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Paulum sepultae distat inertiae celata virtus.—HORACE.

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INDEX TO VOLUME IV.

Original Communications.

Miscellaneous.

Current Medical Literature.

PRACTICAL MEDICINE.

SURGERY.

OBSTETRIC EXCERPTA.

MATERIA MEDICA AND THERAPEUTICS.

DISEASES OF WOMEN AND CHILDREN

Notices of New Books.

Correspondence.

Editorial.

Obituary.

TABLE OF CONTENTS---JULY, 1876.

Original Communications.

Current Medical Literature.

PRACTICAL MEDICINE.

OBSTETRIC EXCERPTA.

SURGERY.

MATERIA MEDICA AND THERAPEUTICS.

Miscellaneous.

Notices of New Books.

Correspondence.

Editorial.

TABLE OF CONTENTS---SEPT., 1876.

Original Communications.

Notices of New Books.

Current Medical Literature.

SURGERY.

PRACTICAL MEDICINE.

TABLE OF CONTENTS---NOV., 1876.

Original Communications.

Miscellaneous.

Current Medical Literature.

PRACTICAL MEDICINE.

SURGERY.

Correspondence.

Notices of New Books.

Editorial.

TABLE OF CONTENTS---JAN., 1877.

Original Communications.

Miscellaneous.

Current Medical Literature.

PRACTICAL MEDICINE.

SURGERY.

Notices of New Books.

Correspondence.

Editorial.

TABLE OF CONTENTS---MAR., 1877.

Original Communications.

Current Medical Literature.

PRACTICAL MEDICINE.

Notices of New Books.

Correspondence.

Editorial.

TABLE OF CONTENTS---MAY, 1877.

Original Communications.

Current Medical Literature.

SURGERY.

OBSTETRIC EXCERPTA.

THE

NEW ORLEANS

MEDICAL AND SURGICAL JOURNAL.

JULY, 1876.

ORIGINAL COMMUNICATIONS.

POPLITEAL ANEURISMS.

BY WARREN STONE, M.D.

READ BEFORE THE NEW ORLEANS MEDICAL AND SURGICAL ASSOCIATION.

Aneurisms occurring in the popliteal space acquire peculiar interest for the surgeon, from the fact of the extreme frequency, comparatively speaking, with which the vessel traversing this locality is thus affected, and of the danger attendant upon pressure, cutting off nervous supply and obliterating collateral and venous circulation, and finally, of the almost hourly risk to which the patient is subjected of having the sac to rupture, allowing alarming extravasation of blood—either of which places the limb below in due proportion in jeopardy.

A reference to the relative anatomy of the contents of this diamond-shaped space which we call popliteal, will at once make patent the reason of the dangers just mentioned, and, I think, accounts as well for the frequency with which the artery here becomes the victim of aneurismal troubles.

This space, bounded above laterally by the bodies and tendons of the hamstring muscles, as they are vulgarly called, below by the two heads of the gastrocnemius muscle, superficially behind by the common femoral fascia, and in front by the posterior aspect of the knee-joint, forms quite a cavity, which contains, starting from before backwards and outwards, the

popliteal artery, vein and nerve, surrounded by a quantity of loose cellular and adipose tissue, which go to serve, as it were, as a very inadequate packing.

The knee-joint, covered with its posterior ligament, supports the artery in front, and little or none being offered behind, an aneurismal tumor soon tends to dilate in this latter direction, and it does not require any great degree of encroachment upon the enclosure to soon interfere with the nervous supply and returning circulation of the parts below.

The knee-joint is probably more frequently exposed to extreme extension than any other joint in the human body, and it can be clearly seen that if put into anything like active use during the existence of an aneurism of the popliteal artery, how readily the sac could be ruptured, producing all the dire consequences of such an accident. Again; it is a well-understood fact that nature, to protect arteries from the deleterious effects of sudden and undue extension of the joints to which they bear intimate relations, has made them materially longer than the limbs down which they pursue their course. Indeed, if this were not so, how few so located would escape damage? But may it not sometimes happen that such providential development does not take place, and believing it to be the case, I think we can, in this way, to some extent account for the disproportion in point of numbers between the recorded cases of popliteal aneurisms and those occurring elsewhere; and, more than that, I venture to say that by taking this view of the matter, we can establish a very essential practical point in the way of determining the pathology of the trouble.

I can not bring myself to admit that the popliteal artery is any more subject to atheromatous degenerations than any other artery in the body; on the contrary, whenever I see one now, unless I discover evidences of such elsewhere, I make it a point to critically search for what I conceive to be a better and more rational explanation, which I am convinced will apply to many cases which are generally stamped as true aneurisms. The middle coat of arteries, which consists of a tissue so organized as to resist the impulse given the various columns of blood by the action of the heart, is so arranged in circular fibres as to keep within bounds the waves of the circulating fluid as they radiate outwards from a common centre within the arterial tubes equally in all directions.

Now, if as mentioned above, the artery, being not of sufficient length, is suddenly put upon the stretch, is it not more than probable that the integrity of this resisting coat might be impaired, and give rise in the end to as genuine a *false aneurism* as if a knife or bullet had injured the vessel—the whole arterial system being healthy. In my mind there is no doubt about it, and I have seen enough to convince me that it occurs much oftener than is generally supposed.

That a knowledge of this fact is of great practical importance, I will illustrate by the recital of one representative case.

A man aged about 35 or 40 years, a painter by trade, while in perfect health, applied to me for advice relative to an aneurism of the popliteal artery which had existed for several months. The tumor had already encroached sufficiently upon the vein and nerve as to somewhat interfere with the proper nutrition of the foot and leg.

I placed him in the hospital and instituted digital compression, which, as I can honestly vouch for, was faithfully kept up without intermission for 48 hours, when it became necessary to stop, as he could bear it no longer.

The tumor had diminished in size and all pulsation had disappeared.

About ten hours after withdrawing the compression, pulsation returned, but at first very feebly. Judge of my surprise, when visiting him twelve hours after, I found him suffering great torment, the sac having given way during the night without any appreciable provocation, allowing an immense escape of blood which filled every available space.

Realizing the danger in which he was placed, I immediately set about to secure the necessary assistance and counsel in the emergency.

During my absence for this purpose he was ill-advisedly removed from the hospital, thus occasioning the loss of much valuable time.

On visiting him at his residence we were much puzzled as to what course to pursue.

Ligaturing the artery above offered no hope, with the mass of extravasated blood pressing upon and strangulating the parts below, and for the nonce nothing short of amputation above the knee offered any hope of success. Further time was lost in discussing the subject, but nevertheless something was learnt which

guided us in what was subsequently done, and here enables me to substantiate what I have stated above.

On close inquiry he stated that in travelling up a ladder carrying a pot heavily laden with paint, he lost his foot-hold, and in attempting to save himself had subjected his knee to a severe strain—the tumor developing itself in a few weeks after.

It was then determined to lay open the tumor, scoop out the blood, and ligature *in situ*. It was done, the artery found perfectly healthy, and the ligature was cast around it just as it entered the upper angle of the popliteal space.

But, as I have said, valuable time had been lost, gangrene of the foot took place, and all that was gained was amputation below the knee; but even this was far from being a bad compromise under the circumstances.

I might here be asked the question as to whether I would pursue this course in all cases of popliteal aneurisms giving such a history. In this connection, I will say that whenever the tumor is small, and has not interfered with the circulation and innervation of the parts below, it would not be well to undertake the troublesome job of ligaturing *in situ*, as delegation of the femoral artery in Scarpa's triangle usually answers every purpose. But most assuredly, should the case present otherwise, I would lose no time in opening and emptying the sac and securing the vessel as above mentioned. If such an effort proved futile, it is easy enough to at once tie above, and you will have secured the very important advantage of relieving the parts from injurious pressure.

Let me here say a word in reference to the result of observations made as to the success of compression in this city, when used for the relief of popliteal aneurisms. Notwithstanding the favorable reports sent us from high quarters elsewhere, I must say that of over a dozen which have fallen under my immediate notice, and in which compression was faithfully practised, I have not one of which I can make kind mention. In this I am sustained by fellow-observers of longer and larger experience; and although I am at a loss to account for it, I am so impressed with the fact as to confess myself in a measure opposed to this method in such aneurisms. One case will serve as an index to the result in all upon which I have used compression, either digital or by means of the tourniquet. About two years ago a man, aged about 35 years, apparently healthy, was admitted

into the hospital, and sent to one of the wards in my charge, with a popliteal aneurism of moderate size. I immediately instituted compression by means of a double tourniquet, which enabled me to so shift the pressure as to secure a longer tolerance of it. It was kept up for 60 odd hours. During the course of the twenty-four hours after withdrawing the compression pulsation returned, and with it great pain in the tumor which gradually enlarged. Profiting by my experience in the case above mentioned, I anticipated what was coming, and immediately secured the femoral artery in Scarpa's triangle, as the space had not been encroached upon sufficiently to materially influence nutrition in the limb below. The operation was followed with prompt relief of all disagreeable symptoms, and the patient made a rapid recovery.

I have been prompted to make these remarks by a deplorable case which has recently fallen under my care, with the desire of attracting the attention of the association to the dangers attendant upon popliteal aneurisms and the necessity of promptly interfering, even when apparently there is no urgency. From the moment an aneurism forms in this locality, the patient is in danger of his limb and perhaps his life, until it is removed.

J. A——, aged about 15 years, accidentally plunged the blade of his knife into the inner part of his thigh at a point corresponding to the upper third of the popliteal space. Little or no hemorrhage occurred, and in a few days he was walking about without difficulty. This occurred on the 5th of May, 1875. About three months after a pulsating tumor, about the size of a hen's egg, had developed in the popliteal space, which gave him no disturbance save an occasional twinge in his foot on that side. It slowly increased, and about nine months after (dating from the accident) had attained the size, as he describes it, of a goose egg. His parents being ignorant of the nature of it, and the child making no complaint of any consequence, advice in the matter was not sought, and he was allowed to move about as usual. During the tenth month, in attempting to get into a buggy he put the injured limb unusually upon the stretch, and at once felt a severe pain in the tumor, rapidly followed by a very perceptible enlargement. On reaching home, instead of sending for their physician they contented themselves with applying various liniments, poultices, etc., and so continued for

fully two weeks. Evidently the sac had been only partially rent, allowing but a gradual flow of blood into the parts outside, which temporarily acting as a stopper, would for the time arrest the hemorrhage, until the clots lessened in size by absorption proved inadequate, when fresh bleeding ensued. Thus the swelling gradually increased, and with it the sufferings of the patient, until the beginning of the third week, when the doctor was called in. Finding his condition precarious, he advised them to hasten him to the city from his home in the country, and thus he fell under my charge.

The foot and leg, and even part of the thigh above the knee, were irretrievably gone, and nothing remained but immediate amputation of the thigh in its middle third.

He bore the operation far better than was anticipated, and although the femoral artery gave way on the 16th day, necessitating its being ligatured above, he is rapidly convalescing, and will soon be able to return home. A proper appreciation, on the part of his friends, of the dangers to which he was exposed, and prompt interference, would have arrested a misfortune which has cost him a limb and very nearly his life.

SELECTIONS FROM THE SURGICAL CLINICS OF PROF. SAM. LOGAN.

BY A. B. MILES, M.D.,

Demonstrator of Anatomy and Chief of Surgical Clinic, Medical Department, University of Louisiana, N. O.

Not a few members of our profession, I fear, pay too little attention to the importance of clinical records. As "the true nature and laws of disease can only be established by the inductive method," it behooves each one, now and then, to make his contribution, however small, to the accumulating store of clinical medicine. The following cases occurred in the Charity Hospital, New Orleans, during the winter term of 1875–6, in the service of Prof. Logan, with whose permission I recorded the notes, and now clip them from the ward note-book for publication.

CASE I.—EPITHELIOMA OF THE GLANS PENIS; AMPUTATION WITH THE ECRASEUR.

Willis C., colored, aged 51 years; gives history of congenital phimosis, for which an operation was performed fifteen years ago. The patient has had a narrow meatus from birth, and has never passed a stream of urine larger than a knitting needle. There is no history of cancerous disease in the family. The patient gives no history of venereal disease in himself.

In July, 1873, a small sore with eschar appeared on the side of the glans penis, through which a small quantity of urine passed. The sore disappeared in two months to recur in six months in the same place, giving passage to a small quantity of urine. The second sore healed in two or three months, and, in January, 1875, appeared on the side of the frænum. The patient attributes the recurrence to a bruise of the glans penis. The little sore began to spread. In April an irritating wash was applied by an unknown physician. In the beginning of July, the indurated mass was about the size of the end of the thumb. The induration extended and the ulceration progressed proportionately to the use of the irritating wash. In the latter days of July more than one-half of the glans was destroyed.

Patient was admitted into Charity Hospital October 11th, 1875. On admission the glans was entirely destroyed, the end of the stump in an ulcerating condition, and the induration involving one-half of the organ. The inguinal glands were seemingly unaffected. Pain sudden and acute. Hemorrhage frequent. Urination very difficult and painful, the indurated mass encroaching on the calibre of the canal.

Saturday Clinic, October 18th, 1875.—Amputation with the ecraseur. Slight hemorrhage from erection of the stump occurred three times during the first week after the operation. No. 10 bougie was passed three times a week. Carbolized oil dressings were applied. The stump healed readily, and the patient was discharged November 13th, 1875.

CASE II.—IRRITABLE STUMP FROM SPONTANEOUS AMPUTATION—RE-AMPUTATION.

Augustus H., a colored boy, aged 16 years, came from a neighboring State with this history. In December, 1874, received a

fracture of the leg below the knee. A bandage was applied (the boy says too tightly), and within one week after the accident there was mortification of the limb. The line of demarcation was drawn through the knee-joint. There was no surgical interference. The boy was admitted into ward 1, Charity Hospital, December 30th, 1875, with a painful, self-amputated stump, still ulcerating. The condyles and the patella were above the line of separation. Secondory amputation deemed advisable.

Saturday Clinic, *January 8th*, 1876.—Amputation of the thigh at the junction of the middle and the lower third. The lower end of the femur was found in a state of subacute osteo-myelitis. The medulla was softened, and several small-pointed exostoses were found on the bone below the seat of amputation. The femoral artery had become obliterated in the process of gangrene, and not a single ligature was required. The after treatment consisted in dressings of carbolized oil (one part to eight) once in five days. The suppuration was very scanty.

January 27th, 1876.—There is only a line of granulations along the union of the flaps. The boy suffers no pain, no longer confined in bed. Suppuration still very scanty. Stump dressed once a week.

February 5th, 1876.—The result of the operation was shown in the amphitheatre of the Charity Hospital to the medical class. Union of the flaps complete. The stump entirely painless. The patient was discharged February 17th, 1876.

Case III.—Gunshot Wound of the Larynx, with the Ball Retained—Laryngo-Tracheotomy.

Mack A., colored, aged twenty-two years, received a gunshot wound of the larynx Dec. 22d, 1875, the ball entering the thyroid cartilage, on the right side, near the pomun Adami. Patient spat blood directly after the injury. Three weeks after the accident, began to experience difficulty in breathing. On admission into Charity Hospital, Jan. 22d, 1876, there was only a small wound to be seen externally, with some induration around the larynx, while the thyroid cartilage was slightly depressed at and around the site of the wound. The ball, supposed to be lodged in the pouch of Morgagni, could not be detected by a probe passed through the external wound. The respiration was seri-

ously impeded, with prolonged and noisy inspiration and expiration.

Symptoms of catarrh were also present, spells of suffocation at night indicating some degree of spasm. While under observation, the local symptoms became more and more aggravated, and the patient became fatigued from loss of sleep and torturing anxiety.

January 26th, 1876.—Laryngo-tracheotomy was performed before the class. (Laryngo-tracheotomy was performed preferably, to facilitate exploration of the larynx, if deemed necessary.)

Introduction of the tube gave immediate relief, insomuch that the patient fell asleep while sitting on the operating table.

January 27th, 1876.—Considerable bronchial secretion, muco-purulent in character. A simple apparatus for the admission of warm, moist air, was devised and applied by Dr. Charles Faget, then interne in charge of the ward. (The apparatus consisted of a rubber cloth sewed in the form of a tube, eight inches in diameter, with one end attached to the rim of a tin basin filled with water and placed over a spirit lamp, the other applied to the patient's neck.) Patient breathed comfortably; strict attention paid to cleanliness of the tube.

January 29th, 1876.—A profuse bronchial secretion has occurred and escapes through the tube. Pus also escapes from the original track of the ball. Patient eats with relish and breathes with comfort.

February 4th, 1876.—Vapor apparatus removed. Symptoms as before mentioned. There is some pain on deglutition.

February 7th, 1876.—An increased quantity of pus comes from the old wound.

The symptoms continued the same until February 28th, when the patient in a fit of coughing dislodged and forced out a conical ball, of the size of Colt's navy pistol ball.

March 25th.—Patient still uses the tube, and experiences a sense of suffocation when it is removed.

The operation was satisfactory, but it is probable that the patient will be obliged to wear the tube permanently on account of the cicatrization.

CASE IV.—TRAUMATIC STRICTURE OF THE URETHRA—PERINEAL SECTION.

Edmund Rector, colored, aged twelve years, came from the

country with rather a vague account of himself. His father says, about five years ago a wagon wheel ran over him in such a way as to wound the perineum. Not long after the injury there was extravasation of urine, and subsequently, urinary abscess of the perineum and anterior abdominal wall near the umbilicus.

The boy was admitted into ward 1, Charity Hospital, Jan. 22d, 1876, with traumatic stricture of the urethra. At the time of admission most of the urine passed through a perineal fistula, while a small quantity passed through another fistula on the anterior abdominal wall, one inch below the umbilicus. No urine passed through the natural channel, not even a drop. The patient was unable to retain much urine in the bladder, manifesting oftentimes symptoms of incontinence. The least emotional excitement caused desire to pass urine. Repeated attempts to enter the bladder with Gouley's small whalebone instrument proved unavailing.

Saturday Clinic, February 12th, 1876.—Perineal section.

A grooved sound, passed into the urethra down to the strictured point, and Gouley's whalebone bougie, passed through the perineal fistula into the bladder, served as guides to the section, which was made to extend from the end of the grooved sound to the whalebone instrument. The grooved sound was then removed, and a tunnel-pointed catheter was passed through the urethra, then over the whalebone guide into the bladder. The catheter remained in the bladder three days, when the boy removed it. The after treatment consisted in passing a bougie at intervals, not without some difficulty, however.

One month after the operation the patient was enabled to pass most of his urine through the natural channel, only a small quantity passing through the perineal incision, when in a transfer of the ward he passed into another's hands for treatment.

Case V.—Stricture of the Urethra—Perineal Section.

Alfred C., a colored man of powerful frame, aged forty-five years, had gonorrhœa twenty-five years ago. The disease continued only one month. Nine years ago the patient again had gonorrhœa. The discharge continued two years, when patient noticed the stream of urine becoming smaller. On account of the stricture, the size of the stream continued to diminish, until

urination became very difficult and very painful. There was extravasation of urine, and several urinary fistulæ formed in the perineum, through which most of the urine was passed for five years.

On admission into the Charity Hospital, the patient passed urine through the meatus by drops. An exploratory examination revealed a stricture about the middle of the spongy urethra, through which a small whalebone instrument passed to meet a hard, impermeable stricture extending the whole length of the membranous canal.

Saturday Clinic, November 5th, 1875.—For the relief of the anterior stricture, internal urethrotomy was performed with Gouley's tunnel-pointed urethrotome. Although the urine passed through the stricture of the membranous portion by drops, all attempts to pass an instrument were unsuccessful.

Saturday Clinic, November 13th, 1875.—Perineal section was performed.

The perineum was indurated and distorted by fistulous tracks. The operation was facilitated by adopting the expedient of passing an instrument through one of these fistulæ into the bladder, to serve as a guide in the section, as in the case above recorded. A No. 10 silver catheter was introduced into the bladder and retained. To anticipate irritative fever, administered

℞. Quiniæ sulph. gr. x, (solve)
Tr. opii. - mxv,
Aq. menthæ pip. ʒij. M.
S. At once.

Nov. 17th.—Catheter removed.

" *18th.*—No. 10 silver catheter introduced and subsequently passed every third day. No symptomatic fever.

Dec. 2d.—All of the urine passed through the natural channel. The patient, instructed in the use of the instrument, was discharged Dec. 11th, 1875.

In a letter recently received, the patient states that he is passing the instrument once a week and is doing well.

CASE VI.—STRICTURE OF THE URETHRA AND PELVO-ABDOMINAL URINARY ABSCESS, COMMUNICATING WITH THE BLADDER—AUTOPSY.

Geo. A., aged sixty years, a native of France, and a man of

intelligence, gives history of stricture of the urethra (membranous portion) of twenty years' standing. When the symptoms of stricture first gave alarm, patient sought relief at the hands of Ricord, who practiced "gradual dilatation" until the canal admitted the largest size solid bougie. Forewarned, and forearmed with instruments, the patient left France for Mexico, where he lived a number of years with comfort under his own treatment; but, for four or five years before he came to New Orleans (about three years ago), he could not procure the necessary instruments, and gradually the size of the canal diminished. The patient was admitted into the Charity Hospital in October, 1873, with a close stricture (admitting only a small whalebone instrument) and irritable and inflamed prostate, and retention of urine. "Gradual dilatation" was practiced, and, for several days, the aspirator used to empty the bladder and give the prostate and the stricture a rest. After six months the patient, enabled to pass a No. 8 gum elastic bougie with ease, left the hospital, but has reported to Professor Logan at his office at various intervals for more than two years. He again neglected himself for six months, until July 1875, when he reported and complained of a distressing pain in the pelvis, on the left side, which was aggravated on locomotion. No further account of the man until December 26th, 1875, the date of his admission into ward 23, Charity Hospital. At the time of admission, the patient was very weak and extremely emaciated. The stricture admitted No. 5 solid bougie. Vesical tenesmus very great. Urine contained mucus and pus. There were dysenteric symptoms, which, however, soon subsided. In the middle of Scarpa's triangle, on the left side, there was a fistula discharging pus constantly. No urine detected in the discharge. There was no sudden change in the symptoms; no rapid decline of the vital powers. All treatment proved unavailing, and patient died, exhausted, January 27th, 1876.

Post-mortem Examination.—Stricture found located in the membranous urethra. Dilatation of the prostatic urethra behind the stricture. Prostatic sinuses also dilated and filled with pus, urine and calculi.

Evidences of Chronic Cystitis.—The mucous membrane of the bladder was thrown into large rugæ, covered with calcareous deposits. The walls of the bladder were considerably hypertrophied (¾ of an inch in thickness). The ureters were of normal

size. There was an opening at the base of the bladder communicating with a pelvo-abdominal urinary abscess. The edges of the opening showed no signs of recent rupture. It is probable that there was no sudden rupture; but the urine accumulated in a pouch formed by the folding of the mucous membrane, underwent decomposition, then disintegrated and destroyed the cystic wall, just as in the urethral canal, when detained in the dilatation behind the strictured point, it destroys the urethral wall, making an exit for escape and extravasation. The walls of the abscess were thick and indurated from the deposit of plastic matter around, showing signs of some duration. The cavity of the abscess had two prolongations. One extended upward in front of the psoas muscle, on the left side of the vertebral column, as high as the diaphragm, terminating in a pouch-like extremity, which contained a teacupful of urine and pus. The other passed under Poupart's ligament of the left side, burrowing beneath skin and fascia, and opened in the middle of Scarpa's triangle. The abscess cavity contained thick pus, with a small quantity of urine.

To be associated with Case I., above recorded, I would append Case VII., which occurred in the private practice of Prof. Logan, the notes of which, as taken from his case book, are furnished by himself.

CASE VII.—CANCER OF THE PENIS—AMPUTATION WITH THE ECRASEUR.

M. S., a German tailor, aged 46 years, was born of healthy and long-lived parents, and is now the member of a healthy family of children. Has always enjoyed excellent health. Two years ago he noticed a "little boil" on the glans penis near the meatus, which he mistook for a syphilitic sore. He treated himself for two or three months, and the sore continuing to grow slowly all the while, he determined to call on a doctor, who coincided with the patient in his diagnosis and treated the sore accordingly. The above treatment was continued until the patient, about three weeks ago, came under the treatment of Dr. W. B. Archer, of Pointe Coupé, La., who, to-day (May 16th, 1875), brought him to New Orleans to consult me, having been some time convinced of the malignant nature of the growth.

When the patient came under my observation, the whole of the anterior extremity of the penis was lost in an irregular mass of scirrhus. The urine trickled with some difficulty through a crevice on the inferior and anterior surface of the mass. The mass is somewhat of the shape of a pear, the base being continuous with the remaining portion of the penis, which still preserves a length of about four inches, and is larger in diameter than is natural in the flaccid condition of the organ. On the dorsum near the pubis, an elongated, rounded, hard mass is found, and the glands in each groin are just perceptible under palpation. The tumor measures $8\frac{3}{4}$ inches in its longest diameter, and $7\frac{3}{4}$ inches in its transverse diameter, measured midway between its apex and its base. It has given him only occasional shooting pains, proving troublesome only from its weight.

The amputation was performed under chloroform. A section, through the skin only, was made about an inch anteriorly to the root of the organ, and the chain of an ecraseur was buried in the incision. The instrument was then worked very slowly, twenty five minutes being occupied in the process. When the section was almost complete, a portion of the instrument gave way. But all the advantages of the crushing process had already been secured; and when, by means of a knife, the remaining connections, condensed into a hard cord, had been severed, not a jet of blood appeared. The edge of the mucous membrane was stitched to the skin in four places, and two sutures were also used to approximate the upper portion of the circular cut through the skin, so as to cover the dorsum of the stump and its face nearly as far as the new meatus. The condensation of the tissues, effected by the ecraseur, so diminished the extent of raw surface, that by the above processes the whole of the same was covered by either skin or mucous membrane. Some surgeon has remarked, that in using the ecraseur your wound is half healed as soon as the operation is performed. This was well illustrated in this case. The oval lump of indurated tissue on the dorsum at the root of the penis was dissected out while waiting for the ecraseur, and two sutures were used to bring the little wound together. Carbolized oil on lint was used as a dressing to the part.

May 17th, 1875.—Patient feels well, and is remarkably cheerful "under the circumstances." Recovered so promptly from the

chloroform that he enjoyed a light dinner three hours after the operation. Has not lost a drop of blood.

May 18th.—Still doing well.

May 19th.—Some parts seem as if about to heal by first intention. The stump healed very promptly, and patient returned to his home in the country, with instructions to pass an instrument into the canal occasionally to prevent closing. A letter received lately states that patient is following the directions and is doing well. There has been as yet no recurrence of the disease.

ON THE NATURE AND TREATMENT OF YELLOW FEVER.

BY NELSON WALKLY,

Formerly of Mobile, now resident in Troy, Ohio.

The object of this paper is to make a record of some observations, the result of my experience in all the yellow fever epidemics that have occurred in Mobile, Ala., since 1844, and hope by this means to excite attention to the extreme deficiencies of our science, and invite industry to matters in which exact observation is so peculiarly required.

I presume that very few of our practitioners have ever seen and watched through a natural uncomplicated case of this disease.

In nearly every case in the first stage, attempts have been made to cure the disease by means of drugs. The stomach has been irritated, the intestinal canal has been inflamed by hyperpurgation, and the succeeding prostration has so lowered vital forces that the system can not contend with the disease, and death is the result.

The practice that I advocate, is founded upon the hypothesis that the disease is a disease of itself, arising from a morbid poison imbibed into the system, which will run its course with as much regularity and certainty as small-pox, and can no more be modified by medication than that disease. It can never be shortened an hour, but can be protracted by mismanagement.

Our text books divide the disease into stages, but treatment usually aggravates and prolongs these periods.

In my practice, in those cases which were permitted to run

their course naturally in the terrible epidemic of 1853, in 336 cases treated by me in private practice, the febrile stage averaged 31 hours—in adults from 30 to 42 hours, and in children from 20 to 30 hours. In the epidemic of 1858, a much larger proportion of children had the disease, and the average was shorter; in 247 cases 29 hours, the treatment being the same; in 1867, 31 hours.

With regard to the pathology and symptoms of this disease I shall say very little; the main object is to point out a course that will save the most lives. The symptoms will be found in all our text books, and it is unnecessary to cumber your pages in describing what has been so well described elsewhere.

As for ourselves, our personal knowledge is necessarily limited, for in the hurry of an epidemic it is almost impossible to make that patient, persevering series of observations, which have to be continued for a number of years, recorded and compared, to enable us to overcome the false ideas imbibed in our early education. A celebrated oculist remarked, that he spoiled at least a hatful of eyes before he learned how to operate for cataract; and I have no doubt but all of us who have had much practice in this disease, have by hyper-medication greatly increased the necessary mortality.

Having expressed my opinion that we have no certain knowledge of the cause of this disease or antidote for its poison, it becomes us to seek and adopt such a course as will enable the vital forces of the patient to throw off this disease.

Will depressing him by bleeding or hydragogue cathartics, emetics, or other depleting remedies, increase these vital powers and give strength to combat this malady? Can you salivate a man in 30 hours? How is that course to modify or supersede a disease which lasts at most but 30 or 36 hours if let alone. The disease is not in the liver; the attempt to stimulate that organ does not remove it. It is not in the bowels, for if they are let alone, natural evacuations will take place on the fifth or sixth day affording no indication that the patient had ever been sick. With regard to blood-letting, I have never resorted to it; but in hospital practice, in 1843, I saw bleeding, cupping and leeching practised, but can not recollect to have seen one thus depleted recover.

In all cases except in the moribund, there is great dread of the result. The patient will anxiously watch the countenances of physician and friends. Hence any manifestation of alarm or

anxiety on the part of either will have a depressing effect on the sufferer.

It is always well to meet the patient with a face void of anxiety, and by that means convince him and his friends that you have no fears of the result. If a practitioner is disposed to have all bad cases and obtain credit for curing them, and comes in with a long face, telling the friends in the hearing of the patient that it is a very bad case, that he will do all that can be done, but the result is doubtful—this will cause so much anxiety of friends, and so depress the patient, that it will be wonderful if he gets well.

Moral remedies are among our most powerful ones: if we can inspire confidence enough to insure our directions being observed, and prevent over-officiousness and anxiety, half the battle is won. After it becomes known that a physician does not lose his patients, and expects to cure most of them, it is astonishing to see how the recently-attacked patient will brighten up at his visit and to observe the close attention paid to his directions.

The great mortality in the epidemic which occurred at Memphis, Tennessee, three years since, would seem to have been unnecessary, if the physicians in attendance had properly understood the nature of the disease and the best mode of treatment.

Our text books are for the most part compiled by those who have no personal experience in the treatment of the disease in question, and from the notes of those who write for medical journals, frequently inexperienced tyros in the profession, or if experienced, are wedded to some routine which they dare not depart from for fear of doing worse.

The disease is so terrible that very few have courage enough to enable them to deviate from the beaten track laid down in the text books, and feel that if the patient died he was treated secundem artem.

It is very difficult to give up our faith in the power of our vaunted curative remedies; and if the physician has lost faith in them, his patient and the patient's friends have not, and unless he is continually dosing they fear that he is neglecting them, and that they will die in consequence. It requires a long and successful practice in a place to gain such a prestige as will enable a physician to pursue an honest practice and give just so much medicine as is needed and no more.

I write this short paper on the *treatment* of this disease for

the benefit of the rising generation of physicians; for it is not to be expected that the old practitioners, that have been in the habit of expecting a mortality of 35 per cent., will admit that any one could treat the disease and lose less than they have done.

My own experience is such that were I now residing in a yellow fever country, I should hesitate to publish this paper. I am now out of the reach of the disease, and my motives can not be impugned.

In the year 1854 I published a paper in the *N. O. Medical and Surgical Journal*, November No., on this subject, in which I detailed the expectant mode of treatment as pursued by me and the results. This paper at the time excited much comment. No one would believe the result as stated. The editor at that time (a personal friend) went into a long argument to prove that most of the cases treated by me in the terrible epidemic of 1853 were probably mild intermittents, occurring in the suburbs in the yellow fever season, and my cases consequently got well.

Others of my confrères in Mobile did not admit the possibility of such success, and compared the statements to those of Barou Munchausen. I have kept a record and notes of every case treated by me since 1843, and *know* of what I write. In the epidemic of 1843, I had an opportunity in the Charity Hospital of New Orleans of studying the disease in life and after death, and became perfectly satisfied that the *idea* that the disease was an inflammatory one, to be treated by depletion, was erroneous. I found that the Creole nurses, with their tisans and no medicine, were far more successful than the learned Faculty of the Charity Hospital. In 1844, in Mobile, we had a few cases. I had time to watch my cases, and in a measure get rid of the prejudices of early education. In the epidemic of 1848 I was better prepared for it, and had so much confidence in my mode of treatment that I did not expect my patients to die. My own family, myself included, had the disease in that year, and I had an opportunity to feel the effects of it personally, and having my senses perfectly, took no medicine except the first dose—a mercurial purgative administered by Dr. J. C. Nott. We all recovered, and I was after this epidemic much better prepared for succeeding ones. The next epidemic was in 1853. It commenced in July or last of June in New Orleans, and did not reach Mobile until about the 1st of August. Our New Orleans brethren rep-

resented the disease as being much more violent and fatal than ever before. Previous to that time —viz., in 1851 and 1852— the subject of the identity of fevers was discussed by Drs. Bolling, Fenner, and other talented physicians, and it was thought by many able men that yellow fever was one of the Protean forms of endemic malarial fever, which quinine was expected to cure if rightly administered.

The abortive plan was thought best, and was adopted in New Orleans by several of the most noted physicians, and we of Mobile were duly informed that although the disease was extremely malignant, yet they were very successful in the use of sedative doses of quinine. They commenced as early as possible after the attack, and administered the following prescription at one dose: ℞—Quinine xxv., calomel xv. grs., followed by magnesia and rhubarb. After the operation of the above, gave x. grs. quinine every 3 hours. This medication relieved the restlessness, allayed the pain usually the first dose, and reduced the temperature from its usual point, 104° or 105°, down to 98° or 100°. If during the first 24 or 36 hours the temperature rose or the pains came back, the 10 gr. dose of quinine was given, usually combined with 2 grs. of tannin to prevent its nauseating the stomach. This treatment was pursued by me through this stage in twelve cases, but I found that when the calm stage came on, the heart's action was more feeble than it formerly was under the expectant mode of treatment hereafter to be described; that there was a greater tendency to sink; convalescence when it set in was more protracted; and worse than that, more died, notwithstanding all my care and nursing, than I thought was right; and although it was pleasant to hear it said that he broke the fever in three hours, yet the ultimate result was disastrous—42 per cent. died. This was trial enough for me, and I returned to first principles, and adopted the expectant plan now to be described.

In the first place, if I saw the patient in the first three or four hours and found him with red face and eyes, capillaries injected almost as red as in scarlatina, restless, rolling from one side of the bed to the other, to get ease and finding none, I at once administered a purgative as an evacuant, either calomel with a little rhubarb or jalap, or, what was a favorite remedy with me, comp. cath. pills. This was given simply *as* an evacuant, to relieve the stomach and bowels of any undigested or irritating substance, as I did not desire another evacuation until the patient

was discharged as cured. After administering the above laxative, I placed the patient's feet up to the knees as near as possible in a bucket of mustard water as hot as could be tolerated, the patient in a recumbent position with his feet off the side of the bed in the bath, which was to be kept hot by frequent additions of hot water. In from 20 to 30 minutes, the extreme capillary congestion would be diminished, the blood withdrawn from the head, and a profuse perspiration and entire relief from pain would take place. This will relieve the patient for three or four hours, when the same operation is to be repeated.

At the next visit, some six hours afterwards, if the evacuant has not operated, administer an enema of salt water and prescribe a placebo. In 1853 I prescribed citrate of potass in aqua menthæ pip. ʒi. to ʒiv., and directed *very particularly* that a teaspoonful should be administered every three hours. In 1858, in consequence of the supposed virtues of the chlorate of potass *it* was substituted for the citrate, with no perceptible advantage, as the mortality was almost precisely the same. I usually informed the patient and friends that the fever would not entirely subside under 30 or 36 hours. On the second day I usually changed the medicine? i. e., I flavored it with spirits of lavender or some other carminative, and continued it until the fever entirely subsided. During this time the whole glandular system appears to be paralyzed and the actions suspended, the Schneiderian membrane secretes no mucus, becomes congested, so that the nostrils are closed, and breathing has to be accomplished through the mouth. The secretion of saliva is suspended as well as digestion. Even water is not taken up by the stomach, except in very small quantities; and if half a glass is taken, the patients complain of a hard lump in the stomach, and unless it is ejected when it gets warm, it will distress them for some hours. As the breathing is done through the mouth, the tongue becomes quickly dry and hot; hence it is necessary to give *a small teaspoonful of pulverized ice every 18 or 20 minutes to keep the tongue cool and moist without distending the stomach, and every particle of food or nourishment of any kind must be absolutely prohibited, as well as stimulants, except in those exceptional moribund cases where it is indicated.

After the fever has left, the calm stage comes on; the patient

* Ice is best pulverized by putting a piece in a towel and striking it against a brick wall or other hard substance.

lies quiet, free from pain, and if the attack has been a severe one, almost powerless; the muscles of the heart appear to suffer fully as much or more than the voluntary muscles; the pulse will be between 80 and 100 per minute; the temperature rather under the normal condition; but if the patient is raised up in bed, there is great danger of syncope. If fainting comes on it is almost always followed by vomiting, and this vomiting, after this stage sets in, is not desirable and must be combatted from the start. I have found a cloth wet with ice water applied to the throat to act very speedily, though if this tendency to vomit has continued long, we will have to resort to spice poultice wet with brandy, applied to the epigastrium, or the Creole remedy, a slice of toast wet with claret or other acid wine, applied to the pit of the stomach, rubefacients, and requiring the patient to be kept perfectly quiet. If the patient's tongue does not clear off and nourishment begin to be craved by the close of the third 24 hours after the attack, I have found it necessary to be with my patient between midnight and morning of the third night, for if they sink at all, that is the time that the sinking period will come on. The patient must be closely watched, and if the pulse has a downward tendency, and you hear the patient sigh, you may know that the heart's action is flagging, and stimulants are required to tide them over these sinking hours.

If the pulse gets below 80 beats per minute, put a teaspoonful of pulverized ice in a wine-glass and a teaspoonful of good brandy without sugar; after stirring it a minute or two give it to the patient. If this does not increase the pulse in fifteen minutes, repeat the dose; if it does not agree with the stomach, try champagne in tablespoonful doses in the same way.

I have found some cases where the above stimulants were not tolerated, where ale, porter or beer, would be borne given in small quantities at a time, and will be sufficient. Some persons, physicians as well as nurses, are so anxious that they over-do in the matter of stimulants, and give so much as to produce a burning in the stomach and induce gastritis, but if the pulse is watched there will be little danger of this.

Should the pulse get above 100, suspend all stimulants, and sponge off the hands and arms of the patient with cold water until the pulse gets down to about 90, then let him rest. It is extremely important to guard against sinking, and I venture to assert that at least two-thirds of all deaths occur for want of

proper attention during the third and 4th nights. Most physicians make their visits during the day, when their attention is of little or no moment, and sleep at the very time when their patient is sinking and dying. It is very seldom that the sinking time comes on at any other period of the 24 hours except between midnight and 5 a. m.

On the night of the 24th of September, 1853, I lost two patients, both convalescent, from neglect or mismanagement of nurses. One of them, Mrs. F., had got through the third night without any tendency to sink. The family with whom she boarded had secured, as they thought, a competent Creole nurse. I was there after midnight, fourth night, and found her doing well. I left specific directions with the nurse, who as I left called me back, to inform me that the patient had not had an action of the bowels since the first day, and *she* thought it necessary that she should have one. I told her that one purgative at that time would be likely to kill her—that it was neither necessary or desirable, but to keep her perfectly quiet, and give her only a little stimulant if it should be needed. I left her to go the country, her case being one of the last in town, and the disease was then ravaging the suburban villages. As soon as I had gone and the family had got quiet, the nurse proceeded to administer an enema to act on the bowels, and got her on a chair, when she fainted. Vomiting set in; she sank and died before I got back in the morning.

The same night, one mile from town, I visited Mr. P., who was taken down the same morning as Mrs. F., and was in the same condition. I had secured, as nurse, Mr. V., who was experienced and knew what I wanted, and would obey orders. He had only recovered the week before from the disease himself, and was quite feeble. I left them at one o'clock, a. m., doing well, Mr. V. (the nurse) understanding what was needed. At two o'clock Mr. V. gave him some water, and he (the patient) dropped off to sleep, and Mr. V. went to sleep also. An hour or so afterwards Mr. P. awoke, and desiring some water, and not wishing to disturb his nurse who was asleep, got up and started for the bucket on the opposite side of the room, but before reaching it, fainted and fell. This awakened Mr. V., who got him back to bed. When his heart commenced acting he commenced vomiting, and nothing would arrest it. When I came by on my return to the city, his pulse was below 60 and very feeble, and no mode

of stimulation that I could adopt was of any avail. The injection of milk punch per rectum, bathing with hot whiskey, and stimulating embrocations were of no avail; he sank and died at about the same hour as Mrs. F. The deaths of both these were such accidents as ought to be guarded against.

After the third night is past, light nourishment must be administered in small doses at first; a dessertspoonfull of cold milk, or what is better, buttermilk, *iced*, may be given every half hour. If it is tolerated well, and begins to be relished, beef-tea may be given in small quantities every hour or two. If nourishment is not tolerated, mild stimulants, as above directed, must be administered until the next day.

The day is the time for administering nourishment. After 10 p. m., the secretion of gastric juice appears to be suspended, and whatever is given of food appears to lie heavy and distress the stomach until after 7 or 8 a. m. During the next day and night drink and some nourishment must be within reach of the patient, so that he can reach out and take a swallow immediately after waking, as he will be so exhausted by a little too much sleep that he will get faint before any one can get it for him.

After the fourth night, if the white coated tongue has regained its natural color, and food is relished, the patient is convalescent, and may be discharged on the fifth or sixth day.

A good way of giving drink during the first days of convalescence is to fill a bottle with cold sage or orange leaf tea; this can stand so near the head of the bed that he can reach it and drink out of it without raising his head or wetting himself.

During the third or fourth 24 hours, no matter how well the patients appear, they should not be left alone, as they are not aware of their extreme muscular exhaustion, and feel comparatively so well that they think they can help themselves, and many a life has been sacrificed by getting up after a glass of water. With regard to the diet of convalescence, articles of flour or arrow-root, boiled rice, or starch cooked, do not seem to agree well, but beef-tea, milk and buttermilk, and afterwards wild game, usually set well. Probably the cooked starch is not digested for want of ptyaline; salivary secretion is suspended, and when the glands have resumed their functions, I am not certain that they furnish any ptyaline, never having tested the saliva.

In some cases, in convalescence the kidneys are tardy in resuming their functions, and require a diuretic, and occasionally,

particularly if the liver has been over-stimulated at the outset of the disease, a blue pill will be indicated. It is seldom that any tonics are required in convalescence, as the appetite is disposed to be too good. No matter how bad a dyspeptic a patient may have been before the attack, he will often get up after this treatment radically cured of that ailment.

Under this simple mode of treatment, with due care, not more than one case in one hundred will relapse. The patients get *well*, not with mercurial cachexia, or the debilitated constitutions and utter prostration, the effect of excessive medication.

The above is the usual routine for the treatment of ordinary cases, but there are exceptional ones. In each hundred cases I have found about three that are struck down so suddenly, and so violently, that they are not sensible of pain, and it is hard to convince them that they are sick. There are two classes of these cases, one of which are so paralyzed that they are moribund at the start, and seldom make an effort to recover, and usually die within the first 48 hours, though some of them linger along until the disease exhausts itself and ultimately get well.

In these cases the capillaries are congested; the pungent heat of the skin and the white tongue indicate the nature of their illness.

They will lie still with their eyes closed. If you ask if they are in pain, they will tell you no. They are not sensible of thirst; they want nothing except to be let alone. They will lie in a semi-comatose condition, receiving no apparent relief from any kind of stimulation. Nothing taken into the stomach appears to be assimilated or produce any effect. I have seen some cases where they could not or would not swallow, and as this was before the time of hypodermic medication, we had to rely upon rubefacients and external applications. These did not appear to produce any apparent effect during the febrile stage, and they usually died before they reached the second stage; yet of these, some would get well. I had in my house an unmarried man, 35 years of age, who was occasionally intemperate. On the 11th of October, after one of his sprees, he was suddenly attacked in the street, had sense enough to get home, and to bed. After that he lay in a comatose condition without swallowing for three days. In fact, his case was so hopeless that I did not attempt to do anything. I called in Dr. J. C. Nott to see him, as he was in my house, and I wished for some one to relieve me

somewhat of the responsibility, and we both concluded that nothing could be done, and he was left to the care of his nurse, who wet his mouth occasionally and twice a day emptied his bladder by means of catheter, and left him to nature. To our astonishment the disease ran its regular course, and he came out of his stupor and commenced convalescence on the fourth day, and was discharged on the fifth.

Miss N., aged 16, was taken, Sept. 26th, 1853, in the same way, and lay in a stupor; pulse about 80; temperature 105°; did not appear to feel pain, nor crave water. I attributed the coma to uræmia, as she had not passed any water during the first 12 hours, and I feared that the action of the kidneys was suspended, but on introducing the catheter 24 ounces of urine was drawn off, and after that, this matter was attended to twice daily. She went along through the first stage regularly, but on the 3d day she did not rally, and her pulse could not be kept above 80. Her stomach would not take up anything; a spoonful of ice water would be ejected as soon as it got warm. I ordered strong beef-juice made by boiling beef cut up in small pieces in a jar, which was set in a kettle of cold water before putting it over the fire, putting no water in contact with the beef, so that we had nothing after boiling some hours except the juice of the meat, three pounds of lean meat yielding about 8 oz. ℥ii of this was injected into the bowels every three hours and retained. She got through the third night without utterly sinking. The beef-tea was given thus at regular intervals through the fourth day, with nothing into the mouth except a little water; and when this had accumulated so that the stomach could contract on it, it was ejected, not by straining and vomiting, but a kind of eructation. After midnight the pulse sank below 60 beats per minute, and black vomit came up with the water. She was bathed frequently with bay rum, whiskey, etc. I left her at 5 a. m. in rather a hopeless condition; directed the water given her to be acidulated with elix. vitriol. Returned at 9 a. m.; found that the vomiting had ceased, but the heart's action was still more feeble. I also found that the good ladies that were nursing their Pastor's daughter had come to the conclusion that it was useless, and had omitted to administer the beef-tea, and they undertook to convince me that she must inevitably die in a few hours and I had better let her die in peace. I found that her heart's action was so feeble that she would cease breathing

every four or five inspirations, and had to have some one stand by her side and slap her or sprinkle water in her face to set her to breathing again, thus resembling a case of poisoning by opium. Her eyes were half closed and tearless, pupils dilated. I had wet cloths placed over the eyes to prevent their being injured by drying up, and told the ladies that as the disease was a self-limited one, if I could sustain her and carry her over that next night, she might be saved, and if they would not carry out my wishes I must have some one there that would. They then agreed to obey my directions, but as often as I could, I called, being doubtful whether my wishes would be carried out. At night, to be *sure* of a reliable nurse I carried out my wife, and my own sick child, who was convalescing from the same disease. Found the patient in the same condition. I left and went on to Jacksonville, and returned at 11 p. m.; prepared a liniment of strong aqua ammonia, tr. capsicum and tr. cinchona, equal parts, and directed her entire body to be sponged over with it. This was done, though not without great complaint of the nurses, on account of the lotion burning their hands. In a few minutes Miss N. became restless, commenced rolling about, and within an hour breathed regularly, the pulse got about 60 per minute, and she was able to swallow a spoonful of milk. She was slow convalescing, did not fairly commence before the ninth day, and was discharged the fourteenth, and is living yet.

The above are examples of the moribund cases that have recovered. I will now describe one or two of the walking cases.

About the middle of the epidemic in 1853, I went into the post office, and there met an acquaintance, and from his appearance knew that he was laboring under the disease and past the third day. I asked him how long he had been sick. He told me he had not been sick at all; that Dr. Kelley had been trying to make him believe he was sick, and had been dosing him for three days; but he was not sick, and had not been sick, only weak from the effects of the medicine, and thought that Dr. Kelley's sole object was to make a bill out of him. I told him that the ecchymosis of the skin told another tale. I put my finger on his wrist and found his pulse below 60, skin cold. I told him to get into my buggy and I would take him to his boarding house. I drove past Dr. K.'s office, and left an order for an immediate call on him. Before he got to his room he

was ejecting a large quantity of black vomit; he died in about an hour.

About that time I was one morning driving up Water street, past Spanish Alley, and a man sitting at a low French cabaret at the corner beckoned me to stop. I did so, and he came out to the buggy and asked me to give him something to stop his hiccough, and just then ejected a spirt of black vomit out of his lips. I jumped out of the buggy and led him into the house. The landlady requested me take him up the ladder to his room in the loft. I, however, laid him down on a lounge in the room, told her that it would be difficult to get him down, and in 20 minutes he was dead. The landlady informed me that he had been wandering about for three days, had not been sick enough to go to bed, that she had given him some senna and salts, and he had had no doctor.

I have met with many cases of mal-direction of nervous powers. We used to think that in a desperate case otherwise, if the kidneys continued to act, there was some hope, but experience has taught me that the patients frequently did not know whether the kidneys acted or not. They were not aware of the distension of the bladder. Frequently young men would complain of violent priapism. After removing this by the application of cold, and introducing the catheter, a large quantity of urine would be drawn off, which entirely relieved the patient. It was thought by many, that if they could stimulate enough to enable the system to resist the disease they would escape; and some physicians who loved their glass have recommended their friends to thus bolster up their courage. Now in these cases we find our worst subjects. There will be a time when liquor will not stick, and the subject will be let down so that the disease will overpower him, then his gastric irritation, brought on by over-stimulation, goes against him, and this class of cases seldom recover. One peculiarity of this disease is, that usually the more violent the attack, or rather, the more complaint made over the pain, the less danger and more speedy recovery.

Some young physicians having treated their first case by this plan, and lost it, dared not pursue it in another case; and some three or four physicians, in 1858, having lost their first case, gave up and ran away.

I will here say that the occasional yellow skin is not from jaundice, but is the after effect of ecchymosis, as in case of a

blackened eye from a bruise, and only occurs in those cases where the capillary congestion is extreme.

I will now close this paper by giving the result of the treatment of 1649 cases treated by 37 physicians, in the epidemic of yellow fever in Mobile, in the year 1858. If any physician now living there, or elsewhere desires to know how many cases he treated and how many he lost, I have the means of furnishing him the record.

This record was made up in this manner. At the close of the epidemic, after November 12th (the date of last case), a gentleman canvassed the city for the purpose of making a directory, and inquired at each house "How many cases of yellow fever had you this summer, who treated them, and how many deaths?" In his book for the purpose, he had a page or more for each physician, and took down the name of each family and the above particulars. This report corresponded, so far as mortality is concerned, nearly identically with the sextons' record; hence it is to be inferred that it is nearly correct. I will give, instead of names, a number designating each physician, the number he treated, and the mortality.

Of this number, 396 patients were treated by four physicians pursuing the plan I advocate, with a loss of 23—a little less than 6 per cent. The remaining 1253 patients were treated secundem artem by 33 physicians, with a mortality of 369, or an average of a little over 29½ per cent.

Table of Cases Treated, with Number of Deaths.

Physicians.	*No. Treated.*	*Deaths.*	*Physicians.*	*No. Treated.*	*Deaths.*
Dr. 1.....	171	57	Dr. 20.....	257	15
" 2.....	100	51	" 21.....	16	5
" 3.....	140	35	" 22	3	1
" 4.....	60	7	" 23.....	36	9
" 5.....	64	16	" 24.....	4	1
" 6.....	93	31	" 25.....	4	3
" 7.....	3	1	" 26.....	77	11
" 8.....	1	1	" 27.....	24	6
" 9.....	48	12	" 28.....	1	1
" 10.....	34	17	" 29.....	3	2
" 11.....	9	1	" 30.....	12	4
" 12.....	4	2	" 31.....	3	2
" 13.....	10	1	" 32	120	6
" 14.....	145	32	" 33.....	6	3
" 15.....	1	1	" 34.....	18	6
" 16.....	78	26	" 35.....	4	1
" 17.....	48	12	" 36.....	4	1
" 18.....	20	5	" 37.....	4	1
" 19.....	24	6			
				Total—1649	Total—392

If in future epidemics each physician will keep notes of all his cases, he will soon satisfy himself with regard to the best plan of practice, and he may rest assured that the course that results in a mortality of more than 25 per cent. can be greatly improved on.

If these statements command any respect, they dispel some of the illusions as to the omnipotence of drugs. It is greatly to be desired that we should recognize the insufficiencies of our knowledge, and grapple with the difficulties rather than acquiesce in a system of sham therapeutics, and thus prolong the reign of blind empiricism hostile to every interest of science and humanity.

In the little epidemic of this disease which occurred in 1856, at Gowanus, on Long Island, I happened to be there. Dr. Vache, who had been for a long time Quarantine Physician on Staten Island, gave me a pamphlet in which he advocated the expectant plan of treatment, and I find it recommended by various writers since.

THESIS: OBLITERATION OF THE "BOTAL" FORAMEN AND DUCTUS ARTERIOSUS.

BY CHARLES FAGET, M.D.

Circulation Before Birth.

In the fœtus, respiration having not yet taken place, and the lungs being yet collapsed, the circulation is as follows: Both auricles of the heart are filled with the blood which comes by the pulmonary veins and by the venæ cavæ. As they communicate together by the Botal foramen, and as more blood comes by the venæ cavæ into the right auricle than by the pulmonary veins into the left, it must follow that there is a current from the right to the left auricle, through the foramen, until they are both equally filled, or to express myself with more accuracy, till there is a perfect counterpoise between them, according to the laws of hydrostatics. The two auricles then contract, equally filling the two ventricles, which in their turn contract, propelling the blood into the arteries. The blood propelled by the right ventricle passes through the pulmonary artery: at the

bifurcation of this artery, a part goes through its two branches to the lungs; the rest continues through the ductus arteriosus into the aorta. A fluid in motion always takes the direction in which it meets with the least resistance. Then, since a part of the contents of the right ventricle passes through the ductus arteriosus into the aorta; that part meets with less resistance in its passage therein, than if it were to pass through the lungs, with the rest of the contents of the right ventricle. In other words, the resistance to the passage of *all* the blood propelled by the right ventricle through the now collapsed lungs, is too great, since a part takes another direction. That part, which went through the pulmonary arteries, having passed through the lungs, returns by the pulmonary veins into the left auricle. It is less than that amount which now comes by the venæ cavæ into the right auricle, since it is only a part of an *identical* amount, which had previously come into the right auricle, the rest having passed partly through the Botal foramen, and partly through the ductus arteriosus. So the amount of blood which enters the left auricle is less than that which now enters the right, in the amount which has been diverted from it, in its passage, through the lungs, from the right to the left auricle. As the quantity of blood is greater, so the pressure of blood is greater, in the right than in the left auricle; therefore, as the two communicate by the foramen ovale, there is a current through this from the right to the left auricle: half of the excess in the right passing into the left to make it equal on both sides, as I said before.

This is, I believe, the cause of the current, and not as Béclard explains it. He says that the disposition of the Eustachian valve and the existence of the foramen ovale cause a large quantity of blood to pass from the right auricle into the left. How could these anatomical dispositions cause this current? And they do not, since both exist after birth, and there is no sign of any current. From the direction of the valve, we infer that it is rather some of the blood from the inferior vena cava which passes into the left auricle. By the Eustachian valve, which seems its anterior wall in the right auricle, and by the valve of the foramen ovale, which seems its posterior wall in the left, this vein seems almost to be continued to the left auricle, passing through the right; opening first into this, then into that.

Now, is the direction of these valves due to the direction of the current, or vice versa?

The blood propelled by the left ventricle is sent through the aorta; a large quantity passes, through the carotid and subclavian arteries, to the upper extremities; the rest, with the addition of that amount from the ductus arteriosus, continues in the aorta to the lower extremities. A portion of that blood, however, is sent through the hypogastric arteries, at the umbilicus, then out of the body, through the umbilical arteries, to the placenta, whence it returns to the fœtus by the umbilical vein. This vein enters the abdomen at the umbilicus, passes under the liver, to which it gives some branches, and finally divides into two branches; the larger joins the portal vein; the other, called ductus venosus, joins the hepatic vein which opens into the inferior vena cava. The blood returns from the body by the veins, which uniting, form two large trunks, the superior and inferior venæ cavæ, which open in the auricle of the heart, where we began.

Circulation After Birth.

As soon as the child is born, his skin coming in contact with the air, his chest expands, his lungs are filled with air; respiration has taken place. Now a great change takes place also in his circulation. All the blood propelled by the right ventricle now passes through the pulmonary arteries into the lungs; no more passes now through the ductus arteriosus into the aorta. The current between the auricles, through the Botal foramen, is also stopped. We know these changes to have occurred from seeing the ductus arteriosus and Botal foramen obliterated some time after birth; and this change takes place simultaneously with respiration, since, as soon as this occurs, the child, from a pale or blue color, becomes rosy, which I suppose would not be, were any venous blood passing into the arteries of the system. If the change in the circulation were gradual, the change in the color would also be gradual, but this is not the case.

That part of the blood, which before birth passed through the ductus arteriosus, now passes through the lungs, either because its passage into the aorta is attended with more difficulty, or because its passage through the lungs meets with less resistance now than it did before birth. We have no reason to believe that the

ductus arteriosus, which before birth was as yielding and as easily dilated as other arteries, at birth obstructs the current through it, by a sort of concentric hypertrophy of its walls, as Billard (cited by Churchill) says; nor that the opposition of the blood in the aorta to the entrance of that from the ductus arteriosus, has increased; while we have reason to believe the pressure on the pulmonary vessels of collapsed and condensed lungs, being changed to the pressure of inflated lungs, the resistance to the passage of blood through them must be less than before the occurrence of respiration. Therefore we conclude, this change in the circulation taking place simultaneously with that in the lungs, that the part which previously passed through the ductus arteriosus now passes through the lungs with the rest of the contents of the right ventricle, because the resistance of the lungs to its passage has become less than that through the ductus arteriosus into the aorta, which remains the same. As all the blood propelled by the right ventricle now passes through the lungs, from whence it returns into the left auricle, its amount is larger than that which preceded it in the auricle, by that quantity which was previously directed through the arterial duct; but yet it is smaller than that which comes by the venæ cavæ into the right auricle, now only by that quantity which passed through the Botal foramen. As there is more blood in the left auricle than before, a less quantity passes from the right into the left auricle, through the foramen, and consequently a larger amount remains in the right than before. This having made its circuit through the lungs, still no blood being diverted from it through the arterial duct, as it comes into the left auricle, is more than the amount which preceded it; less blood still passes through the foramen, and so on till an equal amount comes from both sides into the auricles, then the current between them through the Botal foramen ceases. To make my meaning understood, let us make use of some figures: Before birth, 3 parts would come into the right auricle by the venæ cavæ, 1 part into the left from the lungs; to make it equal in both auricles, 1 part would pass through the foramen from right to left auricle, making 2 parts in each auricle; the 2 parts in the right auricle pass into the right ventricle, then into the pulmonary artery, 1 part would be diverted through the arterial duct, the other, remaining in the pulmonic circle, returns, 1 part as before, into the left auricle; 3 parts come into the right as before, exceeding the

amount in the left by 2 parts; half of the excess, or 1 part, would pass into the left auricle, and so on. Now at birth, the 2 parts in the right ventricle, remaining in the circle, none passing through the arterial duct, return from the lungs into the left auricle; 3 parts enter as before the right auricle, exceeding the amount in the left now only by 1 part; $\frac{1}{2}$ of a part would pass into the left to make it $2\frac{1}{2}$ in each auricle. The $2\frac{1}{2}$ in the right having made its circle, come into the left auricle, more than the amount which preceded it by $\frac{1}{2}$, yet less than the 3 parts which always come into the right auricle by $\frac{1}{2}$ of a part; then half of this, or a $\frac{1}{4}$ of a part, would pass over to make it equal, then $\frac{1}{8}$ and so on, till the 2 parts which were previously diverted, partly through the Botal foramen, partly through the arterial duct, remaining in the circle, and that 1 part which before birth made this circle, return by the pulmonary veins, into the left auricle 3 parts, as into the right auricle by the venæ cavæ. So the current through the Botal foramen alone cannot be the cause of the repetition of itself, for any length of time, as always, at each diastole of the auricle, half less than before passes from one auricle into another till an equal amount comes from both sides, filling them equally. The pressure being equal in both auricles, no current takes place between them, through the foramen.

Dalton gives the following explanation of the change in the circulation after birth:

"At the period of birth a change takes place, by which the foramen ovale is completely occluded, and all the blood coming from the inferior vena cava is turned into the right auricle. This change depends upon the commencement of respiration. A much larger quantity of blood than before is then sent to the lungs, and of course returns from them to the left auricle. The left auricle being then completely filled with the pulmonary blood, no longer admits a free access from the right auricle through the foramen ovale, and the valve of the foramen, pressed backward more closely against the edges of the septum, becomes after a time adherent throughout, and obliterates the opening altogether. The cutting off of the placental circulation diminishes at the same time the quantity of blood arriving at the heart by the inferior vena cava. It is evident indeed, that the same quantity of blood which previously returned from the placenta by the inferior vena cava on the right side of the auricular septum, now returns from the lungs, by the pulmonary veins

upon the left side of the same septum; and it is owing to all these circumstances combined, that while before birth a portion of the blood always passed from the right auricle to the left through the foramen ovale, no such passage takes place after birth, since the pressure is then equal on both side of the auricular septum."

Dalton does not explain how this equilibrium between the two auricles is effected. He says properly that the occurrence of respiration causes a larger quantity of blood to pass through the lungs, and hence to return to the left auricle; but then he says, that the cutting off of the placental circulation diminishes at the same time the quantity of blood arriving at the right auricle of the heart, by the inferior vena cava, while the same quantity of blood which previously returned from the placenta by the inferior vena cava into the right auricle now returns from the lungs by the pulmonary veins into the left auricle (this would occur, however, but at one auricular diastole and then cease), and that it is owing to all these circumstances combined, that the pressure is equal on both sides of the auricular septum. Is it true, that by the cutting off of the placental circulation less blood returns to the right auricle by the inferior vena cava? Indeed, after birth no blood returns from the placenta by the umbilical vein to the inferior vena cava; but on the other hand, that same quantity of blood, which previously returned from the placenta to the child, does not go any more from the child to the placenta by the umbilical arteries. Now, it takes another direction through the arteries of the lower extremities and returns by its veins to the inferior vena cava; hence into the right auricle, the same as before birth, the nutritive material before absorbed in the placenta at each pulsation not making any appreciable difference in its quantity.

I think, as the lower extremities now receive a larger supply of blood, that this is the reason why, after birth, they begin to grow in proportion with the upper; whereas till then they had remained out of proportion, having been deprived of that amount of blood which passed out of the body to the placenta—that amount necessary to their proportionate growth with the upper extremities. The umbilical vein and hypogastric arteries having been blocked up at the umbilicus, there is no current through them, and in consequence, as ligatured arteries, they obliterate and become impervious fibrous cords.

The ductus arteriosus and Botal foramen, as there is no current through them, also obliterate. The ductus arteriosus now can contract, and ultimately becomes a ligamentous cord. The valve of the foramen ovale now can unite with the edges of the foramen. The currents through them formerly prevented their obliteration; but it is not their obliteration which now prevent the currents through them, nor does their non-obliteration cause the continuance of these currents, since these openings of communication persist normally for more or less time after birth: and yet there are no signs of any current, no signs of the passage of venous blood in the arteries and capillaries of the system. Even in adults, communication between the two auricles, or unilocular auricles and ventricles, have sometimes been found, from arrest of nutrition, and no sign of any current between the two hearts had been observed before death. Can this current exist in some cases without those signs which show it in others? And then, without those signs, what reason have we to believe there has been a current between the two hearts, because there is an opening of communication between them? No more than to believe there has been a draft, because the door is found open. Of course, if these openings would close, they would prevent a current through them; but do they, notwithstanding this current, contrary to what occurs in vessels generally? The ductus arteriosus and Botal foramen obliterate after birth, because, as there is no current through them, the processes of nutrition now can go on and finally obliterate them after more or less time, as occurs in vessels through which the current has ceased.

I have examined, post-mortem, about 20 new-born infants, 3 still-born, 2 premature, 2 twenty days, and 1 thirty days after birth. In all I found the foramen ovale more or less open, and the ductus arteriosus pervious In none of them had there been any signs of the passage of blood from one side of the heart into the other. In a child 3 years old and in an adult I had found a valvular opening between the two auricles; they had presented no signs of cyanosis. In another, there was an opening of communication between the commencement of the aorta, at the valves, and the right auriculo-ventricular ring. From the appearance of this opening, it seemed to have been ulcerated through. One of the aortic valve was in part destroyed, the rest of it covered with vegetations. The only thing ascertained be-

fore his death was an aortic regurgitant murmur; he presented no symptoms of cyanosis. These openings of communication, between the two sides of the heart, when found, are not, then, by themselves, a proof that there has been a current through them, but a confirmation of it, if found after the signs of this current have occurred.

STATISTICS OF THE PRESENT EPIDEMIC OF SCARLET FEVER IN NEW ORLEANS.

COLLECTED AND ARRANGED BY

S. M. BEMISS, M.D.

In the present paper, and in those of a similar character relating to other diseases, which are expected to follow it, the writer will appear in the character of a reporter rather than that of an essayist. A different course would fail in doing justice to those who observe and furnish the facts, which it is my desire simply to compile and arrange. Still, whenever it shall appear to the advantage of the subject, I shall not hesitate to present collateral facts, or to make remarks which occur to my mind, tending to elucidate more clearly those truths which carefully gathered statistics always reveal.

On the 6th of May, two hundred printed blanks were distributed among the physicians of New Orleans, requesting information in regard to cases of scarlet fever observed during the six months ending April 30th of the present year. The period designated in the circular comprises the six months beginning with November, 1875, and ending with April 30th, 1876. The epidemic prevalence of scarlatina in this city dates to a time anterior to November 1st, 1875. From January 1st, 1875, to May 31st, inclusive, eight deaths were reported as having been due to scarlet fever. From June 1st to October 31st, the monthly returns of scarlet fever deaths were as follows: June, 8; July, 20; August, 21; September, 28; October, 18. It seemed to the writer quite a necessity that the statistics called for should be restricted to a shorter period than that of the whole epidemic, for two reasons: first, that greater accuracy might be secured by limiting the calls for reports to the six months just expired; second, that some positively defined term of observation should

be noted, that comparisons with the reports of the Board of Health might be made useful in determining some important questions connected with our subject of statistical study. These are the causes which induced the reporter to limit the call for statistics to the six months just elapsed.

The responses made to our circular have been sufficiently general to afford encouragement for the future of this method of study, and at the same time to authorize interesting conclusions relating to the present subject. The blanks returned embraced an aggregate of 587. This is a return of 1 in every $\frac{1}{362}$ cases of scarlet fever which have occurred in this city within the limits of the time designated in the circulars. The following is the process of computation by which an estimate is reached. The mortality exhibited by the statistics presented herein is 1 in every 15.87 cases. The number of deaths occurring from scarlet fever as returned to the Board of Health for the six months designated in the calls for statistics, is 134. This number multiplied by 15.87, yields 2126 as the estimated number of cases occurring in this city during the term of investigation.

One who has been engaged as extensively in the study of medical statistics as the present reporter, acquires a feeling of respect and veneration for those statistics which exhibit inherent evidences of truth. The experienced statistician has but little difficulty in discovering whether the items returned to him have been carefully or loosely gathered. There is one great law of statistics, whose application to their study proves the correctness or falsity of all considerable aggregates. This law is based upon the essential predicate, that, in every mass of medical statistics made up by summing together individual reports, the majority of the individuals reporting will furnish reliable facts. If under any circumstances, a minority of the reporters are either careless or unfaithful in making up their returns, we have only to go on increasing our volume of statistics until the errors relating to the minority are hidden by the preponderating mass of facts furnished by the majority. It hence follows that, as soon as the medical statistician has gathered a sufficient number of facts, he has a safe criterion by which to measure each individual group which enters into the aggregate.

But the experienced statistician has another equally legitimate mode of testing statistics. This is, to select several groups, however small, which from the character of the reporters can be

assumed to be strictly correct, and construct of these a standard by which to measure the whole mass, both *seriatim* and in gross. Both of these modes of test have been applied to the statistics herein presented; and it is due to the contributors to state that, in only one single instance, was there so considerable a departure from the mathematical uniformity of the remainder as to invite even the slightest criticism. This disturbance of harmony related to the very small death-rate the group in question exhibited. This group is included in the report, and the results are not appreciably altered by its incorporation. In truth, many individual practitioners can recall experiences in times of epidemic prevalence, when, without claiming superior skill, or being able to define in what, if any, particular exercise of virtue, their superior success rested, they were still able to congratulate themselves upon a death-rate far below that of their surrounding professional friends.

While, in perfect fairness to my contributors, I consider these prefatory remarks proper and called for, I shall not hesitate to vouch for the accuracy of the results and general conclusions appearing in the following pages.

I shall arrange the statistics for their critical study under headings corresponding with those of the circulars upon which they have been returned. The following table exhibits in a condensed manner, the facts collected under headings 1, 2 and 3, of the circular, and at the same time has a column added which is designed to show an estimate of the whole number of cases, with results, which actually occurred in the city during the six months ending April 30th. The process adopted in this computation has been previously explained.

Table I.

	Actually Reported.	*Number Estimated.*	*Percentage.*
1—Number of cases for six months, ending April 30th, 1876	587	2126	27.62
Simple Form	377	1363	64.22
Anginose Form	177	423	19.93
Malignant Form	38	137	6.47
Irregular Form	10	36	1.70
Not classed as to Form	45	163	7.66
2—Recovered, without Sequlæ	273	988	46.40
" with Sequelæ	97	351	30.66
No statement as to Sequelæ	180	651	
3—Died. In primary attack	20	72	3.40
" From Sequelæ	17	61	2.89
Total Deaths	37	134	6.30

The percentages in this table have reference to the aggregates in column 1, with the exception of that at the head of the column, which exhibits the percentage of the estimated number of cases which were actually reported.

1--*Number of Cases.* Our records of the medical history of this city afford very meagre accounts of the prevalence of scarlet fever, whether in endemic or epidemic form. I think, however, that it may be safely assumed that scarlet fever germs are not infrequently entirely extinct here, a condition which seldom or never obtains in equally large centres of population situated in our more Northern States, or in Europe. Minor, in a very interesting paper on Scarlet Fever in the United States, ventures to formulate certain propositions, some of which directly touch this locality. Those of his propositions necessary to be mentioned in this connection are: "No. 3. Another zone of comparative immunity in the western hemisphere extends from 30° to 35° north latitude. 4. In times of pandemics, occasional epidemics occur at points within the zone of comparative immunity." The very important investigations of Prof. Chaillé into the prevalence of various diseases in this city do not sustain Dr. Minor's third proposition, in so far as we are concerned. During a period of thirteen years, divided in three series, as follows, 1856 to 1860 inclusive, 1863 to 1865 inclusive, 1866 to 1870 inclusive, scarlet fever caused 1038 deaths in this city. Admitting a mortality rate during all these periods identical with that pertaining to the present epidemic, 16608 cases must have occurred, to have given the above stated number of deaths. The year 1864 seems to have been one of decided epidemic violence, since 200 deaths are reported. In 1871 five deaths were ascribed to scarlet fever; in 1872, three deaths; in 1873, three deaths; in 1874, four deaths; in 1875, one hundred and forty-four deaths. We must be cautious in declaring any population to enjoy immunity from scarlet fever, even though for a number of years few or no cases are observed. For 21 years, 1809 to 1829, the number of deaths caused by scarlet fever in Philadelphia was 108. For five consecutive years of this period, not a death was occasioned by this disease. We all know, however, that Philadelphia has suffered under severe epidemics of scarlet fever.

Forms of the Disease Reported. One principal object in making

the effort to obtain a classification of the cases reported, which should conform to that usually adopted in the text-books, was to ascertain whether any special relation existed between either form and the occurrence of sequelæ. Such is the erratic nature of scarlet fever, that its symptomatic phenomena vary with different epidemics, and the classification of one visitation may be quite reversed in the ratio of prevalence or intensity of the respective forms. These facts tend to destroy the utility of such information, in so far as the primary attacks are concerned. But if it can be ascertained that some clinical form of primary symptoms is more liable than others to sequelæ, it is a very important practical gain, since we become admonished of the approach of a danger which is susceptible of prevention.

The mortality rate of primary attack can be safely assumed to depend upon the ratio of simple cases attending any given epidemic. In this declaration I do not lose sight of the proper signification of the word "simple," as used to designate a clinical form of scarlet fever. It does not imply mitigation in the severity of symptoms so much as it implies conformity to type, and regularity of clinical career. A simple case may therefore be an intensely violent case, and yet no fatal impingement of morbid action upon a particular structure or apparatus is likely to occur, because of its equable distribution throughout the system. I think the study of the classification by forms afforded by Table I. interesting, however little practical benefit may accrue from it. Under the heading "Irregular Form," some interesting facts are reported which will appear more properly among clinical observations. No instances have been reported of the coexistence of scarlatina and rubeola, although both of these eruptive fevers have been epidemic during the latter half of the period of research.

2—*Recovered without Sequelæ—Recovered with Sequelæ.* Quite a number of interesting facts have been reported under these captions, which will appear *in extenso* under headings Nos. 4 and 6.

3—*Died* (a) *in Primary attack*, (b) *from Sequelæ.* The mortality rate of various scarlatina epidemics is eminently a shifting one. According to Thomas (Ziemssen's Cyclopedia, Vol. II.), "Epidemics where the mortality is below 10 per cent. may be regarded as benign epidemics, comparatively speaking." Measured by

this standard, our late epidemic has proved a mild one. The aggregate mortality rate per cent. has been 6.30 My own convictions are, that a more positive mode of testing various epidemics in respect to mildness or violence of character, is to measure them by the rate per cent. of deaths occurring in primary attacks. Intensity of epidemic force, increased personal receptivity, or weakened personal resistance to epidemic attacks, are the factors which concur in the production of the most virulent visitations of zymotic disease. Either, or all of these factors tend to the production of fatal results in a speedy manner; consequently, short duration of fatal cases is a correct measure of violence of attacks. The rate per cent. of deaths during primary attacks is 3.40; that due to sequelæ is 2.89. These percentages are very probably smaller than those marking scarlet fever epidemics in the more northern cities of the United States. Smith (Diseases of Children, Third Edition) says: "The mortality rate varies greatly in different epidemics. In epidemics of a mild type, the mortality is sometimes not more than one in twelve, and the ratio may be less; whereas, if a severe form is prevailing, not more than one recovers in every two, three, or four." Meigs & Pepper observed 274 cases, distributed through a series of years, and comprising a number of groups relating to various epidemics, and the best results they report are 1 death in 14 cases. A tabular arrangement of deaths was constructed for insertion here, but it was afterwards judged to possess too little interest to merit publication.

4—*Sequelæ—remarks upon character of and various forms of.* No part of the study of scarlatina is more interesting than that which concerns its sequelæ. Do they depend upon a morbid process essential to the disease, or are they merely accidental consequences dependent upon some mismanagement, or other fortuitous circumstances, connected with the primary attacks? Do they principally follow the mildest cases, and therefore indicate that an energetic expression of regular symptomatic phenomena is a safeguard for the future of the patient? Does any one clinical form of the disease inflict upon the patient additional danger of sequelæ—if so, what form is thus distinguished? These are questions of profound interest to the physician. Unfortunately, it may be, my report will not furnish sufficient evidence to justify satisfactory adjudication of either of these mooted points. Still

it will bring to the great garner of facts some additional gleanings. We may therefore congratulate ourselves upon the aid we afford to the ultimate elucidation of these points.

The most common of the sequelæ reported is renal dropsy. This is not peculiar to scarlatinal epidemics here, but is probably generally true. Meigs & Pepper found dropsy to ensue in 31 of 274 cases, or 11.31 per cent. Steiner (Compendium of Children's Diseases) states that, "The percentage of kidney complications in scarlet fever varies from five to seventeen." The percentage of all cases of sequelæ, including those which were fatal with those which recovered, is 19.42. The percentage of cases of kidney complications is 11.24. The percentage of kidney complications in the gross number of cases of sequelæ is 58.76. This, however, does not represent the precise facts of the epidemic as it respects the actual proportion of cases followed by renal dropsy. In one report, comprising an important number of cases, the reporter stated that an unknown number of his patients had suffered from renal complications as sequelæ. Cases thus reported do not, of course, enter into computations appearing herein, except in respect to such points as are explicitly stated.

Next in point of frequency among the sequelæ are affections of the cervical glands. It is to be inferred from the general tenor of statements of those reporting, that in more than half of the cases in which inflammation of cervical structures occurred, abscesses resulted. In three instances the abscesses followed inflammation of connective tissue, but in all cases they are represented as having gland structures for their points of departure. One reporter indicates the parotid as most frequently the seat of adenitis. Another mentions the parotid and sublingual glands. One case is reported of abscess on both sides of the neck, which required to be opened, and which discharged a large amount of fœtid pus. Cervical abscess was the cause of death in two instances. In one of the fatal cases it was "deep-seated, and commenced on the twelfth day." The mode of death is not more precisely stated, but it is to be presumed that it took place from exhaustion. The other instance in which death was due to abscess, took place under my own observation and treatment. A child, aged two years, died of hemorrhage, presumably from sloughing process involving the facial artery, as that was the nearest considerable vessel to the point of ulceration. As the

case had connected with it rather an interesting question concerning its proper treatment, it will be more particularly considered under that head.

Aural inflammations were very common sequelæ. One excellent observer reports "abscess with perforation of both drums" in one case, and abscess with perforation of one drum in another instance. No case of permanent loss of hearing has been reported, but several instances of temporary deafness are found among the reports.

Discharge from the nares is frequently mentioned among the reports of sequelæ.

Vulvitis with purulent discharge is reported in two instances. These cases, with treatment adopted, will be again referred to under head of treatment.

Neuralgic affections, rheumatism, and joint inflammations, are mentioned by five reporters. One of this number mentions a case of synovitis, terminating in purulent accumulation.

In two instances, fever of a typhoid type followed the primary attacks, resulting favorably. The reporters do not, in either of these instances, explain the probable causes of the continued fever.

Three deaths are ascribed to renal dropsy. In one of these cases the death is attributed to pericarditis. Four other instances of implication of cardiac structures in the scarlatinal process, are mentioned in the reports. These were all endocardial; three involving the mitral valves, and one the semilunar valves of the aorta.

Now, as to the inquiries made at the beginning of the discussion in regard to the character of sequelæ. It must be admitted that nothing is reported in definite answer to the first of these inquiries. It is, in truth, a question whose solution involves a knowledge of the precise mode of action of the scarlatinal poison in and upon the human economy. There is a growing tendency in the profession to look upon scarlatina, as well as rheumatism, as a disease whose unusually wide range of morbid action accounts for the great number of different organs implicated, rather than mere accidental metastasis. Entertaining this view of the pathology of scarlet fever, and placing the kidneys within the range of morbid action, it would appear quite as natural for them to become points of localization of intense inflammation as the skin, or the throat. The proposition some-

times advanced, that the kidneys are sacrificed by the mischief inflicted upon them as channels of elimination of scarlet fever poison, is scarcely tenable. A qualified advocacy of the affirmative of these inquiries is in no manner inconsistent with the correctness of the pathological doctrines above stated. We are unable to interpret the laws which govern the mode of systemic diffusion of scarlatinal poison, but knowing, as all physicians do, the derivative effects of a local inflammation, we are well prepared to admit that patients suffering from intense eruption, or the anginose forms, are in some measure protected against nephritis. In every instance in which reporters have given in observations in regard to these points, their testimony is in perfect accord in regard to the relations between renal dropsy and mild primary attacks. Three cases of renal dropsy are reported consequent upon attacks so light that medical aid had not been invoked. Another reporter, who furnishes thirteen cases of renal dropsy, declares that "all of them followed the mildest cases."

The statistics upon which this report is based, justify these propositions:

1. That simple and mild cases were more liable to renal complications as sequelæ than were other forms of the disease.

2. That anginose attacks were followed by sequelæ in larger ratio than any other form of the disease—the sequelæ being in these instances abscesses, otorrhœa, ozena, gangrenous conditions, and septic states of the system.

3. That the death-rate of sequelæ following anginose primary attacks, is greater by far than that of sequelæ following simple attacks.

More extended observations are necessary either to set these propositions aside, or to extend their authority.

5—*Observations of Age, Sex and Color.* The reports bring considerable interesting matter to be arranged under this caption. In 420 cases, in which general statements were made respecting the ages of patients, 404 were reported as minors. Of the 16 adults, one was 45 years of age, one 35, and one 30. The youngest patient reported was a child of 9 months. Of 83 instances in which the ages were reported with precision, the average was 9 years and 5 months. Those interested in these figures will quickly understand that wherever a partial report of ages was

made, extremes would naturally attract the attention of reporters and be sent up for record. This would hold especially true of extremes in the direction of advanced age, since it is a recognized fact in medicine, that immunity from scarlatina attacks increases in direct ratio to increment of age. But, fortunately, there is at hand a standard by which the accuracy of these figures can be measured. A painstaking and admirable worker in our profession has reported 55 cases, in each of which the age of the patient has been carefully noted. The average age of this group of cases is 8 years 11 months and a fragment. In another group of 12 cases observed by myself, the average age was 8½ years. To aid in illustrating the infrequency of scarlatinal attacks in adult subjects, it is worthy of mention that of 5385 deaths of persons insured in the New York Mutual Life Insurance Company, only 10 were occasioned by scarlet fever.

I am not willing to declare that the statistics returned in respect to ages of those attacked, are exponent of the actual standard of averages which more extended observations may exhibit. The average above shown is at variance with most authorities, in representing the standard at a more advanced period of life. This point is fully discussed by Thomas, Murchison, Meigs & Pepper, West, and Smith. Whatever may be the conclusions of some of the above named writers adverse to such a decision, I do not hesitate to express a belief that a high average age of attack in scarlatinal epidemics is proof of infrequency of epidemic visitation. Whatever may be the degree of immunity from scarlatina conferred by advancing years, no one contends that it is complete. Granting that it is not complete, the longer the intervals between epidemics, the greater must be the proportion of adults who are subjects of attacks.

Sex. Sex was noted in 167 cases of those reported. The result was 78 males, 89 females. Two, or more, of the reporters, stated that males were more often subjects of attacks than females. It is quite probable, therefore, that a fuller report would have reversed the result of these observations.

Color. This point was noted in 404 cases. The result was 369 whites, and 35 colored. It is difficult to admit that these figures represent the true ratio of frequency of scarlet fever attacks in the white and colored races. The 5th of Dr. Minor's propositions is: "When scarlatinal epidemics occur

within zones of comparative immunity, the disease attacks by preference the Caucasian race." Prior to the recent civil war, Kentucky and South Carolina were the only slave States which attempted to keep in operation, laws requiring a registration of all births, marriages and deaths, occurring within their respective borders. In the former State, the deaths ascribed to scarlet fever for the six years 1852 to 1857 inclusive, were 1754 whites and 232 blacks. The census of 1850 gave Kentucky a population of 761,413 whites, and 220,992 blacks. If we base a computation upon this estimate of population, it will give one death from scarlet fever in every 434 whites, and one in every 951 blacks. It is unnecessary to explain to an experienced statistician that these figures do not claim mathematical precision, but they are sufficiently accurate to represent a fact that, for a period of six consecutive years the death-rate from scarlet fever was lower in that race than in the Caucasian race. The rate per cent. of mortality among the colored patients reported is 11.42, nearly double that presented in the table of aggregates (page 4). This is quite in keeping with every candid statement regarding the ravages of acute diseases among these unfortunately circumstanced people, given over, as they seem to be, to politics, improvidence, crime, disease, and death.

6—*Clinical Observations.* It is to be regretted that full reports have not been made under this heading. Whatever may be the erratic nature of scarlatina touching its symptomatic phenomena, or the influence of epidemic force in changing them, the study of its symptoms is one of deep interest. Every practitioner who has had any considerable experience in observing cases of this malady, has, no doubt, been often puzzled to know the significance of symptoms attending primary attacks. Symptoms frightfully violent and sudden are very common manifestations of the primary effects of scarlatinal poison, especially as it relates to the nerve centres. While those exceedingly malignant attacks which seem as it were to begin in death, are unquestionably aggravations of these disturbances of nerve function, many accessions of the disease marked by terrible nervous commotions result in recovery. The line which separates the two classes of cases is too indeterminate for prompt or positive demarcation. Trousseau once said that the rapid pulse of scarlatina was worth much as a diagnostic, and nothing as a prog-

nostic. In a qualified manner, a similar remark may apply to those dreadful nervous commotions which distinguish attacks of this disease.

In a number amounting to nearly or quite half of my cases, the first symptom was a sudden attack of emesis. Those who were sufficiently advanced to be able to report subjective symptoms, complained of cephalalgia and chilliness. One of my cases was inaugurated by a convulsion. It ran a favorable course and terminated without sequelæ.

The highest record of temperature noted was 108°—the patient a female, 11 years of age. The observer adds that the "urine was albuminous throughout the case." The highest recorded temperature in the simple form of the disease is 105°, with a pulse of 168. Upon the next visit (presumably the next day), temperature 105°, pulse 160; third visit, temperature 102°, pulse 134. A white female, eight years of age, had a temperature of 105°, pulse 146. Another white female, aged 20 years, had upon three consecutive visits the following exhibits of temperature and pulse: 104.5°, pulse 136, 102.2°, pulse 130; 102°, pulse 114.

These were all simple cases. One reporter states that in the simple form the temperature is rarely noted above 103°. The same observer adds, that in the anginose cases the temperature sometimes rose, in severe cases, to 106°. "In the malignant variety," continues the same excellent observer, "the temperature was not much elevated." Only one observation is reported which indicates that a different condition, as it respects febrile movement, is liable to be connected with the malignant type of the disease. A male negro, aged 28 years, died on the third day of the disease; the temperature in the axilla was 106.2°.

No special reports concerning the pulse have reached me other than the one recorded above. One reporter states that he had found that the pulse afforded very unsatisfactory data concerning the patient's condition.

From the general tenor of the reports, it is obvious that a majority of medical practitioners are accustomed to treat scarlet fever without examinations of urine, except in so far as relates to the quantity and gross appearances of the secretion, unless symptoms of uræmic poisoning, or dropsy, call for a different procedure. A number of reporters make it a special point of mention that the renal secretion had been carefully watched from

the beginning of the attacks, but few, however, seem to have subjected unsuspected secretions to a chemical test.

One reporter has paid sufficient attention to the urinary secretion in the primary stages of the disease, to feel justified in announcing the opinion that albuminous urine in the primary attack was a much more grave event than albuminuria as a sequel. This proposition is certainly sustained by analogical reasoning, if not by direct observations. In all other acute diseases in which albuminous urine is an early event, it is supposed to result from deperdition of the blood. Its appearance is therefore, to some extent, a measure of the devastation wrought upon that fluid by the presence of the morbid poison. On the other hand, albuminous urine as a sequel may be regarded as being due to inflammatory processes in the kidneys, susceptible of resolution and cure, provided they are not so serious as to kill by complete arrest of kidney functions. Some very remarkable instances have been reported of tolerance of, and recovery from, the most extraordinary conditions of suppression and perversion of urinary secretion. One of these cases had "albuminuria, convulsions, and temporary strabismus; totally unconscious five days; had general dropsy. These symptoms commenced at the middle of the fourth week after the primary attack, and lasted for ten days before permanent convalescence began. The urine was turbid with blood, and very scanty for seven days, during which time he lay in a state of lethargy, recollecting nothing which occurred, and at times it was very difficult to nourish him. The patient was a boy of about 10 years, of previous good health, and under the most favorable circumstances of hygiene and nursing."

The most common attendants upon albuminuria as a sequel, were convulsions, cephalalgia, vomiting, dropsy, hematuria, and more or less suppression of urinary secretion.

A very interesting fact is found in the report of one of the best observers in this city. This is the occurrence of a "periodical increase of albumen," corresponding, in respect to intervals, with malarial manifestations, and, without doubt, due to the influence of that poison.

Certain irregularities of clinical career are worthy of mention. Absence of eruption was noted in four instances. Seemingly true relapses were noted in two cases. One of these occurred under my own observation. B. L., white female, aged 7 years,

seized, March 25th, with vomiting, chilliness, headache, and fever subsequently. On the 26th the rash appeared. The case ran a regular course, with symptoms sufficiently specific to render a diagnosis absolute. The patient was dismissed convalescent on the 2d of April. On the 10th of the same month she was seized with a chill, followed by headache, fever, and severe sore throat. The punctated efflorescence over the fauces was so strikingly identical with the appearances presented in primary attacks, that I exclaimed to her father—a medical practitioner himself—"If a genuine relapse in scarlet fever is a possible occurrence, here is surely one." On the 12th, patches of redness were observed on various parts of the skin, but as the surface had been pretty generally frictioned with various embrocations, it could not be determined whether or not the redness was from this cause. The child had constant fever, and very great enlargement of the left side of the neck. On the 16th, an abscess in the left tonsil ruptured, discharging a considerable quantity of pus, after which some apparent amendment was observed. During the primary attack, and up to the 19th of April of the second attack, no chemical examination of the urine had been instituted. It was sufficiently abundant, and gave us no reason to expect any abnormal constituent. On the 19th of April the urine became diminished in amount to such degree that complete suppression was considered imminent. From the 19th until the 26th, the whole amount collected was by actual measurement ℥xviiss. We estimated a loss of ℥iiss, which would make the aggregate amount secreted ℥xx. The urine was red from the presence of blood, and coagulated to a jellied mass under application of heat and acid. The microscope revealed great quantities of blood corpuscles, blood and tube casts. During the period of partial suppression, it was not possible to obtain at any one time enough urine to fill the tube for measurement with the urinometer. After the secretion was resumed the quantity rapidly increased, until on the 5th day of May 64 ounces were passed, with a specific gravity of 1005. May 6th—Quantity, 46 ounces, s. g. 1004. May 8th—40 ounces, s. g. 1002. It is proper to mention in this connection, that on Saturday, April 22d, a colored woman, previously nurse to the child, came to visit her. Some of the family observed that her face and eyes were much swollen, but not until the next day was it discovered that the nurse had just entered upon the stage of eruption of measles. Sunday night,

April 30th, the patient had a severe chill, followed by fever, catarrhal symptoms, and the eruption of measles, Wednesday, May 3d. From all this terrible accumulation of complications, the patient gradually emerged to complete convalescence. The urine continued to exhibit traces of blood and albumen as late as the 10th of May. During the period of scanty urine, the patient suffered with frequent attacks of vomiting, much cephalalgia, and a precordial pain difficult to account for; but with the exception of these rather ambiguous symptoms, no evidences of uræmic intoxication were present. Sleep was quiet, the mind clear, and no convulsive tendency present. The only manifestations of dropsy were puffiness of the face and slight pitting about the ankles.

Some of the reporters have stated that in the irregular cases, diagnosis had to be rested upon the pulse, temperature, and throat.

7—*Treatment.* All medical investigations and labors are at last directed to the same great and desirable end of curing, palliating, or preventing disease. I cannot do full justice to the work I have undertaken to execute, in respect to the practical feature of treatment of scarlatina, or full justice to my collaborators, by epitomizing, or in any manner altering their reports touching this point. The reader will therefore find the remarks in full, of a large majority of those who responded to the circulars. In some few instances no report was made under this heading; in several other reports, the words "Expectant," "Symptomatically," or "Of the simplest form," conveyed in a forcible manner the mode of procedure adopted by the reporter.

"On general principles, having always in view the reduction of the temperature and too rapid heart's action, the agents used have been the tincture of aconite with a gentle diuretic, sweet spirits of nitre, from the commencement of the attack.

"For the cases of anginose forms of scarlet fever, the local application has been mild solutions of nitrate of silver twice a day, and hot poultices. In some cases, where the patient could gargle himself, I have used with very decided success a combination of borax, chlorate of potassa, and rose honey—half a drachm of each to eight ounces mixture, avoiding always irritant doses." M.

"Mostly expectant. In all, however, carbolized inunction three or four times a day was practised, till convalescence was well established. One part of acid to six of olive oil was used. In the only case of a serious character—as reported above (see page 47 ~~15~~)—active purgation, diuretics, dry-cups over the kidneys, vapor baths, etc., were all resorted to at different times, followed by a quinine and iron tonic." L.

"In mild cases gave laxatives, cool drinks, astringent and antiseptic gargles, inunctions with lard, and observed general principles of hygiene.

"In severe cases, used cold spongings to the fullest extent the prejudices of the people would allow.

"The case which died during primary attack (see page ~~15~~ 47) would not permit cold water treatment until 12 hours before death, when I instituted the cold pack, remained with patient 2 hours, renewed the pack, and ordered its continued renewal every 2 hours until temperature should subside. As soon as I left the house the cold sheets were replaced by hot blankets.

"Cases of simple albuminuria and anasarca were treated with warm baths, laxatives and diuretics (potass. nit., st. æther nit. and *digital.*). Convalescents were given quinine and tinct. ferri mur. Where urgent symptoms supervened in sequelæ, strong purgatives, calomel, jalap, ext. colocynth co., and even elaterium, were used; wet-cups along the spine, and blisters." P.

"Tincture of iron and carbolic acid from the first—2 to 7 drops of the former, and from ½ to 2 drops of the latter, every 3 hours.

"Water, to which chlorate of potash had been added, was given *ad libitum.*

"Wherever the temperature rose to 102°, sponged freely with water acidulated with vinegar. Anointed the whole body after sponging, with carbolic oil. Had the room ventilated, and changed clothing when it became soiled.

"For albuminous urine and dropsy, gave cathartics, applied wet or dry cups to lumbar region, and gave warm baths.

"Where blood appeared in urine, continued iron and gave fld. ext. of ergot in from 10 to 20 minim doses. Two cases treated recovered rapidly.

"Careful and systematic nourishment, such as beef-broth, milk, milk punch, etc." W.

"Mercurial cathartic, if seen early in attack. Warm foot and general baths. Oleaginous munctions." H.

"Whenever seen in time, after the initiatory eruptive stage, I used small doses of chlorate of potash and tincture of chloride of iron, with happy effect. To facilitate desquamation, and to relieve the tension and harshness of the skin, I used sweet oil, castor oil, and skin of bacon. I also used quinine by inunction.

"I may add one additional case, which I saw *only* AFTER recovery, yet suffering with some anasarca, which yielded to the potash and iron, and frictions with whiskey.

"I used small quantities of bismuthi, subnit. by insufflation for the relief of the catarrh, and simple washes of tepid water and castile soap for the ears." M.

"In very nearly all my cases I used the chlorate of potas. for the throat, and used internally: ℞—Tinct. ferri mur. ʒi, pot. chlor. ʒi, acidi mur. ʒi, tinct. digitalis ʒi, aquæ ℥ii. M. 30 drops every three hours in sweetened water, with nourishing diet and cooling drinks. I treated the renal sequelæ with a mixture of bitart. potash and honey, and had a good result. I also used quinine in some of the cases, but my success seemed to be due to the first named mixture. In a case of diphtheritic sore throat, I used the inhalations of atomized tannin by the steam atomizer." D.

"Expectant in every case, except in such as were attended with kidney troubles, when digitalis, squills, and calomel were administered, until the secretion of urine was restored. Tonics of bark and iron subsequently administered. Applications of lard to the skin invariably soothed and disposed to sleep. Jaborandi, administered in the case which proved fatal, produced profuse sweating but without relief to symptoms." L.

"In the case of the gentleman aged 30 years, the febrile symptoms were slight, but the soreness of the throat was marked. He had been for several days in close attendance upon his daughter, six years of age. Ten days after the subsidence of the throat trouble, slight but continuous fever returned, accompanied within twenty-four hours by general anasarca, well-marked but not severe. Urine albuminous one-fourth. Under well-

sustained cathartic and sudorific treatment, wet cups over kidneys, followed by a course of ferruginous tonics, patient made a good recovery.

"Two little girls, sisters, aged 11 and 8 years, passed through the disease with the usual symptoms of fever and sore throat, but very mild in character. Three weeks after convalescence had commenced in the eldest, she was seized with high fever accompanied by severe pain in the hypogastrium. The general features of the attack were those of a simple case of bilious fever, which responded most favorably to a free mercurial purgation. In two days convalescence was reëstablished. During this last attack there was evidence, in the local pain and redness, of a decided vulvitis. When this passed off, there commenced a free purulent discharge from the entire mucous surface of the vulva and vagina. This lasted for six weeks, resisting all the methods of treatment common in such conditions. A mild solution of permanganate of potash did much good. Finally, the trouble seemed to yield to the local application of carbolic acid and tannin in glycerine (very weak), and the internal administration of cod liver oil and the ferrated elix. of calisaya. During the six weeks of the continuance of this trouble, there were two attacks of the fever in every respect like the first, except milder.

"It is peculiarly interesting that the sister, aged eight years, one month after her convalescence from the scarlet fever was seized exactly in the same way, with a fever like the first case, pain in the hypogastrium, vulvitis and vaginitis, purulent discharges following, and which continued two months. In this case, also, there were two relapses of the vulvitis, and other acute symptoms. When, in both of these cases, the local trouble had become chronic, it seemed to respond more favorably to the influence of a tonic and nourishing course than to local applications." H.

"As to the treatment of scarlet fever, physicians often have peculiar notions of their own. But there is one thing that we all know, and that is, that it is a self-limited disease, running a certain course, accompanied and followed by two (if you will allow the expression) other diseases—one diphtheria, the other dropsy. Although this is not always the case, yet we must, as far as possible, anticipate these complications, trusting to time

and nursing for the cure of the eruption and fever. This has been my course for several years past. As to medicines, first a mild purgative, usually a few grains of calomel—2 to 6 grains—with twice as much magnesia. If that does not act on the bowels, followed by castor oil or some saline purgative. Then, to moderate the fever, liq. ammonia, acetat., combined with spts. nitri and liq. morph., to quiet restlessness and as mild diuretics. But the principal thing to be looked after is the ulceration of throat, for which I use tinct. ferri chloridi ʒii, potass. chlorat. ʒi, and syrup ℥ii. M. Teaspoonful every three hours, diluted with water when used, as a gargle and also taken internally. I resort to other treatment as the case and condition may seem to require; not treating the name of the disease, but the condition present. If dropsy supervenes, small doses of calomel, potass. bitartras with jalap, and diuretics." W.

"The treatment was simple. Not much medication was practiced. I usually found constipation to exist in the incipiency of the disease, and gave a mild purgative; sometimes a small dose of calomel, if the tongue was furred and excretions checked. My object was to place nature, or the organism, under the most favorable circumstances, and in this way direct the attack or tide over it, sustaining the system in the most judicious manner possible. Some cooling febrifuge, controlling somewhat the circulation, during the height of the fever, together with greasy applications to abate the heat and lessen the itching, gave great comfort, and were probably the best and safest anodynes. The throat affection—one of the chief local manifestations of this constitutional malady—was treated mainly with simple gargles, such as tincture of iron and chlorate of potash, lime water, tannin, etc. The cervical glands often suppurated, and especially the parotid and other posterior glands, frequently behind the mastoid muscle. The three that died from the sequelæ all had extensive suppuration of the glands, accompanied with a continuous irritative fever of a typhoid type; also more or less rheumatism. It was sought to relieve the congested state of the kidneys, which produced the albuminuria and effusion, by equalization, as it were, and diversion; by moderate purgation, chiefly with cream of tartar, or something tantamount, and warm baths to encourage perspiration, at the same time always attending sedulously to the nutrition to reorganize the blood, and in

this way give an impetus, as it were, to the atonic state of the vessels and tissues. I found a fine tonic to be, in this state, equal parts of Squibbs or Battley's ergot, and muriated tinct. of iron, given in frequent but moderate doses. All the cases of albuminuria and effusion recovered, and some after having convulsions from uremia." B.

"General plan of treatment was to keep patients warm until the setting in of convalescence. In a few cases, the bed was kept but 5 or 6 days, in others as many as 25 or 30 days. Allowed cool drinks (not ice), milk and broth diet. Had the skin anointed with leaf-fat, or French tallow, as long as there existed desquamation.

"Complications of lungs were combatted by kermes and brandy, and Alimentary Elixir of Ducro. Gave quinine with slightest suspicion of malarial influence. I blistered once or twice in congestion of lung, and think to some advantage.

Dropsical complications were met by a combination of digitalis, scammony, and scillæ, and I confess that I thought that with this combination, I could predict an amelioration of symptoms in the 24 or 48 hours.

At the offset of the disease, I have in a few cases given a vomit of ipecac and a slight purge, but do not advocate either, excepting to meet certain conditions, etc." W.

"In mild cases, saline laxatives; frequent sponging with tepid vinegar and water; cold acidulated drinks, either lemonade or vinegar. In the more severe cases I administered acetate of ammonia, with excess of the salt; acidulated drinks; an application to the throat of tinct. ferri mur. with potass chlor.; support throughout, beef-tea, milk, wine, and constant tepid sponging during febrile stage. When desquamation began, inunction. Sponging resumed if fever returned.

Renal dropsy, of which thirteen occurred in my practice, readily yielded to copious purging with croton oil, followed by potass. bitart. as a diuretic, and the vapor bath daily. No subsequent impairment of health that I can discover has ever resulted." H.

"Chlorate of potash in 5 to 10 grain doses every 2 or 3 hours; sulphate of quinine when the temperature became elevated, or previous to the period when once ascertained. Tincture of iron

in 5 to 20 drops doses, according to age, at the period of desquamation. Tincture of iron and also cod-liver oil, to the case with scarlatinous buboes; the swellings painted with the tincture of iodine, in the hope of aborting the same; finally the use of the lancet, and poultices.

"In the two cases of dropsy from kidney affection following the scarlet fever, tinct. of iron in 5 to 10 drops doses every 3 hours; infusion of senna and manna in purgative doses; stimulating frictions to the back; diaphoretic drinks, beef-tea, and light nourishing diet." D.

"In mild cases, treatment consisted in mild cathartics and cooling drinks, with an aqueous solution of potassa sulphas *pro re nata.* Anginose case, active cathartic, and scarification of the tonsils and parts adjacent, in addition to the treatment in mild cases. I can not speak too highly of the cooling drinks, provided the surface of the body is kept covered and warm at the same time." H.

"During primary stage, liq. ammonia acetat. with tinct. aconiti; the wet pack applied to the throat constantly, until eruption faded or the throat symptoms abated.

"Inunctions of the skin during desquamation.

"In the anginose case, the ulcers in the throat were daily brushed with a strong solution of nitrate of silver.

"On the appearance of any throat trouble, chlorate of potassa was given internally.

"In case of anasarca, acetate of potassa was given in infusion of digitalis." H.

"In the four successful cases simple treatment was used, laxatives, diaphoretics, chlorate of potash, sometimes tincture of iron, gargles or washes of tincture of myrrh, alum, borax in solution. In addition to the above, the iron excepted, there were used in the fatal case, quinine, calomel, oil of turpentine, carbonate of ammonia, and as a modifier of the throat affection, sulphurous acid in the drink. In this case, as already stated, the only remedy that did any good was the sponging, which had a marked effect in reducing momentarily the temperature of the surface." M.

"Treatment was necessarily varied according to circumstances.

Generally, however, the bowels were evacuated at the outset, and a mixture containing quinine, chlorate of potash, and tincture of iron, was given. When cinchonism would appear, the quinine would be omitted, but recourse would again be had to its use as soon as its unpleasant effects would disappear. I was induced to give quinine steadily, because it seemed to me that, during the last three months, a distinctly appreciable malarial wave complicated my cases of scarlet fever. In many of my patients intermittent symptoms were clearly evident. Quinine was well tolerated, and I do not remember to have ever regretted its use. Attention was paid to diet—beef-tea, broth, milk, and alcoholic stimulants were used. Ice and iced drinks were freely employed. Attention was paid to the condition of the skin. In cases of kidney trouble, the bowels were kept acting. Warm baths, dry cups, blisters, and other revulsive agents were brought into play. Various diuretics were employed. Among these, some were directed to the heart and kidneys, and others to the kidneys alone. Milk was freely used, not only as a dietetic agent, but also as a diuretic. The Bethesda water was used in three cases of kidney obstruction: in one instance it appeared useful, in the others no result was noticed. Iron, in various forms, was used in the different stages of the disease. In certain varieties of kidney trouble, gallic and tannic acids, and ergot were given. The throat troubles were treated in different ways. Chlorate of potash, tannic acid, tincture of iron, and carbolate of iodine, etc., were employed. The carbolate of iodine seemed, in five or six cases, to be peculiarly successful. The foregoing remarks concerning treatment are necessarily general, as I have preserved no written notes of my cases. It is hardly necessary to add, that the condition of the skin was very closely watched, that exposure to cold was studiously avoided, and that the customary inunctions of the skin were carefully recommended. Frankly, however, I cannot say that I was satisfied with the results obtained from the lard inunctions." L.

I have very few remarks to make in addition to the abstracts of treatment given above. I have given quinine to every patient to whom I was called during the stage of invasion. With every renewed opportunity of observing the effects of this drug upon the pyrexia preceding the eruptive stage of scarlet fever, my confidence in its favorable action is increased. Its therapeutic effects appear to be manifold: an apyretic; a nerve tonic—per-

haps lifting and toning up the system above the depressing influences of scarlatinal poison, as is conjectured in respect to its action upon the malarious constitution, and a modifier of the excessive waste due to the scarlatinal processes. An important objection to its exhibition is the liability to induce nausea. This can be obviated by using solutions in enemas of flaxseed emulsion. While it has not been my habit to continue it during the eruptive stage, I have never failed to appeal to it as an anti-suppurative remedy in anginose ulceration or abscesses, and often as a counter agent to atonic states of the system during convalescence.

Another remark which I desire to make, relates to the treatment proper to institute in very grave cases of buboes. My usual practice is to resort to hot, moist applications, changed often, and applications of tinct. iodine once or twice daily until the irritation of the skin requires its omission. Twenty or more years ago, in deference to a popular belief in its efficacy, I constantly used the slices of salt bacon which Smith praises so unstintingly. At that time it certainly appeared to me good practice.

A question of importance relates to the surgical treatment of the lymphadenitis in its gravest forms. The highest authorities (Thomas, Gee, etc.) advise to open as early as the collection of pus can be determined. Every experienced practitioner understands that this advice is based upon the tendency to burrow which attaches to scarlatinal abscesses. But is it justifiable practice to make incisions into these hard tumors before purulent accumulations can be detected? This became a question in a case dying under my care from hemorrhage, and referred to on a preceding page. The tumor was so large and pressed so firmly upon the trachea, that death seemed liable to occur at any moment from suffocation. Deglutition was also extremely difficult. These symptoms were so urgent that the indication was in my opinion an almost imperative one for an attempt at immediate relief. After leaving the patient, I accidentally met one of the leading medical gentlemen of this city, and stated the case to him, inquiring at the same time how it was possible for me to lessen pressure around the tumor by draining it of extravasated fluid and yet avoid the risk of dangerous hemorrhage. He suggested aspiration with a hypodermic syringe. Upon returning with the intention of attempting this mode, I found the

symptoms greatly aggravated, and the tumor so brawny and resisting that I feared to waste further time by using the syringe. I at once passed a sharp pointed bistoury into the tumor, making a deep incision. Quite a considerable quantity of bloody serum, and shreddy material escaped. Warm poultices were again applied, and by the next morning the size of tumor was reduced, and the child's respiration and deglutition were better performed. The puncture was made on Friday, Dec. 31st, 1875. On the morning of Wednesday, Jan. 5th, one side of the incision looked of an ash color, and fearing hemorrhage, I explained my fears to the parents of the patient, and ordering a solution of perchloride of iron and some lint, gave instructions what course to pursue in case the apprehended event should occur. During the ensuing night sudden and profuse bleeding took place, resulting fatally in less than two hours.

I have prescribed ergot for the bloody and albuminous urine of nephritic complications. The prescription used was Squibb's fluid ext. ergot, ʒj; dilute sulphuric acid, ʒss; syrup poppies, or syrup blackberry, ʒviss; teaspoonful every 2 to 4 hours. To this prescription I have occasionally added, gallic acid, grs. xij to xvj. While I cannot positively declare that curative effects followed these prescriptions so uniformly as to justify the assumption of a relation between them, I am yet so well satisfied with results that I shall continue the prescription.

The propositions in reference to treatment may be stated as follows:

1. We know neither an antidote to, nor a sure eliminator of, the scarlatinal poison, therefore our safest treatment is "symptomatic," or "expectant."

2. The symptoms which most frequently demand our care in the simple form, are excessive temperature and excessive skin inflammation. For these, the cold douche, cardiac sedatives, and inunctions afford the best therapeutics.

3. The anginose variety requires additional treatment by the local application of astringents, alteratives and disinfectants to ulcerated surfaces, proper attention to lymphadenitis, and especially those tonics and blood depurants which prevent or cure septic states of the system.

4. The treatment of the malignant form of scarlet fever should be varied to meet the varying conditions present. One reporter mentions that the highest temperature noted was in a malignant

case; another states that the malignant cases observed showed lower records of temperature than other forms of the disease. I am satisfied that both were strictly accurate in their observations. Trousseau's remark, "that scarlatina, especially when its form is malignant, is of all diseases that in which the temperature of the body rises to the highest point," should not be understood to be applicable to all cases of the malignant form. While our choice between the cold douche or sponging, and warm baths, may be governed by the heat of the surface, there is good reason to believe that upholding measures of treatment are proper for all malignant cases. Quinine, carb. ammonia, small opiates, alcoholic stimulants and forced nutrition, are the means of cure usually most beneficial.

5. Scarlatinal dropsy is amenable to cure by hydragogue, purges, diuretics, diaphoretics, and blood restoratives.

6. Severe sore throat in scarlet fever is liable to be followed by gangrenous, suppurative, or septic processes in the system, attended by low forms of secondary fever, and requiring local and general measures of treatment, which, however carefully varied to meet particular conditions present, yet often fail to cure. The sequelæ of the anginose form are therefore more serious as points of treatment than renal complications.

8—*Contagium; Incubative Period; Preventive Means; General Remarks.* It is to be admitted that the degrees of intensity of all epidemics—whether this intensity relates to the symptomatic violence of their attacks, or to the universality of the diffusion of their germs, should not be regarded as matters of mere chance, but rather as being determined by laws sufficiently fixed to render them sooner or later, subjects of remunerative study. Scarlatina exhibits extraordinary eccentricity in all of its leading features, but in no one essential characteristic is this more strikingly shown than in the anomalous behavior of its contagium. At one time it appears to be so unsparing in its sweep that very few of the unprotected escape. At other times, its contagium exhibits so little of this fierceness that comparatively few attacks result, whatever may be the apparent amount of exposure. The introduction of the word "apparent" in the last sentence implies a want of knowledge of those conditions which give life and activity to scarlatinal disease germs. If they possessed as much uniformity in regard to repro-

duction and activity as the variolar poison, we would be able to predicate some rules respecting liability to attack after exposure. Consequently we could then speak with more certainty of greater or less degrees of exposure. But there is nothing of regularity in scarlatinal infection. Often we observe one case only, occur in a large family, or children's asylum, although no means are used to prevent its spread. Again, we see it over-leaping all the preventive measures with which we seek to surround our patients for the protection of the well. I think it a reasonable inference that this eccentricity is due to circumstances affecting the contagium, rather than to any circumstances or conditions which may be supposed to affect the human system so as to alter personal receptivity of the poison. A subtle contagium, which undoubtedly is endowed with attributes resembling those of organized substances, may show widely differing states of activity and virulence, subject to atmospheric or telluric influences not susceptible of formulation in our present state of knowledge.

No report has been made of observations tending to show the period at which a scarlet fever patient is most likely to infect persons brought within range of infection. Nor have any facts been furnished, which indicate that the scales of the desquamative stage are either chiefly or partially vehicles of communication. No doubt, Thomas expresses truth when he says "it may be presumed that the contagion enters from the blood into all the secretions and excretions of the patient."

In a crowded city, with scarlet fever epidemic among its entire population, reports in regard to the incubative period have all the liability to fallacy which must arise from the indefinite multiplication and diffusion of infecting foci. I venture, however, to report from my own practice, two cases in which pretty fair opportunity was afforded to observe the periods of incubation.

C., aged 13 years, spent Saturday, January 29th, at the residence of four children who had never had scarlet fever. The disease had for some time been prevalent in C.'s family, and one case was convalescing at the time of her visit. At dinner she occupied a chair situated between two of the unprotected children—M., aged 13, and H., aged 8 years. On Wednesday, Feb. 2d, H. complained of chilliness, headache, nausea and vomiting, and sore throat. The rash appeared on the following day, and a very severe example of the anginose form of the disease

resulted. The other children present at the dinner escaped attacks. No other case occurred in H.'s family, although the only preventive measures were exclusion from H.'s chamber. In this case, about 86 hours elapsed after exposure before symptoms manifested themselves, while the non-eruptive stage lasted some 20 hours.

B. L., aged 7 years, lost a little brother from pneumonia complicating hooping-cough, March 21st. She attended the funeral March 22d. Taken ill on the 25th; eruption appeared on the 26th. M. L., aged 4 years, was suffered to enter at will the chamber in which B. L. was confined, and no measures were employed to prevent infection. M. L. remained free from attack until April 23d, when scarlet fever was inaugurated with a chill and convulsive seizure. On another page of this report, the reader will find that B. L. suffered under symptoms strongly indicative of a true second attack of scarlet fever. If M. L. contracted the disease from B. L., we must assume, either that the germs from the primary attack infected her, which would indicate an incubative period of 20 days or more, or that the relapse produced the infecting material, which would imply an incubative period of about two weeks. Thomas reckons the incubative period of scarlatina at an average of from four to seven days. My own observations teach me to look with distrust upon histories of cases claiming a period of incubation longer than a fortnight.

No cases were reported of parturient females suffering under attacks of the epidemic, nor any instances of extraordinary personal liability to be affected by the poison.

The measures of prevention most often resorted to were isolation and the disinfection of rooms and bedding occupied by patients. Several cases were alluded to in which no spread of the disease occurred, although neither isolation nor any other means of prevention was resorted to. The following instance will illustrate the above statement. The family of H., a German baker, comprised three children, aged respectively 4 years, 2 years, and 3 months. The child aged 2 years was attacked December 22d. I saw it for the first time on the 24th, when an abundant rash covered the surface. The child died on the 14th day of the disease. The other children were kept in the same room with the scarlatinal case, and yet neither one suffered an

attack. Instances of this sort are unquestionably sometimes made to contribute in bestowing upon belladonna its totally unmerited reputation in preventing scarlatinal attacks. One reporter sends up a case in which he administered belladonna, to a child as a preventive, and naively added that it "turned out to be the worst case he had."

General Remarks. In the admirable compendium of Children's Diseases, by Steiner, we find the following paragraph: "A very dreadful kind of scarlet fever is every now and then met with, where the child succumbs almost directly to the most violent symptoms, without the forewarning of any prodromata. These cases sometimes run their course from beginning to end in thirty-six or forty-eight hours, almost even before the eruption has appeared, the only symptoms being vomiting, loss of consciousness, coma, violent delirium, or convulsions, with a most abnormal and continuously high state of the temperature. They are generally the forerunners of an epidemic, and are not unfrequently seen in children who are very healthy." On Saturday, April 8th, I was summoned to visit G. H., a remarkably healthy male child aged two years. It was 12½ p. m. when I reached the patient. The history given me, was that the child had arisen in perfect health and partaken of a hearty breakfast with his usual appetite. After this meal he had played with various members of the family, when about 10 o'clock he suddenly grew pallid and commenced vomiting. The emesis persisted until after my arrival and the administration of a dose of calomel, prepared chalk and opium, and the application of a spiced poultice over the epigastrium. At the time of my visit, the child had high fever, a rapid pulse, and red cheeks. He took little or no notice of anything said or done in his room. His mother stated that he complained of his throat when first seized with his ill fit, but no evidence of inflammation could be noted either internally or externally. In the course of the afternoon, several small alvine dejections occurred, fluid in character, seemingly due to the calomel. Quinine was given under a fear that malaria might have caused the attack, although the entire absence of prodromes, and the fast pulse, and rather florid surface, led me to make a probable diagnosis of scarlet fever. During the night convulsions were so strongly threatened, that I prescribed bro-

mide of potash with a small opiate. This did not prevent their occurrence at about 6 o'clock a. m. of Sunday. Dr. T. G. Richardson now saw the case with me, but the child soon fell into a semi-comatose state, and death ensued at 2½ p. m. of the second day of illness. The indications of an eruption were so indefinite, that I unhesitatingly rejected all those appearances which were pointed out by the very intelligent nurses who had care of the child.

A point in the history of this case is proper to be mentioned. In a house adjoining that of G. H., lived the family of B., which comprised several children unprotected by previous attacks of scarlet fever. On Wednesday, 5th of April, G. H. visited the family of B., and played with the children, more especially with one just his own age. This child was seized with sudden illness on Wednesday night, and died in about 24 hours. The fact that the children had been associated so shortly previous to their sudden deaths, led to suspicion of accidental poisoning. There were no symptoms present which I could account for by imputing them to any poison, or combination of poisons, likely to be within reach. I therefore requested a post-mortem, which was granted in so far as it related to the abdominal cavity. This was done by Dr. Richardson and myself, Monday, April 10th. Nothing was discovered, either as it respects the solids or the fluids, which accounted for death. The B. child was attended by Dr. P. C. Boyer, who informs me that no symptoms of scarlet fever had been manifested in any member of the family before, or after the child's death, although several of the children, directly after these events, had fevers distinctly malarial in their character. At the time of these deaths, scarlet fever was present in one or more families in the same square. I do not venture to diagnose this case as one of scarlet fever, and it does not figure in the enumerations of this report. I cannot, however *account* for the death in any satisfactory manner, other than by referring it to an overwhelming toxæmia from the materies morbi of that disease.

To illustrate yet further the analogy between this case and some which occurred in this city during a former epidemic of scarlet fever, I will copy here the account of instances of sudden death from malignant scarlet fever observed by Dr. F. Downer.*

* See N. O. Med. and Surg. Journal, vol. iv., p. 562.

Report of several Cases of Scarlet Fever. By F. Downer, M.D., of New Orleans.

CASE I.—Dec. 12th, 1847, called by appointment, at 4 p. m., to prescribe in a chronic case, for a member of a large family. Before leaving, I was requested to look at their son, a boy of seven years, who for several days had been laboring under what appeared to be a bad cold, but on this day he seemed so much worse, they began to feel uneasy.

I found him with a high fever; great difficulty in swallowing; mind confused and wandering; tongue dry, and loaded with a thick dark coat; teeth covered with sordes; with a slight eruption on the face and neck, of a livid hue. I at once pronounced it to be malignant scarlet fever of a typhoid type. Ordered cold effusions to the head and face; a gargle of infusion of capsicum, alternated with one of sage tea, honey and alum. Tens grains calomel, with four of ipecac, in four powders, one to be given every three hours till it operated; to be followed with flaxseed tea, or barley water, acidulated with lemon juice.

13th. Skin hot and dry; oppressed breathing; countenance haggard; great restlessness, with delirium. Owing to the unmanageableness of the patient, the directions had been but slightly fulfilled: a part of two of the powders had been given, and brought away two discharges of very dark offensive matter. Ordered one grain tartar emetic to an ounce of water, a teaspoonful every half hour till it acted as an emetic, with volatile liniment to the throat. He vomited slightly, but so great was the difficulty of deglutition that but little more was done; delirium, with frequent convulsions during the night, and on the morning of the 14th he died from suffocation.

CASE 2.—At daylight on the morning of the 17th, I was called to visit an older brother of the deceased, aged nine years. He had appeared well up to the day previous, when he was engaged the greater part of the day in shopping with his mother. Came home late, and very much fatigued, but ate an unusually hearty dinner of vegetable soup, meat and potatoes, which in an hour or two he threw up, and without making any complaint, soon after retired to bed. When I saw him, he was laboring under short, quick, and anxious breathing; pulse rapid, and vibratory; increased heat of the head, whilst that of the body was but little above the natural standard. There was uneasiness of the throat, with hoarseness and a slight enlargement of the tonsils; great intolerance of light, mind confused and wandering.

Gave an emetic of antimonial wine, which caused him to eject a large quantity of tenacious, ropy mucus, with decided relief. 8 o'clock.—Ten grains calomel with five of ipecac to be followed with flaxseed lemonade; cloths wrung out of cold vinegar and water to be constantly applied to the head.

12 o'clock. The bowels moved; fœces of a light clay color, and highly offensive. Warm sage tea, continue cold applications to the head.

At three o'clock I was sent for in great haste, as the boy was believed to be dying. On arriving, found him almost in a state of collapse—pulse weaker and quicker; had had two discharges since I saw him at 12 o'clock, the last involuntary, and in the highest degree offensive. Ordered weak brandy toddy, a starch injection with laudanum, and dispatched a messenger for my friend Dr. Harrison. The heat of the body being greatly diminished, with the pulse at the wrist quite imperceptible, we applied sinapisms to the abdomen, ankles and wrist; gave sub-carbonate of ammonia alternately with the brandy toddy.

At 6 o'clock we again met; he was now insensible to surrounding objects; great jactitation, constantly tossing his arms about, and moaning These symptoms seeming to indicate a high degree of gastric inflammation, the idea of poison suggested itself to the mind of Dr. H.; but on pressure of the abdomen and over the region of the stomach, not the slightest evidence of tenderness or pain did he evince, nor had he from the commencement, as I had frequently examined these parts, and asked the question while he was able to answer. He now rapidly sank till death closed the scene, during a convulsion, at 8 o'clock, it being but little over twelve hours since I was called to see him. An examination of the body was not permitted.

Case 3.—Dec. 23d. Was called at 7 o'clock, a. m., to see a daughter of five years; found her with slight fever; frequent, but not very full pulse; dry, brown tongue; some swelling of the throat, with slight redness of the tonsils and difficulty of breathing; bowels constipated. Prescribed senna and manna, flaxseed lemonade; vol. liniment to the throat, with a flaxseed poultice.

11 o'clock. The bowels had been moved once freely, fœces light and offensive with scybala and undigested food. Another discharge very copious, same color, without scybala or food, Ordered twelve leeches applied to the throat, and to take a teaspoonful of the following mixture every two hours—

Muriate ammonia, ʒjjs,
Emetic tartar, 1 gr.,
Ext. glyc, ʒj,
Aqua dist., ℥iv.

7 o'clock. Leeches had drawn well; had had another passage of the same kind; kept up the mixture, with the same drinks, and frequent sponging of the head and face with vinegar and water.

24th—8 o'clock. Much better, would not take any more medicine; during the morning asked for tea and dry toast, which was granted.

25th. Much improved; the rash well developed; tongue clean,

with papilla very elevated; bowels costive; order senna and manna; to be kept quiet. From this time she improved rapidly.

While I regret that a post-mortem examination was not allowed in the second case, I am satisfied, on a review of all the symptoms, that this was a case of a regular congestive form, and that the head, and not the stomach, was the part most affected. The tendency to assume the typhoid type so early in the course of the disease, can only be accounted for by the peculiar contagion to which he had been exposed; and this, as Dr. Good remarks, "under a depressed state of the living power, whatever be its cause, whether a want of cheerful warmth, cheerful passions, cheerful food, or cheerful and regular habits, typhus is often more likely to take place than any other species of fever. But when febrile miasm, produced by a decomposition of effluvium from the living body, exists in a coöperation with these, it is almost impossible for an individual to escape; as the miasm thus generated has a specific power—a power beyond all other febrile causes whatever, of lowering still farther the vital energy as soon as it is received into the system, and thus of confirming the tendency to this peculiar type." In this instance, the boy suffered much during the last hours, and after the death of his little playmate; he had slept in the same bed with him, until within two days of the death of the latter—was taken sick immediately after a long and fatiguing walk, the hearty dinner he ate assisting still more to depress the exhausted vital powers. The weather for two weeks preceding had been unreasonably warm and rainy; the thermometer, for about ten days, had ranged over seventy degrees, while the location was damp and low. All these causes acting on an existing predisposition; hence the sudden overpowering shock, under which the system gave way in so few hours, and while the medicine was apparently doing its offices kindly. Dr. Armstrong is the only author I know who describes this form of scarlatina. He says, "the subjects of this modification are for the most part suddenly attacked." "Sometimes they at once sink as if overcome by a sudden shock, and lie in a state of confusion and oppression, without making much complaint." "The mind at first alarmed, confused or dejected, soon becomes disordered with delirium, or an indifference to surrounding objects, and a stupor succeeds under which patients finally expire."

In two other very severe cases of scarlatina anginosa which I treated a week before, both the parents suffered from severe sore throat, attended with febrile symptoms, but no efflorescence of the skin; an adult member of the first family labored under soreness and swelling of the fauces, unattended with febrile symptoms, thus showing the protean nature of the disease, and the degree of virulence it assumes according as it is met by a predisposition, or otherwise. As regards my experience, scarlet fever is most to be dreaded of any of the diseases incident to childhood, whether considered in its immediate consequences or

as regards its results. As Dr. Francis observes, it is one for which we have no prophylactic; and in this climate delay in resorting to immediate remedial measures is so often fatal, that active treatment should be commenced from the first suspicion of the complex form of the disease; and then, alas! the bills of mortality tell with what success.

In conclusion, I sincerely thank those of my confrères who have kindly given aid and encouragement to this mode of studying disease. Whilst I shall not venture to speak of it as a complete success, the results appear to me sufficiently satisfactory to justify a further prosecution of the undertaking. I shall therefore issue new blanks within a few days, and again request the assistance of my professional brethren in studying some other disease in a statistical manner. In the mean time, I invite from those concerned the most free and critical comment in regard to the manner in which I have discharged the duties of a reporter. If I voluntarily undertake to represent the views and observations of my brethren in regard to any professional subject, I shall not seek to shun responsibility for the proper execution of these trusts.

I regret that a table of errata must be appended to the report, but absence from home during the time when the first forms were worked off, occasioned several errors so important as to demand notice.

ERRATA.

Page 37, 10th line, from for "—" read 3.62.

Page 38 (Table), 16.54 should be inserted between 46.40 and 30.66.

Page 40, for "attaek" read attacks.

Page 42, fifteenth line from bottom, for "all cases" read all other cases.

Page 45, fourth line from top, for "scarlatina" read scarlatinal.

MISCELLANEOUS.

HOMŒOPATHY IN UNIVERSITY OF MICHIGAN.

It will be a sad era for schools of theology when the "coming" man turns politician, elects himself a legislator to the exclusion of his predecessor, and then proceeds to ordain that the religion

of his forefathers and that of his own choice be taught in all public universities. Then may devil-worship be taught by yellow-skinned professors, with almond-shaped eyes and ridiculous pig-tails; or the mysteries of fetishism, vodonism, or trial by the bean, explained by the emotional colored gentleman, whose oratory is as much a natural gift as that of the chattering quadrumana of Brazil. These imaginary, and yet not impossible portraitures of the future, of portions at least of this country, are very little more humiliating than the spectacle presented by the accomplished action of the legislature of one of the sister States of the great United States of America. The Legislature of the State of Michigan undertakes to legislate homœopathy into their State University. When was human folly more egregiously manifested? It does not in the least diminish the appropriateness or force of this interjection, if one were even to admit that homœopathy was a true system of medicine. The interpretation of all scientific truth must be entrusted wholly and implicitly to those whose zeal and long-continued researches have carried them into the inmost chambers of the temple of knowledge, and should be the spontaneous outpouring of intellects liberally educated and not schooled to the narrow bigotry of any-"ism"—more especially, not schooled in an "ism" or "pathy" made up from impossible contradictions. The intrusion of the truculent and purse-loving legislator of the present day, is as fatal to truth as the worm to Jonah's gourd. Neither by his education, his habits, or his personal associations, is he qualified to be a judge concerning medical principles. Even if he were thus qualified, truth is unchangeable, while no chameleon can change his coat more readily than the time-serving politician. If the legislator of to-day shall be granted authority to fill teachers' chairs with men holding to his particular bias, he of to-morrow must be allowed a similar privilege. Is not this the quintessence of sublunar madness? Homœopathy, which in theory has not the substantiality of the ghost of Hamlet's father, but in reality—potentiality, I may as well say—has all the energy and danger in practice which the use of highly concentrated drugs can confer upon it. Such is George Johnson's uncontradicted testimony concerning this system in Europe. And this is to be taught by legal prescription in a State university!! "Facilis descensus averni!!"

We will publish here the proceedings of the Medical Society of the State of Michigan in reference to this question, and leave our readers to make such comments as they deem called for by the occasion.

Action of the Michigan State Medical Society regarding Homœopathy in the Michigan University, at its meeting held in Ann Arbor, May 10th, 11th, and 12th, 1876.

"On the admission of new members," the question arose concerning the admission of *University graduates* of 1876, which was finally referred by the Association, together with *all matters* pertaining to homœopathy in the University, to a committee composed of nine gentlemen, representing different portions of the State, a follows:

Drs. Foster Pratt, Kalamazoo, Chairman; S. S. Cutter, Coldwater; J. H. Jerome, Saginaw City; G. K. Johnson, Grand Rapids; James A. Brown, Detroit; H. B. Baker, Lansing; Gordon Chittock, Jackson; J. S. Hamilton, Tecumseh; J. Andrews, Paw Paw.

These gentlemen, after due deliberation, made the following report, Drs. Cutter and Hamilton objecting *only* to the last resolution:

* * * * * *

For the better understanding by our brethren in this and other States of the "existing situation," your committee present the following succinct statement of the facts in the history of the movement which has resulted in this new (so-called) department of homœopathy.

Before stating these facts, however, it may be well to say that, by the Constitution of our State the Board of Regents "*have the general supervision of the University, and the direction and control of all expenditures from the University interest fund.*" The University fund and the students' fees, together, constitute a fund absolutely under the control of the Regents; but, as the University has been expanded and is now managed, this fund is only about half what is required to defray the annual expenditures of the institution. For this additional amount the Board are compelled to look to the annual appropriations of the State Legislature; and in making these appropriations, to meet the pressing wants of the school, the law-making power has, from time to time, seen fit to couple its bounty with *conditions*, upon compliance with which, by the Board of Regents, the money could be drawn from the State Treasury. In several instances, the Legislature has made use of its power of appropriating money to practically invade the constitutional function of the Regents, as the controlling power of the institution, and to dictate to them in matters not legally within its sphere.

Beginning in 1855, it passed an act providing for at least one Professor of Homœopathy in the University.

The Regents refusing to comply with this legislative requirement, the Supreme Court, in 1856, was asked, by a mandamus, to compel its observance. But the mandamus was refused by the court, for reasons, in this instance, not necessary to enumerate.

In 1867, another act was passed appropriating 1-20 of a mill on each dollar of the taxable property of the State, for the benefit of the University, *provided*, the Regents would comply with the law of 1855 and establish one homœopathic professorship.

The Regents agreed to and did appoint *two* such professorships to be located at some point outside of Ann Arbor. But the Auditor-General refused to pay the money appropriated on the ground that this was not a compliance with the act. The Regents now asked the Supreme Court, by mandamus, to compel the Auditor to the payment of the appropriation. But the writ was refused, the court being equally divided in opinion.

In 1869, a mandamus was again asked of the court, by homœopathic interests, to compel the Regents to comply with the original act of 1855. The court being again equally divided, the request was again denied.

In 1873 the Legislature passed another act, in this instance without appropriation and without condition, providing for the establishment of two professorships of homœopathy by the Regents.

As before, the Regents refused to comply, denying the power of the Legislature to control them in their management of the University.

The usual effort, by mandamus, to compel the observance of the act was made, but this time before the Circuit Court of the county in which the University is situated. The court decided it had no jurisdiction and refused the prayer; also refusing to grant an appeal for the reason that, having no jurisdiction of the case, it could take no action from which to appeal. But nothing daunted, and with a zeal worthy of a better cause, the petitioners again besought the Supreme Court, and were again refused, the court being again equally divided and unchanged in the opinions formerly expressed.

But, in April, 1875, an act was passed authorizing the Board of Regents to establish a new department of medicine in the University—the homœopathic department—and made an annual appropriation of $6000 for the purpose of sustaining it.

On the 12th of May, 1875, the Regents established a Homœopathic Medical College at Ann Arbor; equipped the new college with two professors—one of practice and one of therapeutics; required five of the former professors—viz., of anatomy, physiology, surgery, obstetrics, and chemistry—to supplement the

deficiencies of the new department, and to become with the two homœopathic professors, the teachers of registered homœopathic students, and with this requirement the professors named have complied.

To remove one difficulty in the execution of this plan, the former mode of granting and executing diplomas was radically changed in every department of the University; the diplomas of each department, instead of being granted and signed as formerly by the professors of the several departments, are now granted by the Board of Regents upon certificates of proficiency given to each student of a department by each professor of that department, and are signed "*only by the president and secretary*" of the Regents.

* * * * * *

Your committee, in conclusion, beg leave to report the following resolutions:

Resolved, That we are not content with the existing situation of the Medical Department of the University, because in our opinion it is not calculated to maintain or advance medicine as a science, nor is it consistent with the honor or interest of the Profession.

Resolved, That a State under our form of government can not successfully teach either medicine or theology, and that the Medical Profession ought to be its own teacher and the guardian of its own honor.

Resolved, That we regard all legislative interference with the government of the University as unconstitutional, wrong in principle, and harmful in its results.

Resolved, That section 4 of the constitution of this State Society be amended so as to read as follows, viz: "Section 4. The resident members should be elected by vote of a majority present at any regular meeting, their eligibility having previously been reported upon by the Committee on Admission; provided, that no person shall be admitted to membership who practices or professes to practice in accordance with any so-called 'party' or sectarian school of medicine, or who has recently graduated from a medical school whose professors teach or assist in teaching those who propose to graduate in or practice irregular medicine."

The submission of the report was followed by an animated debate.

The ayes and nays being called for, this report and the resolutions were adopted by a large majority; the fourth being an amendment to the by-laws, was under the rule, laid over until the next annual meeting.—*Richmond and Louisville Medical Journal.*

CURRENT MEDICAL LITERATURE.

PRACTICAL MEDICINE.

BY S. M. BEMISS, M.D.

Professor of Theory and Practice of Medicine, and Clinical Medicine, University of Louisiana.

ON FEBRIFUGES.

BY C. BINZ, M.D., LOND.,

Professor at the University of Bonn.

A rational treatment of fever supposes an exact knowledge of its height and of its general course. We have two physical means for the valuation of both: pulse and internal heat.

Till within late years only the number of pulsations was used as a measure of fever; and often it suffices, as the heart generally beats more rapidly when the blood is heated. Very often, however, this excitement is not the expression of fever, but of mental irritation, poverty of blood, the beginning of a crisis, or of local processes in or near the heart.

The quality of the pulse examined by the finger or the sphygmograph is a still less exact guide to a correct opinion regarding the height of the fever. Tension and relaxation of the arteries may vary to a great degree, whilst the fever remains almost constant.

The chief symptom of the complex condition we call fever is heightened oxidation and disintegration of the living tissues of the body. It follows, therefore, that at present the thermometer is the best means for estimating the height of fever. Measuring warmth with the hand, as some practitioners, relying on habit and expertness, continue to do, is like trusting to the sun for fixing the time. I should say that a well-regulated watch is to be preferred in the one case and a thermometer in the other.

The exact study of the febrifuges has only been rendered possible since the general introduction of the thermometer. The two chief objects of their employment are: (1) to withdraw a great amount of heat from the burning organism; (2) to lessen the production of warmth.

We attain the first object by directly cooling the surface of the body and through dilatation of the vessels; the second by means of antipyretic drugs.

Let us first take into consideration

The External Application of Cold Water.

It is not long since every fever patient was carefully guarded

from pure air and fresh water. Thick blankets and hot beverages seemed indispensable. Several medical men observed that this treatment did more harm than good; but James Currie was the first to have any success in fighting against these prejudices.

Old and deeply-rooted errors do not fall at one blow, especially when they derive support from the extravagances of the opposition. So at least it was with us. Priessnitz, and the fanatic hydrotherapeutists who followed him, barred the way for a long time to the rational use of cool water; and it is only about fifteen years ago that we have recurred to the healthy principles of Currie.

The matter itself is very simple. If a patient at 40° C. (104 F.) is placed in a bath at a lower temperature, he must quickly part with heat. In fever, the natural regulation of heat which keeps our body at an almost equal temperature is insufficient. The cool bath makes up for this. If we measure the temperature after the bath, we shall find it lower than before. The blood that surrounds the cells of our nerve centres is less hot. The patient therefore feels stronger and quieter.

Cold baths (15–20° C.=60–68 F.) have the clearest effect. Extensive experience has taught that their action is most positive when they are short and often repeated. Very weak patients must begin with 35° (97 F.), and then the warmth must be lowered to 20° (68 F.), by carefully and gradually adding cold water. In the meantime the body should be gently rubbed.

Cold sheets *(Kalte Einwicklungen)* are less efficacious, and cold effusions *(Uebergiessungen)* have less effect; this latter considered merely from the antipyretic point of view.

Only a high degree of weakness of the heart, loss of blood or perforation of the bowels, are contra-indications against the use of cool baths. Menstruation is not one when the fever is at a dangerous height, and pregnancy never. Every age and every constitution permits the withdrawal of fever heat, only it must be observed that the loss of heat is in inverse proportion to the weight of the body. For babies we need therefore seldom go under 30° C. (86° F.) to have a full effect, the temperature of the water must be lowest for strong adults.

External application of cold proves, like all other febrifuges, to be most efficacious when the temperature has a tendency to sink spontaneously. That is from seven in the evening till morning, and again in the day from eleven till two o'clock.

The after-effect is of great importance. Under some circumstances it lasts several hours; that is, the lower temperature continues even when the patient has been removed from the water. The reason is probably as follows:

In fever the vessels of the skin are generally much contracted. The cool water acts as a strong stimulant on them, and causes a somewhat stronger contraction to take place, but this is only of short duration. Relaxation for a longer term is the neces-

sary consequence. The hitherto bloodless and dry skin becomes filled and moist, and thus the irradiation of warmth goes on. It is easy to convince oneself of this state of the skin after the bath. The cooler the bath and the longer it lasts, the more evident and the more lasting will be its result.

I only touch on these points, although they are generally known; for the theory of the action of cold water serves partly as a foundation for the following.

Digitalis, Veratria, Aconitia.

In connection with the loss of warmth from the skin, I would mention here some often discussed drugs. Our knowledge of them as febrifuges is still very incomplete, notwithstanding several excellent researches.

If we give moderate doses of digitalis in health, the pressure of the blood in the arterial system rises. Digitalis then acts as tonic on the heart. In what connection does this, its principal pharmaco-dynamic effect, stand to the observation, that digitalis lowers the febrile heat; that often the other febrifuges are efficacious only when they are given together with digitalis? According to my opinion the explanation is this:

Whenever fever or any other factor of the feverish process has reduced the energy of the left ventricle of the heart, one of the next consequences must be that the arteries will contain too little and the veins too much blood. Especially the large veins of the abdomen are turgid in such cases. It is well known that they are spacious enough to enclose all the blood of the organism. Here the greater part stays, flows languidly to the surface, and a much smaller amount of warmth is given off. Now, every alteration of the pressure in the arterial system must alter the hydrostatic and thermic distribution. In raising this pressure we drive the blood away from the hot interior of the body to the cooler skin. We augment the quickness of the stream, and thus each portion of the blood, in a given time, comes into contact with the external atmosphere in the skin and lungs oftener than before.

No other explanation of the antipyretic effect of digitalis seems to be given as yet, and this may be sufficient. It has at least been proved by experiment* that augmenting the pressure in the arteries to a certain degree augments the dispersion of warmth.

On the other hand, digitalis is no trustworthy antipyretic, even when all the said conditions are given. The drug itself changes in strength on a large scale; the single glycosides it contains as active molecules are not yet sufficiently known; it disturbs digestion in almost every case; its wonted effect on the heart comes on slowly and uncertainly; and as soon as you go a

* Heidenhain in the *Archiv fur Physiologie*, iii. 519, 526.

little over the line, its *poisonous* qualities begin to act on the heart.* Traube, who has used digitalis most extensively in experimental and clinical inquiries, says that its effect on temperature does not take place till thirty-six to sixty hours after its first application, a time which generally does not suit our object.

The true field of action for digitalis is not fever, but that series of heart diseases in which, without fever, the arterial pressure is too low and threatens to produce dropsy.

Veratria much resembles digitalis in its general action on the heart. Small doses heighten the pressure of the arterial system. But this is all the light that we have at present on its doubtlessly antipyretic effect. Liebermeister says of it:†

"I convinced myself by numerous experiments that a complete intermission can still be achieved in cases where quinine has not sufficient effect. I generally give pills, of which each contains five milligrammes, one every hour till sickness or vomiting ensues. Four to six pills are usually enough. The collapse which often takes place after sickness through the rapidly sinking temperature, is not dangerous, and is quickly relieved by wine or other analeptics. I have only given veratria to patients the action of whose heart was not too weak."

The poisonous effects of veratria have been very clearly described by v. Bezold, but this has as yet produced no result of therapeutic value.

The tincture of veratrum viride is used in America and praised as a most powerful antipyretic. I have no experience of it, either on men or animals. No explanation of its effect, as far as I know, has been given as yet.

Aconitia seems to be a much valued antipyretic in England. Its mode of action is still less known than that of veratria. Its influence on the heart is similar to that of digitalis. The various preparations of aconitia coming from England, Switzerland, or Germany, differ very much in chemical quality. This point renders of course all conclusions from experimental researches rather uncertain. Aconite and aconitia are therefore hardly used in Germany. Whether this is wrong or not, can only be proved by further strict experiments.

Alcohol.

I shall now proceed to speak of alcohol, which I regard as occupying an intermediate place between the febrifuge agents previously mentioned, and those which are subsequently to be taken into consideration. It also possesses the property of giving rise to that increased irradiation of heat from the surface of the body which accompanies an accelerated circulation of

* Cf. the most instructive case of W. Murell in this periodical, November 1875, p. 345

† *Handbuch der Pathologie und Therapie des Fiebers.* Leipzig, 1875, p. 643.

blood through the cutaneous vessels. It is certain, however, that this is not the only manner in which it acts as an antipyretic.*

What we know about the influence exerted by alcohol upon the temperature of warm-blooded animals may be summed up as follows.

To begin with, the increase of animal heat which it was formerly supposed that alcohol causes, does not really take place. The subjective impression of warmth experienced after imbibing a quantity of any strong alcoholic liquor is due, at least partially, to an irritation of the nerves of the stomach, and to the hyperæmia of the skin, where the peripheral nerves receive an impression of increased heat from the caloric passing over in process of being given off. The thermometer—the only reliable guide—indicates no important rise or fall in the temperature of the body after *small* doses of alcohol. Given in quantities a little larger, but still sufficiently moderate as not to cause drunkenness, it causes a distinct fall, lasting half an hour or more, while after a dose powerful enough to inebriate, a still more decided lowering of the temperature—from 3.5 to 5° Fahr.—is observable, which lasts several hours The decrease of temperature after moderate doses takes place most distinctly in warm-blooded animals to which, for some time previously, no alcohol has been administered. After becoming inured to it, the organism does dot respond to such doses by showing any measurable cooling or the reverse.

Well-marked results are yielded more readily by a feverish animal than by a healthy one. For my experiments I generally used strong rabbits or dogs of the same origin and the same quality throughout, and injected into them subcutaneously several cubic centimetres of ichor, or putrefying blood. As is well known, after this proceeding the temperature of the animal rises several degrees, and all the symptoms appear which are to be observed in the case of a human being suffering from putrid fever. The several symptoms referable to the intestinal canal, in particular, remind us strongly of those belonging to enteric or typhoid fever. If the quality of the poisonous substance injected be sufficiently virulent, the animal expires within a few days. Not so, however, if, simultaneously with the commencement of the experiment, alcohol diluted with water be administered, either by means of the hypodermic syringe or by the stomach. The temperature then remains low from the very beginning, the intestinal catarrh is slighter, the animal is more lively, and while the one so treated lives and takes food kindly, another, without the saving influence of the alcohol, may be seen gradually to decline and die. A corresponding result follows if

* I have referred to the principal authors who have written upon this question according to the dates at which their articles have appeared, in the *Journal of Anatomy and Physiology*, viii. 242. (London, 1874.)

we allow the fever to make a decided progress in both animals before administering the alcohol to one of them.

In such cases, therefore, alcohol shows us a threefold action: (1) it lowers the temperature of the body, or tends to maintain it at a normal temperature despite the influence of an active pyrogenic material in the blood; (2) it resists the process of putrid fermentation; and (3) it stimulates the action of the heart.

Here we clearly see alcohol emerging from the limited sphere allotted to it by many practitioners who look upon it merely as a stimulant. A stimulant for both the heart and the nervous system it certainly is, but in the circumstances under consideration it is much more than a simple stimulant.

In these experiments upon animals poisoned with ichor, it is clearly to be seen that alcohol, even in powerful doses, need not necessarily act as a narcotic. On the contrary, the ichor-poisoned animal, which at first cowered down in drowsy apathy, after having been dosed with alcohol becomes more lively and begins to run about. Todd and his followers observed similar results in man.

Now, how does alcohol work in the animal economy to bring about the first of the three effects above enumerated, viz., the reduction of temperature?

Reasoning according to popular prejudices, one would think at first that a *rise* of temperature *must* follow the administration of alcohol. Let us, however, consider the matter scientifically. Alcohol becomes readily oxidised, or in other words it *burns*, in the tissues of the body, when it is not given in excessive quantities, forming carbonic acid and water, and during this process of combustion heat is set free.* But the same thing occurs, and to a far greater extent, in the assimilation of the numerous oils and fatty substances which we take in such quantities with our food every day; and yet in this instance we are conscious of no *elevation* of temperature, nor does the thermometer show one. The truth is, that the working of our whole system is so admirably ordered, that, despite the development of this heat within the tissues, one almost uniform standard of temperature is maintained, other causes operating to counterbalance the thermic effect generated by the said combustion, I shall not here enter upon a discussion of the various channels through which this compensation may possibly be caused, as I have already explained my views on the subject in the *Journal of Anatomy and Physiology*.

There can be no doubt but that the heart and the skin are two of the media by means of which alcohol acts in causing a change of temperature, the former driving the blood with unwonted energy through the dilated vessels of the latter, where its heat is permitted to irradiate with unusual rapidity; but in

* This special point will claim attention further on.

my opinion, one of the chief causes for the depression of warmth produced by large doses is a direct impediment offered to the activity of the cells.

The numerous microscopical elements of which our glands are composed, and through whose action the albumen of food is decomposed, become slightly paralyzed by alcohol. We have a clear illustration of this fact in the action of alcohol upon yeast, a substance whose cells, endowed with their peculiar catalytic power, may serve here as a type of the more highly organized animal cells. And it may be safely asserted from all points of view, that the cells of the animal organism, on the whole, react towards the paralyzing influence of alcohol in the same manner as those of the *mycoderma vini*. Thus the higher the percentage of alcohol in a fluid with which they are brought in contact, the less able is the protoplasm of the cells to work and produce warmth. And this is not shown in the case of common yeast only, for in every other form of fermentive process the retarding influence in question becomes most apparent, and particularly in that familiar process of oxidation which we call putrefaction. Even the highest and most complicated issue of the protoplasm, the hæmogoblin, is affected by it when in the very act of transferring the oxygen it carries to other substances, the presence of only a very small quantity of alcohol being sufficient to check the rapidity with which this transfer to combustible substances takes place.

Another series of experiments has proved to me that the *post-mortem temperature* is also susceptible of being lowered by previous injection of alcohol. As is known, this warmth, after the death of almost every warm-blooded animal—particularly when fever has been the cause of death—not only lasts for a longer or shorter time, but even rises by several degrees of the Fahrenheit scale. The fact that this warmth is also under the influence of alcohol, proves to us more strongly than anything else the direct action of that agent on the chemical processes of the animal body.

It has been denied that alcohol so diluted as to be harmless to the body could produce any chemical effect within the circulation. This conclusion, however, is shown to be erroneous by the experiments upon the post-mortem temperature just referred to; for there one certainly has to do with purely chemical processes—processes depending upon the action of organic ferments, viz., our cells, which, however much they may have depended upon the possession of some peculiar vital property for their activity during life, can give only a chemical reaction after death.

But it requires no special argument to prove that the activity of living cells is, on the whole, much influenced by alcohol when brought in contact with them in quantities too small to be poisonous; and such being the case, we have no grounds for refusing to believe that not only the protoplasm of the nerve-centres,

but that protoplasm in general, is similarly acted upon by the same agent.

A priori it is to be expected that alcohol would not be without influence on the metamorphosis of tissues. An agent which, when brought to bear in somewhat larger quantities, so clearly retards combustion, must be supposed to decrease the production of urea and carbonic acid, the two most important excretions of the organism. And, in fact, the researches of several authors prove to us that this is the case.

With regard to the application of alcohol to fever cases, we must not overlook the fact that its effect is not as energetic nor as lasting as that of certain other antipyretic agents, large and repeated doses being required to maintain the lowering of temperature. On the other hand, there are certain cases in which alcohol acts as an antipyretic, whilst quinine is powerless. For instance, Dr. Breisky, now Professor of Obstetrics at Prague, in writing upon this point, says:*

"A point which I especially emphasize is, that in the fever from resorption of septic material after child-birth, alcohol is a more vigorous antipyretic than quinine. I therefore make use of it as such in the continued fevers also, although I have only been able to obtain decided effects in certain cases which partook somewhat of a remittent form, that is to say, in cases where the production of pyrogenic material was not so abundant as to keep up a constant elevation of temperature.—*The Practitioner.*

IMPERFECT MASTICATION AS A CAUSE OF DIARRHŒA.

By Arthur W. Edis, M.D.

In the able article in your October issue by Dr. Fothergill, on Diarrhœa, he omits to mention one important cause of looseness of the bowels, viz., deficient mastication from defective or decayed teeth. This I have reason to believe from careful observation is a far more frequent cause of irritability of the bowels than is generally supposed. Dentists are familiar with a form of this latter, presumed to be due to the decayed teeth inducing a more or less acrid secretion from the gums which produces gastric irritation, and so sets up a species of diarrhœa, or, more properly, looseness of the bowels; but apart from this, I have observed lately, among females especially, a form of looseness and irritability of the bowels, due, I believe, entirely to an inability to masticate properly their food.

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* F. Conrad, *Ueber Alcohol und Chininbehandlung im Puerperalfieber.* Mit einem Vorwort, von Prof. Breisky. Bern, 1875, p. iv. (Aus den Erfahrungen der Berner geburtshulflichen Klinik.)

Dyspepsia is usually the first symptom noticed, but not by any means invariably. A sudden attack of spasms or abdominal colic, followed by a smart attack of diarrhæa, is frequently the only symptom that will aid us in forming a diagnosis. On inquiry we find this condition is of frequent occurrence, more especially if great care be not taken in the selection of proper food. On examining the mouth, serious defects in the number of the molars will almost invariably be found. Even should they be tolerably sound in one jaw, the teeth that should oppose them are either absent or in such a state of decay that it is painful or impossible to masticate the food properly; this latter is consequently bolted in lumps which, resisting the action of the gastric juice, are carried into the middle intestine and there set up much irritation, increasing the vermicular contraction, as also the secretion of mucus, and so causing a species of diarrhæa.

That this is no imaginary cause I have proved in many instances by suggesting a set of back teeth in place of medicine, and with the effect of obviating entirely the frequent attacks of diarrhœa.—*The Practitioner.*

RECENT PROGRESS IN THE TREATMENT OF DISEASES OF THE THROAT.*

By F. I. Knight, M.D.

Extirpation of the Larynx.—Case VI. (continued). After our paper which appeared in the last number had gone to press, we received a fuller account of Bottini's case.† The age of the patient is stated to have been twenty-four. Bottini employed local anæsthesia, deeming it imprudent to produce general anæsthesia by chloroform. He expresses a prejudice against the trachea-tampon, which is not sustained by the experience, now extensive, of German Surgeons in the use of this instrument. The growth in Bottini's case involved the entire larynx, and was pronounced to be genuine sarcoma, which is of extremely rare occurrence in this situation. Bottini also gives an account of some operations on dogs, from which he removed the larynges by means of the galvano-caustic knife, without the slightest hemorrhage, either primary or secondary.

Case VII.—Langenbeck.‡ The patient was a man fifty-seven years of age, a master blacksmith, who had suffered about four years from hoarseness and dyspnœa, and had been treated for some time by cauterization of the larynx. A full description of the operation, which was performed July 21, 1875, may be found

* Concluded from page 393.

† Annales des Maladies de l'Oreille et du Larynx, 1875, No. 6, from Giornale della R. Academia di Medicina di Torino, May, 1875, No. 14.

‡ Berliner Klinische Wochenschrift, No. 33, 1875.

in the JOURNAL of October 21, 1875. The patient was nourished through the œsophageal tube with eggs, beef-tea and wine. The pulse was highest on the 22d and 24th, the patient having some diarrhœa on the latter day. The evening temperature on both of these days was 103.6°. On the 28th, his condition continued good, and he was free from fever. With reference to the execution of the operation, Langenbeck says that he considers it much better to operate from above downward, the cutting of the trachea being done the very last thing; the important arteries are tied before they are cut, so that the loss of blood may be reduced to a minimum. He recommends that several Tredelenburg's tampon-canulæ should be at hand, in case any one of them should fail. He advises that tracheotomy should precede the extirpation a sufficiently long time for adhesions to take place between the skin and the trachea. In this way, also, we can more quietly and effectually arrange the tamponade.

Trendelenberg's Tampon-Canula.—As reference has been made to this useful contrivance, a brief description may interest those of our readers who are not familiar with it. Nussbaum* proposed that tracheotomy and plugging up of the larynx through the mouth should precede resection of the upper jaw, anæsthesia being maintained through the tracheal tube. Below and Trendelenberg, independently of Nussbaum and of each other, proposed more elaborate methods of making the tampon. Below proposed that a rubber balloon should be placed between the canula and the vocal cords, which, being blown up, would prevent any blood flowing into the air-passages. Trendelenberg† concluded from his experiments on the cadaver and on animals, that such a method as this would not do well on account of the danger of the balloon slipping through the glottis, and also of its provoking cough from irritation of the vocal cords. He devised the tampon-canula, and proved its efficacy at once on a patient. This apparatus, which is introduced into the trachea after tracheotomy, consists of an ordinary tracheal canula, over the vertical part of which a ring-shaped rubber balloon is drawn. This can be blown up through a piece of rubber tubing connected with it and provided with stop-cock, so that it surrounds the canula like a thick roll, and thus obliterates the space between the trachea and the canula.

Artificial Larynx in Case of Stricture.—Dr. Carl Reyher‡ has used Gussenbauer's apparatus with satisfaction in a case of laryngeal stricture. Even if the vocal part of the apparatus is not used, the maintenance of an opening through the glottis by means of the second canula enables the patient to use the whispered voice, which is of course impossible when the stricture remains tight.

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* Canstatt's Jahresbericht, 1869, ii. 440.
† Canstatt's Jahsbericht, 1870, ii. 368.
‡ Archiv fur Clinische Chirurgie, xix. 334.

Differential Diagnosis and Treatment of the Various Forms of Bronchocele.—Lücke* classifies the different forms of bronchocele as follows: (1) struma hyperæmica; (2) struma parenchymatosa, follicularis (Virchow) lymphatica; (3) struma fibrosa; (4) struma vasculosa (aneurismatica); (5) struma colloïdes; s. gelatinosa; (6) struma cystica (Beck), hydrocele colli (Maunoir).

Simple hyperæmia involves the entire gland. The throat seems larger, rounder and fuller; the clothes become tight; the larynx is less prominent, and the outline of the sterno cleido-mastoid muscles is less distinct. The shape of such a throat is by no means uncomely. The hyperæmia usually passes off with the cause (pregnancy, menstruation).

The follicular hypertrophy or parenchymatous struma gives a greater resistance to the touch and a sharper boundary. Some parts are usually more enlarged than others, and are to be distinguished from one another by digital examination. This form rarely attains the size of a small hen's egg in one lobe. The diagnosis depends on moderate size, soft, elastic consistence, and smooth surface.

Struma vasculosa et aneurysmatica belongs to the small or at least moderate-sized bronchocele. It usually affects the whole gland symmetrically, the form of which is therefore not changed. The most important diagnostic point is the possibility of reducing it to a small size by continuous pressure, which having been relaxed, it fills up again more or less by jerks. The true aneurysmal bronchocele pulsates, and we hear vascular bruits in it.

The colloid form affects not uncommonly the whole gland. The enlargement is symmetrical, and one lobe may become as large as a man's fist. The diagnosis is made from the symmetrical form, and the doughy, almost soft consistence.

The diagnosis of the fibrous form is made from the presence of single hard knots, which can be isolated from one another.

The mixed form most closely resembles the fibrous, but shows a different consistency in different parts. The mixed bronchocele attains the largest size. Those bronchoceles in which the mixture of fibrous and parenchymatous degeneration preponderates are inclined to be pendulous, when small multiple cysts are found in them. When larger cysts form in solid masses, the tumor has usually a broader base.

The diagnosis of the cystic form is made from the fluctuation, eventually also from the transparency, from the globular form of the tumor, and its sharp boundary. Tapping affords the safest conclusion.

With reference to medical treatment, Lücke says the influence of iodine on thyroid enlargement is not to be doubted, but it is indicated only in tumors containing true glandular tissue. The dose need not be great. Two or three grains twice a day is enough at first. It is best given in simple solution with water.

* Die Krankheiten der Shilddruse. Stuttgart, 1875.

If the unguentum potassii iodidi is used, a few drops of tinctura iodinii should be added, as the pure, fresh ointment contains no free iodine, and will be efficacious only when it has become yellow, *i. e.*, decomposed. Painting the gland with tinctura iodinii should not be practiced, as the skin is too tender. The injurious effects of iodine on the testicles and mammæ are not easily to be seen.

With reference to the surgical treatment of bronchoceles, it is convenient to consider separately those which are solid and those which contain fluid. The history of the treatment of hard goitres is not much more than a hundred and fifty years old. The ligature of the thyroid arteries was one of the first methods; then came the employment of the seton; later, cauterization, extirpation, and the use of the écraseur.

Opinion has constantly changed, so that no one method of treating solid goitres meets with general acceptance. Ligature of the superior thyroid arteries was finally given up on account of the frequency of secondary hemorrhage, and because at the best only a diminution in the size of the tumor was obtained. The seton was often used in the last century, but was given up on account of the frequency of dangerous inflammation, purulent infiltration, pyæmia, and even hemorrhage. It has been, however, recently again recommended very strongly by Mackenzie.* Cauterization and subcutaneous tearing of the gland are both to be avoided, on account of danger. Lücke thinks well of parenchymatous injections of tincture of iodine in the follicular form of goitre, and thinks it acts specifically as well as locally by inflammation and cicatrization.

The most radical operation is obviously removal, whether by ligature, écraseur, galvano-caustic loop, or the knife. Surgeons generally dread this operation, and advise against it. Undoubtedly extirpation cannot be practiced on all goitres. The gland must be movable, as a first condition, and must not have too large a base. It is still better, of course, if it is pediculated. Hemorrhage is considered the chief danger. Extirpation by ligature, écraseur, or galvano-caustic loop is dangerous. In all cases in which removal is indicated, it had better be accomplished with the knife.

This operation has been gaining again in favor during the past ten or fifteen years. Lücke says if great care is taken to tie all the vessels peripherally and centrally, there will be little bleeding, and he has never experienced secondary hemorrhage. Sometimes the operation is very easy, inasmuch as one may peel out the tumor with blunt instruments up to a thin pedicle. Often, however, as many as thirty ligatures have to be used.

Recently Kocher has proposed to dig out the gland substance. The gland, having been laid bare, is fastened to the edge of the skin on either side; it is then incised, and the gland substance

* Boston Medical and Surgical Journal, November 28, 1872.

is completely spooned out with sharp spoons and the fingers. The hemorrhage is profuse and must be stopped by a tampon. This method would be indicated only in parenchymatous and colloid goitres.

One would not expect much from massage. Galvanism is reported to have been successful in some cases (Chvostek).

Treatment of Cysts.—Simple puncture should be made only for diagnosis. Every genuine cyst must be injected with iodine. One should use a trocar sufficiently large, so that small masses may come out. If the cystic fluid contains much sediment, or many granular pieces which have broken off, Lücke considers it very important to wash out the cyst with warm water before injecting the iodine (ten to twenty grammes according to the size of the cyst). The puncture is carefully closed with sticking-plaster or collodion. In many cases cure takes place. Some operators wishing to encourage suppuration, inject a dilute solution of chloride of iron, and leave in the canula (Mackenzie).

In regard to electrolysis Lücke says that in his experience, although the systic fluid disappeared under electro-puncture, it returned in a week.

Incision of the cyst is well esteemed by Lücke. After an incision has been made down to the cyst wall, this should be stitched to the skin on either side, and the cut into the cyst made between the stitches. If the operation be done in this manner, the bleeding will be less. After the contents of the cyst are evacuated, bleeding from the incision in the cyst wall is best stopped by additional sutures, but bleeding from the interior of the sac must be stopped by plugging with lint. Cure takes place by suppuration, and one must take care that the external opening does not close too soon. Secondary hemorrhage is the accident most to be feared as suppuration goes on. The vessels cannot usually be found, and plugging up the cavity must be resorted to. Purulent infiltration and septicæmia are also possible, usually, however, only in conjunction with hemorrhage in persons already enfeebled. In other respects the results of this mode of treatment are very brilliant. Sometimes after the cyst is laid bare the connections with the surrounding tissues may be so loose that it will be better to practice extirpation.

Tonsillotomy.—Saint-Germain* speaks strongly against the practice, too common, of trying to excise all enlarged tonsils with the tonsillotome. He says truly that only those which project and have a narrow base should be treated in this manner, but that others, sessile, bilobar, and not prominent, should be excised with the bistoury and long forceps, made for this

* Annales des Maladies de l'Oreille et du Larynx, 1875, No. 2.

purpose. Otherwise an insufficient amount is removed from the gland.—*Boston Medical and Surgical Journal.*

AIR AND ITS RELATIONS TO LIFE.*

This little book aims to present, in what the author calls a "light and popular" manner, information concerning the composition of the atmosphere and its important and essential relations to life and health. The style of the work is very clear and pleasing, and the absence of technical scientific terms conspicuously adapts the volume to the general reader. The writer's purpose to impart a summary of the knowledge with regard to the properties of the air has been fulfilled very satisfactorily. To be sure we do not find much that is positively new and original; but the ability to condense and define and compare the researches of others, to discriminate between the false and the true so as to present an exact and impartial view of existing knowledge, is an accomplishment of no mean order.

The information imparted by the book has to do principally with the chemistry of the air, and comprises the discussion of the properties of the various atmospheric constituents, illustrated by experiment and demonstration. But there are numerous instances in which the author has turned aside to point out the significance of the various elements with regard to health and the vital processes. Thus, he gives considerable space to the principles and practice of ventilation, to ground-air, and to the germ theory of disease. All these subjects he treats in a very comprehensive manner. We may remark, however, in passing, that he seems to us to give undeserved weight to the ventilating force of the transpiration or diffusion of air through the apparently solid, though really porous, walls of buildings—a principle long ago demonstrated by Roscoe, and more recently reiterated and confirmed by Pettenkofer. This source of air-renewal is entirely inadequate; and while no one can doubt its existence after the experimental tests which Pettenkofer has applied for its demonstration, it is nevertheless more curious than useful with regard to ventilation.

The last two chapters of the book are devoted to a discussion of the germ-theory. The author places himself unreservedly with the believers in that theory. He quotes Pasteur admiringly, and has considerable to say in disparagement of Dr. Bastian's well-known views and experiments. Sometimes, indeed, his style of argument with regard to his opponents transcends the didactic and becomes pungent, as, for example, when he says of Bastian that "he reasons from premises that he has not

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* *Air and its Relations to Life.* By Walter Noel Hartley, F.C.S., Demonstrator of Chemistry and Lecturer on Chemistry in the Evening Class Department, King's College, London. New York: D. Appleton & Co. 1875.

first established;" and, again, "If on the one hand, we are asked to believe the arguments of Dr. Bastian, we cannot admit his experiments; and on the other, if we are asked to believe his experiments, we cannot assent to his arguments; but as his reasoning and his experiments should both be in harmony, we see that he has failed completely to make a case." In truth, we have found in these closing chapters a special satisfaction, because of the clearness with which the positions of the combatants concerning the germ-theory are defined.—*Boston Medical and Surgical Journal.*

OBSTETRIC EXCERPTA.

BY JOSEPH HOLT, M.D.

CASES ILLUSTRATING THE SIGNIFICANCE OF VAGINAL EXAMINATION IN OBSTETRIC PRACTICE.

By A. E. Aust Lawrence, M.D.,

Physician-Accoucheur to the Bristol General Hospital.

The following paper is an abstract of one read before the Bristol Medical and Chirurgical Society on October 27th, 1875, and it is intended to show that there are a large number of cases, the true nature of which would be overlooked unless a vaginal examination were instituted.

In the first set of cases detailed, the symptoms pointed to some urinary trouble, either (1) difficulty in passing urine, (2) constant desire to pass urine, or (3) scalding.

The difficulty in passing urine was found to be due in three cases to retroflexion, and in two cases to anteflexion, of the uterus; and, upon replacing that organ and maintaining it in its proper position, the trouble entirely ceased.

The symptom of constant desire to pass urine was found associated with ulceration of os and cervix uteri in six cases, with hæmorrhoids in two cases, and with polypi attached just inside the os uteri in three cases. The symptom entirely disappeared on the removal of the causes specified above.

The symptom of scalding on passing urine was found to be due in four cases to varying degrees of prolapsus uteri, not allowing the bladder to be properly emptied, in consequence of which the urine underwent slight decomposition.

The second set of cases pointed to some alteration in the menstrual function; and the patients simply complained of troubles due to the "change of life," to use their own expression. The main symptom was excessive and frequent menstruation in three cases, and no pain was complained of; yet examination revealed extensive malignant disease of the cervix uteri. The absence

of pain must not, as is too often the case, throw on one side our suspicions of malignant disease, or negative an examination.

The third set of cases illustrated that pregnant women suffering from rather profuse hemorrhage when they are about three or four months "gone" should not be looked upon as having miscarried without a proper examination having been instituted; for in three cases an examination revealed denuded and hypertrophied papillæ surrounding the os uteri, which bled freely on pressure, the course of pregnancy not having been interrupted at all. The bleeding surface was in each case healed by applying a little liquor ferri perchloridi and glycerine, equal parts, on cotton-wool.

The other points touched upon in the paper referred to the necessity of making a digital examination as well as by the speculum. This advice was shown to be needed in a case where a small polypus was detected, growing from the os uteri, with the speculum; but a fibroid of the uterus was not recognized until two weeks later, when a digital examination was made. The rule to be observed in making vaginal examinations is, the finger first; after that, if necessary, the speculum, sound, etc.—*British Medical Journal.*

THE MANAGEMENT OF ABORTION.

Dr. W. D. Hazard. (*Virginia Medical Monthly*, December, 1875.)

On being called to a case threatened with abortion, my invariable rule of practice is first to ascertain as nearly as possible the stage of the pregnancy, frequency and the extent of the pains, the amount of hemorrhage, and the cause, if known, that has induced the symptoms present—whether they be habitual or accidental, immediately predisposing or exciting. Having elicited all the information I can from the patient or her friends, I then institute an examination per vaginam. If I find the os uteri dilated and flaccid, with expulsive pain at the menstrual periods, whether attended with hemorrhage or not—if the os be dilated to any considerable size, I regard the case as of doubtful character and make my prognosis accordingly. But if I find the os uteri firm and undilated, even if I find hemorrhage attended with severe pain, I regard the case more favorably; and if the other symptoms warrant the belief that the fœtus be living, I make the effort to save the conception. I endeavor to bring my patient as speedily under the influence of opium as possible. Having done this, I endeavor to keep her under the influence of the drug as long as any symptoms remain of pain or hemorrhage—experience having taught me that many cases may be carried to a favorable termination that under a more temporizing treatment would result in miscarriage. I am thoroughly

convinced that many cases of abortion are caused by nervous irritability of the uterus, resulting in an intolerance to the presence of the fœtus in the womb; hence nature endeavors to rid the organ of its contents by expulsive efforts. If this irritability be overcome by the free and full administration of the sedatives and narcotics, the pregnancy may oftentimes be saved.

I do not think authorities have laid stress enough on the importance of thorough investigations in such cases as I have spoken of, to enable the practitioner to make a clear diagnosis. Neither do I think they attach sufficient importance to the wonderful powers of opium, administered with the view of procuring its full effect. In my hands, it has seldom disappointed my expectations.—*Chicago Medical Journal and Examiner.*

A CASE OF PROLONGED GESTATION.

Prof. Frank Wells. (*Bost. Med. and Surg. Jour; Obstet. Jour.*, December, 1875.)

Mrs. M., a lady of great intelligence, had sexual intercourse with her husband on August 27, 1874, two days after the completion of her monthly period. On the following day her husband was called away by business, which detained him from home until the existence of pregnancy had declared itself to his wife by the cessation of the catamenia. She quickened in the early part of January, 1875, and naturally expected to be confined about the 3d of June, for which period she engaged her nurse. Labor did not come on, however, until June 26th, nor was it completed until the following day, exactly three hundred and four days from the date of sexual congress.

The birth, which was a tedious one, necessitating the application of the forceps, was chiefly characterized by the almost entire absence of liquor amnii, only sufficient being discharged to make upon the sheet a stain of the size of a silver dollar. The child, which weighed eight and one-half pounds, looked as though it had been, in a measure, macerated in the amniotic fluid, its skin being loose and wrinkled, and the epidermis peeling off in strips. At this date (November, 1875), the child (a boy) is healthy and vigorous, and weighs eighteen and one-half pounds.

The case is remarkable, not only for the long continuance of the gestation, but also for the undoubted evidences of the absorption of some, at least, of the liquor amnii through the cutaneous surface of the fœtus. That this must have been the case is indicated by the fact that as late as the eighth month the child was quite freely movable in the uterine cavity, which shows that at this time there must have been some fluid in which it could float; and still further by the absence, during gestation,

of all painful motions of the child, which would undoubtedly have been felt, had the solid contents of the womb come in direct apposition to the uterine walls, without the medium of a protecting fluid.—*Chicago Medical Journal and Examiner.*

PROFESSIONAL RESPONSIBILITY IN PRODUCING ABORTION.

To the Editor of the Medical Record:

Dear Sir—In the last number of your journal, there is a letter upon the subject of criminal and abortifacient drugs, signed "C.," which suggests a few words in reply.

In answer to the question as to the "properties of aloes," we will quote from a few well-known authors.

Ringer says aloes acts mainly on the large intestine and rectum; by its action on the rectum it sympathetically affects the neighboring pelvic organs, as the uterus; and is useful in many cases of amenorrhœa and deficient menstruation.

Headland says, aloes appears to act on the lower part of the intestine, and is therefore objectionable in cases of pregnancy or of uterine disorder.

Scanzoni classes aloes with savin and ergot, as a medicine capable of determining the blood towards the organs of the pelvis, while

Barker, in his work upon the *Puerperal Diseases*, says that he has for many years given aloes to pregnant women, with a tendency to hemorrhoidal affections in sufficient quantity to secure one easy, free daily evacuation of the rectum.

From these statements, we conclude that aloes may be given in some cases of amenorrhœa with advantage; and that although it acts upon the rectum, and the uterus, it has been found useful and safe to administer it in certain conditions arising during pregnancy. We believe the same is true of ergot, savin, and digitalis; hence we see no reason for considering any one of these medicines an abortifacient. They are, indeed, often of the greatest service in checking a tendency to abortion; but much discrimination should be exercised in the choice of cases for which they are applicable.

Let us now review the "circumstance" which you related to the attorney, beginning with the words "some few years ago." The case is briefly as follows: A married woman had not menstruated for "over three months," and her husband applied to you for medicine to "make her turns come regularly." Without becoming in the least degree familiar with her condition, in fact without seeing her, you prescribed a "compound, the basis of which was aloes." This is the form of practice we are constantly condemning in the unprincipled druggist—the medical impostor, and the advertising abortionist. In most cases, indeed, they are

compelled to exercise more care than was shown by you in this case. For should disastrous results follow, they cannot take refuge in a learned diploma, nor call upon the medical profession to "help them out."

We do not pretend to know what your object was in prescribing this compound; but if, as we infer, you desired to restore the menstrual flow, you might with equal and even greater propriety have made use of other means; as, for example, the injection of hot water into the vaginal canal—the stimulating foot-bath—local applications to the cervix uteri, passage of sound into the uterine cavity, etc., for these are methods indicated in many cases of amenorrhœa, and we confess surprise that you did not resort to one or more of them. Probably, however, you have tested your "compound" so frequently under similar circumstances, as to have complete confidence in its sufficiency. Sure enough, in eight or ten days you were summoned to see your patient—the courses which had been absent for three months and over had returned. Happy result! What an excellent compound! But your attention is called to something else, and you rupture the sac (a most laudable procedure, for it marks the beginning of careful practice). Then you tell your readers you "discovered a fœtus" at least three months old. The diagnosis was a good one, but made rather late. You should have discovered it ten days before, within the uterus.

Now we do not accuse you of criminal intent in this matter; we are not even prepared to assert that your "compound, the basis of which was aloes," produced the abortion. You cannot, however, be too severely blamed for administering this drug, at random, while in entire ignorance of the woman's condition. Such practice is an abuse of professional power, and if the medicine you gave was the cause of, or increased in any degree the tendency to, this abortion; or if by previous knowledge of her condition, you could have by advice or medicine preserved the life of the fœtus—then are you partly responsible for its death.

Ignorance does not excuse you; since it was here your special office as a physician to investigate and know; and whether "this fellow" (the husband) designedly or innocently misrepresented the facts, does not in the least alter your responsibility. If you were duped, so much the worse.

One word in conclusion: your reference to abortionists and their numerous followers throughout our country suggests a remark, by way of admonition to our profession. Let us remember, that the number of *criminal* abortions is insignificantly small, as compared with those produced by disease, and although we are familiar with many of these diseases, yet we have not made ourselves master of them. Moreover, recent investigations plainly indicate that we have as yet learned to recognize only the very smallest percentage of actual abortions: that abortions chiefly occur at the first or second month, and pass unnoticed. In view of these facts, and their important practical bearing,

what a great demand is made upon the physician for earnest and devout labor in this department of science.

Again, in our relations to families as guardians of health and life, are we doing what we can to prevent the accidents and dangers to which fœtal life is exposed?

Especially let us be on our guard lest, by careless medications, we be often made unwilling participants in the crime of infanticide. Yours truly, H.

—*Medical Record.*

CASE OF PROLONGED PREGNANCY.

By F. R. Lee Strathy, M.D., Harborne, Birmingham.

The following case of prolonged pregnancy may be worthy of record. Mrs. X. lived with her husband up to March 25th, but, owing to his having communicated to her gonorrhœa (which ran into a gleet), she lived *absque marito*, from the above-mentioned date till the following August. She called in September and engaged me to attend her in her confinement, stating that she expected it take place on December 25th. At the latter date I saw her, but there were no signs of approaching labor, at which she was much astonished, having previously borne six children, and always being confined within a day or two of her reckoning. However, labor did not come on till the night of January 16th, and it terminated on the following afternoon. The child (female) when born weighed about five pounds; the umbilical cord was very thin and weak, and looked shrunken; the placenta was normal in size, but darker in color and more easily broken down than usual, and a considerable amount of flooding occurred. Reckoning from March 25th (the date of the last connection) to January 17th, the period which elapsed, is just 298 days, On referring to Churchill's *System of Midwifery*, I observe cases of prolonged pregnancy mentioned as having occurred in the patients of the following gentlemen, viz., Dr. Beatty's case, 291 days; Mr. Skey's case, 293 days; Dr. Ashwell's case, 300 days; Dr. M'Ilvain's case, 293 days; Dr. James Reid's cases, 287 and 293 days.—*British Medical Journal.*

AN INSTANCE OF UNUSUALLY HIGH TEMPERATURE IN A PUERPERAL PATIENT.

By Samuel W. Torrey, M.D.

Mrs. D., primipara, was delivered, naturally, of a healthy infant, at five o'clock a. m., Saturday, March 25th. Patient was very calm and quiet during the labor, and was quite comfortable

at my evening visit. Condition normal through Sunday and Monday; temperature 99°. On visiting her Tuesday afternoon, I learned that she had not slept during the previous night, but had been much harassed by the tormenting, irritating pain of prolapsed piles; there also had been considerable pain in the breasts. Pulse not particularly feverish, rather irritable, 106°; respiration natural; skin, to the touch, not excessively warm; tongue moist, with slight white coating; temperature, by thermometer under the tongue, at the end of three minutes, 108°; at the end of five minutes, 108.5°. Examination revealed, protruding from the anus, a mass of piles, not inflamed, about as large as a small biliard ball, which, with some difficulty, after prolonged gentle manipulation, I returned through the sphincter. Gave ten drops of fluid extract of veratrum viride, and ten grains of Dover's powder. There had been no nausea, no chill, no pain in the abdomen; there was nothing abnormal about the lochia, and there was no unusual sensitiveness to pressure over the uterus. Temperature next morning, 100°; milk flow established; patient quite comfortable. A mild saline cathartic moved the bowels gently, and the only further trouble was due to the relaxed condition of the sphincter, causing an occasional prolapse, which was satisfactorily overcome in a few days, by the use of suppositories containing bismuth and extract of opium. All symptoms of metritis or peritonitis being absent, the fever being removed by replacing the piles, and the flow of milk becoming fully established, lead me to conclude that the exceptionally high temperature was caused by the constant and severe irritation arising from the prolapsed piles, augmented by "milk fever." This case appears to me a good illustration of the value of the thermometer and its frequent application in puerperal cases, the physician's hand proving, as in this case, an imperfect means of estimating the degree of fever present, a due appreciation of which, early, is often of vital importance to the patient.—*Boston Medical and Surgical Journal.*

ERGOTA AS A GALACTIFUGE.

By C. Henri Leonard, M.D., Detroit, Michigan.

Recently I had quite a novel experience in the use of ergota. The story, in short, is told in the caption of this article. Deeming, however, a little prolixity not unacceptable, I give you a somewhat brief *résume* of the case.

Mrs. ——, aged 26, had a rather hurried, otherwise normal, confinement. On the third day the breasts were full; no fever or other abnormal symptom occurred. On the fourth and fifth days there was a free secretion of milk, so much so that the breasts were relieved by manipulation, the babe not being able

to take it all. On the afternoon of the 5th day, my patient was doing so nicely that I gave her permission to sit up (bolstered) in bed a few moments. She exceeded my permission, and so held the babe, and "changed" it. She became quite tired, and before lying down a pretty sharp hemorrhage (uterine) set in. I gave her twenty minims of the fluid extract of ergot (Parke, Davis & Co.'s manufacture), combined with some simple adjuvants, twice during the evening, the hemorrhage then ceasing. On the afternoon of the next day, after being guilty of the same imprudence as on the day before, the flowing again occurred, even more freely than before. I then placed her upon the same treatment, directing four doses daily, to be continued two or three days. She was thus getting about eighty minims of the ergot daily. On the second day of the taking of the drug the secretion of the milk was notably lessened. There was no fever, or other abnormal symptoms made manifest. On the third day the supply was so much lessened, that artificial feeding of the infant was necessary, both breasts being equally deficient in the amount of nutriment.

I was completely nonplussed at this, for my patient, otherwise, was doing as nicely as any woman could do; and in her former nursing period the supply had, for a long time, exceeded the demand. However, I withdrew the ergot mixture; not because I *then* attributed the trouble to that, but more to satisfy her, as she attributed her trouble to the medicine. Upon a second thought I was inclined to side with the views of my patient, and believe the ergot to be at the bottom of the mischief. My reasoning was, that if it will stimulate the nonstriated fibres of the uterus, intestines, arteries and veins (M. Vulpian) to contraction, thus diminishing the blood supply, why may it not, for the same reason, deprive the breasts of their usual amount of blood and thus lessen the throwing off of the milk cells, and diminish the amount of secretion? Further than this, the same action might be conceded as taking place in the walls of the secreting cellules and ducts of the mammæ, and so aiding in diminishing the milk supply—something of the same line of action that is manifest in checking certain watery diarrhæas, even though they (the intestinal discharges) may be more properly classed with transudation rather than secretion.

As a clinical proof of the truthfulness of my reasoning, I would state that in a few days the milk was again secreted in its normal abundance, and the child (at this writing about two months of age) receives all the nourishment it needs from its mother. There have been at no time any symptoms of fever, diarrhœa, pelvic tenderness, or anything of a suspicious character in the symptoms presented by the mother, save the one, hemorrhage, which was readily stopped by the use of ergot.

Nothing in my library gave me any similar account of the action of this drug, neither could I learn, upon inquiry, that any of my friends had experienced the same results from its admin-

istration. Some days after this episode of mine, *The Richmond and Louisville Medical Journal* came to hand, and in an essay upon Ergot, by Dr. Hadra, of Texas, I find that he quotes Le Gendre as an authority for using the drug in galactorrhœa, but only refers to it incidentally. However, in the "Clinical and Pharmacentical Department" of the same number of the above Journal I find the following *excerptum:* "During an epidemic of *secale cornutum*, in the district of Simbirski, Dr. J. Schtscherbinenkoff found that among the symptoms of ergot-poisoning was a diminution, or a complete arrest, of the secretion of milk in lactating women. The same result was found to occur in cows that had been fed on meal which contained ergot, or had been littered with carelessly threshed straw which still contained some affected ears. Dr. S. conceived the idea of employing it as a remedy in case of threatened abscess of the breast, and carried it out in many cases, with great advantage. Two multiparæ, who had suffered at each previous confinement from abscess of the breast, took some of the drug with the happiest result. He has also found the drug useful in cases of 'milk fever,' and also at the weaning of the child, whether at the normal or an earlier period."

This is the extent of the literature upon the subject, so far as I am acquainted with it. Certainly, if the action of the drug, as witnessed in my patient, is to be anything of a criterion of its reliability as a galactifuge, the customary belladonna, magnesiæ sulphas, and potassii iodidum treatment must be superseded in the treatment of many of the common ailments of our nursing women. Have any of the Journal readers had any similar experience with the drug?—*Chicago Medical Journal and Examiner.*

SURGERY.

[Compiled by SAMUEL LOGAN, M.D., Professor of Anatomy and Clinical Surgery Medical Department, University of Louisiana.]

IRRITABILITY OF THE BLADDER TREATED BY DILATATION OF THE URETHRA.

In the *London Lancet* for March, Dr. H. Bendelack Hewetson records a case of great interest to the profession, as demonstrating the entire success of a mode of treatment recently introduced. The patient was a female, aged 36, who for fifteen years had been under the necessity of rising "every half hour or hour" during the night to urinate. The urine passed in small quantities with great effort and pain, and there was a constant sense of weight and bearing down. Retention of urine came on occasionally, requiring the catheter. Her general health was much broken. On examination, the orifice of the urethra was found

surrounded by warty growths. Under the influence of chloroform these were removed, and also a small hemorrhoidal tumor, and at the same time the sphincter ani was forcibly dilated by the fingers. Partial relief followed, but the relief was temporary. Dr. Hewetson placed her again under chloroform, and introduced the dilator, and slowly stretched the urethra so as to admit of the introduction of the forefingers into the bladder, distending not only the canal but the neck of the bladder. No bad effects of any kind followed, and for the first time for years she was not disturbed during the whole night. Her painful and distressing condition was entirely removed within a week. She gained strength and health rapidly. No return of disease occurred. In six weeks she took a walk of eight miles without suffering. In short the cure was complete and permanent. "Thus, then," says the writer in conclusion, "were miserable and intractable sufferings of years, shutting out this poor woman alike from society and employment, put an end to by an operation whose best recommendation is its simplicity and success."—*Pacific Medical and Surgical Journal.*

In a recent report on Gynæcology, read by Dr. P. F. Mundé to the New York Medical Journal Association, we find the following on Surgery:

GASTRO-HYSTEROTOMY.

Within the last year nine cases of this operation have been performed, and of these six recovered. Billroth, after several unsuccessful operations, has finally come to recommend it as justifiable, having succeeded in one of his own cases.

TREATMENT OF GONORRHŒA IN THE FEMALE.

Dr. Palmer had recommended that the patient be placed in the knee-elbow position, air be allowed to distend the vaginal canal, the vagina be thoroughly cleansed, and after the water has been allowed to escape, refilled with a solution of sulphate of zinc of the strength of a tablespoonful to the half-pint of water. Reyeated daily, and a complete cure might be expected within a week or ten days.

Attention was called to the fact that vaginal syringes should never have a central opening, for with a hole in the centre of the tube, there was liability of exciting unpleasant, and, it may be, serious symptoms, especially in cases of wide cervix, ruptured cervix, or a cervix left open by operation, because of the injection of water into the uterine cavity. For that reason the fountain syringe was preferred.—*Medical Record.*

SECTION OF UNITED FRACTURE AND WIRING OF THE ENDS.

Reported by Prof. Paul F. Eve to the Nashville Medical Journal, and copied into the Richmond and Louisville Medical Journal for May, 1875.

Mr. A. Smith received a fracture of the right collar-bone from being thrown from a mule. The fragments had united with a lapping of one inch, and with more than the usual amount of deformity. The head of the humerus so pressed upon the nerves and blood-vessels of the axilla as to seriously interfere with the use of the right arm. Prof. Eve cut down upon the point of fracture by making a semilunar incision three inches in length, the convexity down, the middle of the incision reaching below the clavicle at the point of fracture. The flap was dissected up, exposing the overlapping fragments fully, and the subclavian artery and internal jugular vein. The viciously-united fragments were divided with a pair of cutting pliers, and the roughened ends squared off. The periosteum was cut through and a hole drilled in each fragment half an inch from the end, a silver wire passed through, and the ends of the fragments brought into apposition by pressing the shoulder backward, outward, and upward. The wire was then tightly tied and the ends thrust into the holes. The wound was closed with sutures and adhesive plaster, and dressed with carbolic lotion. A soft pad was placed in the axilla, and the hand carried across the chest and placed in a sling. The patient suffered from ague and erysipelas after the operation, but got well, with a fine result. To use Prof. Eve's words: "And why not; for who does not know the innocuity of silver wire to the flesh, and how easily it may become incased in callus? I, therefore, recommend the metallic suture for all fractures of the clavicle, recent or otherwise, believing that the slight exposure made by the operation as described would not much increase the danger in such cases, wherein the methods now resorted to fail to keep the ends of the broken bone in apposition."—*New York Medical Journal.*

A COLLES'S FRACTURE OF THE LEFT RADIUS.

By William A. Byrd, M.D., Quincy, Ill.

William M. Francis recived a Colles's fracture of the left radius in 1868, when fifteen years old. * * * When I first saw him, six years after the receipt of the injury, he was unable to straighten the left arm to a greater extent than is represented in Fig. 1.

There was an ununited Colles's fracture of the radius, with considerable cupping of the palm of the hand, and an inability to either fully extend or flex the fingers. November 1, 1873, I cut down upon the ulna, opposite the fracture of the radius,

and carefully detached the periosteum with its adherent muscles over about an inch of the continuity of the bone, which was then resected with a chain and metacarpal saw, something over an inch of the lower end of the ulna was left. An incision was made over the ununited fracture at the radial side of the arm, and the ends of the atrophied fragments cut off with pliers. A hole was drilled to the medullary cavity of each of the fragments of the ulna, and an iron wire passed and twisted tightly, bringing the fragments closely into apposition. The ends of the radial fragments were not wired. Several different kinds of splints were tried and laid aside for one of plaster of Paris, moulded to the back and lower half of the forearm from the elbow to the ends of the fingers.

February 7th.—The radius had united. The wound on the ulnar side of the arm was nearly closed, but there was a sinus on the front aspect of the arm, midway between the radius and ulna, that led down to the wire, and two small pieces of necrosed bone included in its twist, which being loose were removed. The wire was bright and unchanged. The ulna rapidly healed, and April 8, 1874, when he started for California, the cupping of the hand had been in a great measure overcome. He writes from San Francisco, December, 1875, that his hand and arm are as good and useful as the left hand and arm of most people.

* * * * * * *

Although the lower end of the ulna does not enter into direct articulation with the wrist-joint, yet I could not but believe that the destruction of the attachment of the ligaments connecting the ulna with the carpus, and the exposure of the triangular fibro-cartilage, would be liable to greatly endanger the integrity and usefulness of the joint. Acting upon that idea, I performed the operation above briefly described; and now, if I meet with any cases of fracture of either of the bones of the forearm, having anything like a sufficient loss of bone to cause non-union, or serious deformity, I shall exsect its fellow *in its continuity and not the end*, and wire the ends of the fragments together. I shall, in the event of being called to treat a fractured tibia, with the loss of bone-substance causing a gap, cut down upon the continuity of the fibula and resect sufficient of its shaft to allow the ends of the fragments of the tibia to come together. Such practice I believe will soon be considered the most legitimate for a surgeon to pursue.—*New York Medical Journal.*

TREATMENT OF FEMORAL ANEURISM BY ESMARCH'S BANDAGE.

A patient is at present in hospital undergoing treatment for femoral aneurism, by means of Esmarch's bandage. The aneurism is situated immediately beneath Poupart's ligament, and is

as large as a man's fist. The treatment consists in employing the elastic bandage, and keeping it in position for half an hour each day. During the application of the bandage pulsation is controlled, but on its removal it recommences. The method has been practised for about a week, and so far there seems to have been slight improvement.—*New York Medical Journal.*

ACCIDENTS FROM THORACENTESIS.

The subject of the accidents which sometimes occur from thoracentesis has attracted some attention in the medical societies at Paris. This has suggested an article, to be found in the *Gazette Hebdom.*, February 11, 1876. Cases of sudden death after thoracentesis are rare. Three cases have been recently observed which may be attributed to emboli caused by the sudden removal of pressure on the lungs, but, as clots are formed and emboli occur in cases of untreated pleurisy, it is questionable whether the deaths can be fairly attributed to the operation alone; and also, if an earlier tapping, before the clots had formed, would not have saved life. Certain facts, mentioned by MM. Behier, Lionville, and Terillon, prove that death has occurred from the pulmonary congestion and œdema consequent on the removal of liquid in the thoracic cavity. In the three cases of death reported, however, the pleurisy was complicated by other pulmonary lesion, which, without doubt, acted as a predisposing cause. M. Tennison has observed a dangerous asphyxia occurring during the operation of tapping, after removing but a small quantity of liquid (600 grammes), due in his opinion to sudden congestion of the lung. In this case pleurisy had existed four months. It is probable, therefore, that the expansibility of the lung had been impaired by pseudo-membrane, and that the aspirator, in thoroughly evacuating the fluid, had induced congestion to fill the cavity which the lung was unable to fill by simple expansion. An early operation, and slow aspiration, to cease on the slightest distress of the patient, insure safety.—*New York Medical Journal.*

RADICAL CURE OF HERNIA.

Prof. Nussbaum. (*Allg. Med. Central-Zt.g*, 18, 1876.)

The favorable results obtained by Lister's antiseptic treatment of lesions of the peritoneum encouraged the professor to attempt the cure of hernia by catgut sutures in a few cases where an operation was imperatively indicated by the impossibility of getting a truss to retain the rupture.

After a thorough evacuation of the bowels by cathartics, the

patient was narcotised, and his scrotal hernia was well exposed by a long incision through the integument and the other coverings. All adhesions of the hernial sac with the testicle and spermatic cord were severed, and after a careful reposition of the intestines contained in it, the sac was sown up by catgut sutures as near the inguinal canal as possible.

One centimetre below these sutures the empty sac was cut off and the upper end of it, with the stitches, pushed into the abdominal cavity. The external wound was then closed by antiseptic silk sutures, and the case was treated by a strictly antiseptic dressing.

The healing process went on unattended by any untoward symptoms, and the immediate result was exceedingly satisfactory. Still the professor thinks it premature to venture a definite opinion on this operation.—*Chicago Medical Journal and Examiner.*

A REMARKABLE CASE OF SKIN-GRAFTING.

Dr. Aug. Reverdin, (*Deutsche Zeitschr. f. Chir.*, vi., 418.)

A woman, 21 years of age, while working in a factory was caught by her hair in the machinery and the whole scalp was torn off her head. This accident occurred in April, 1872, and on October 10th, of the same year, she was admitted to Professor Lücke's clinic, in Strasburg, with an immense granulating wound which measured 14 inches (35 centimetres) from the root of the nose to the back of the head, and 11 inches (28 centims.) from one ear to the other. The upper part of the left ear was torn off with the scalp. The surface of this wound exhibited pretty good granulations and a copious secretion of pus, and was surrounded by a stripe of cicatrized and very vascular skin, about one inch (2 to 2½ centims.) in width.

After eight days of dressings with strips of adhesive plaster, the granulations had a more satisfactory appearance, and the grafting process could be commenced

For excising the grafts, Dr. R. used a lance-shaped knife (like the iridectomy knife), the blade of which was concave at the upper and convex at the lower side. From the knife the excised grafts could easily be removed to the wound with a needle where they were secured in their places by plaster strips. When the grafts had taken, the surrounding granulations were touched by lunar caustic in order to favor the formation of epidermis. After seven months the whole wound was healed, and the head was covered with a sound cicatrix in which large blood-vessels could be seen.

During the treatment the doctor made various experiments with transplanting pieces of the skin of dogs and rabbits, and also with larger pieces (one to two inches square) of human in-

tegument taken from the amputated leg of a boy. The latter transplantations were successful, while those made with animal skin all failed.—*Chicago Medical Journal and Examiner.*

FATTY EMBOLISM AS A CAUSE OF SUDDEN DEATH AFTER INJURIES OF THE BONES.

(*The Med. Record*, New York, Jan. 29, 1876; *Berlin Klin. Wochenschrift*, Nov. 1 and 8, 1873.)

Prof. V. Czerny, of Freiburg, taking the reports of two cases as a text, discusses this subject mainly in its clinical aspects. The first case was that of a healthy man, aged 24, who, Nov. 16, sustained a simple fracture of the right thigh in its upper third, caused by falling off a sandbank. The surgeon who was called to him, found that he suffered but little pain at the seat of the seat of the fracture, but could not lie down without difficulty, especially on his back, and could not breathe easily.

On the 18th, the swelling having subsided, a pasteboard splint was applied, the patient at the time finding it very difficult to maintain a half-sitting posture. On the night of the 20th, great dyspnœa and depression suddenly manifested themselves, without inflammation, and he died on the 22d.

The authorities subsequently had the body disinterred and examined. The fragments of bone were in proper position, but both lungs were full of venous blood, and the membranous substance, and blood-vessels of the brain also, were similarly filled. He cites the opinion of Wagner, who, in 1865, states that a sudden fatty embolism was capable of inducing hyperæmia of the lungs, œdema and death; and in 1866, of Busch, who established that the medulla of the bones, when crushed, was taken up by the veins and lymphatics, and caused emboli in the lungs, and death.

Czerny's second case is as follows:

J. S., aged 32, a strong and healthy man, sustained a simple fracture of the right thigh just below the middle, the consequence of a fall from a scaffold. He also had a flesh wound of the chin which was sewed up, and dressed antiseptically. He was taken at once to the clinique, where the limb was dressed and ice applied. The patient complained very little of pain, although quite conscious. This occurred Nov. 14, 1874. On the following day, Prof. C., in a clinical lecture on the case, mentioned that although free from fever the previous day, his temperature that morning was nearly 103° F., and he gave a guarded prognosis. In the evening the temperature was almost a degree higher. Although at night he was free from pain, he was sleepless(?), and had at intervals of three hours doses of about one-eighth gr. each of morphia. Some hours after midnight he was found comatose, with deep and free respirations, accompanied

by coarse râles. The chest was resonant on percussion. Pulse 100, full and strong. He was bled from the arm, but obtained no relief, and died at half-past seven, thirty-eight hours after the injury.

At the autopsy, both lungs contained air and fluid. The left side of the heart was contracted, and there were coagula in both sides. The vessels of the pia mater and of the brain were distended with blood, and in both of these were numerous small ecchymoses. There were extensive extravasation of blood at and about the seat of fracture, but the femoral vein and artery were not wounded. The microscope revealed throughout the lungs a firm injection of all the smaller arteries and the capillaries, with clear fluid fat. Likewise in the brain, corresponding to the small ecchymoses, were branching fatty emboli in the vessels. Fat was also in the vessels of the kidneys and liver. The fatty embolism of the lungs was considered a sufficient cause of death.

Prof. C. quotes the statement from Busch that fatty embolism begins in the first few hours after the injury. The difficulty of respiration would point to this condition. Possibly the slight sensitiveness to pain may also be symptomatic of it.

Shock cannot be held to explain a death after injury, when an interval of several hours of good condition has intervened between the injury and death. He concludes that fatty embolism is of essential significance only after injuries of the bones, and perhaps osteo-myelitis. We may, continues Prof. C., suspect this condition when after such injuries a rapid failure sets in, with interference with the circulation in the lungs; and secondly, in the general capillary circulation, without other cause, and very shortly after the injury is received.—*Chicago Medical Journal and Examiner.*

MATERIA MEDICA AND THERAPEUTICS.

BY E. S. LEWIS, M.D.,

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ON OFFICIAL DOSAGE, WITH SOME REMARKS ON HOMŒOPATHIC TINCTURES.*

By Robert Farquharson, M.D.;

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It is now more than two years since our late lamented colleague, Dr. Anstie, referred, in the pages of the *Practitioner*, to the very uncertain and misleading directions of our official dos-

* Read before the Medical Society of London.

age. The text on which his remarks were founded was a case which made a good deal of sensation at the time, and provoked much varied controversy as to the best mode of obviating the disasters which might at any time arise from a similar combination of circumstances.

A physician of Ramsgate, being in attendance on a severe attack of delirium tremens, prescribed half an ounce of tincture of digitalis, to be repeated if necessary in four hours, but the chemist, observing that the quantity was eight times larger than the maximum dose allowed by the British Pharmacopœia, refused to make up the medicine as ordered.

The patient died, and in the inquiry which followed, the medical man expressed his belief that digitalis used according to his instructions might have arrested the disease and saved the sufferer's life. And although the chemist had so far a good line of defence, by appealing to the standard book of official reference in his particular department, he was severely censured by the coroner on the reasonable ground that it was his clear duty to have communicated with the prescriber, and ascertained whether the apparently excessive dose was actually ordered with deliberate intent. Now, although public opinion at that time turned strongly against the man who, by his excess of caution, contributed to so unfortunate a result; and although it was very properly suggested that an unusual dose of any poisonous substance should always be explained by some well-understood mark or symbol, it is impossible not to feel that in this, as in most cases, there is something to be said on both sides. We must remember that great responsibilities devolve on those who are empowered by law to dispense medicines, that the issues of life and death may depend on the slightest slip or mistake, that they may be at any time held liable for serious consequences. On the other hand, we are all of us liable to error, and in our younger days many of us have, no doubt, inadvertently put on paper some hurried combination of drugs in dangerous quantity, which, if made up as written, might have caused an inconvenient or even fatal result. It is clear, therefore, that the deliberate reading over and consideration of our prescriptions by skilful and highly practised dispensers, may be of essential service in correcting mistakes which carelessness or ignorance not unfrequently bring about. And although the British Pharmacopœia was not originally intended in any way to regulate dosage, although information on this score was only added to its second edition "in compliance with a generally expressed wish," and although these directions are not authoritatively enforced by the Council, and "the practitioner may rely on his own judgment and responsibility in graduating the doses of any therapeutic agents which he may wish to administer to his patients," the very fact of the doses being appended at all gives them an official sanction which it is clear was not originally intended. But these directions, such as they are,

constitute all which the druggist has to rely upon for information and support under doubtful and exceptional circumstances. Supposing he is called upon to give over into inexperienced hands a bottle of medicine, which his *vade mecum* tells him is far too strong, and supposing at the same time that he is unable to communicate with the prescribing medical man, he is undoubtedly placed in a position of some perplexity. Grant also, however, that the doctor whose prescription is either rejected *in toto*, or mutilated in some way, and the patient whose interests may be gravely imperilled by such a line of action, are possibly, sufferers both in reputation and in health, and the evidence begins to point pretty plainly to the necessity for some alteration in our present system. I do not suppose I can be singular in my experience in having had prescriptions referred back to me for supposed correction, because I have ordered doses which are well known to be necessary for the proper development of the action of a special drug. Thus, on one occasion when I ordered succus conii in ʒi doses for acute chorea in a girl of ten, the dispensary prescriber considered it his duty only to give a drachm, and on my next visit pointed out with some concern what he naturally believed to be my mistake. Here no harm was done, for the patient afterwards getting her proper dose was rapidly cured, and the dispenser hailed with satisfaction this additition to his knowledge; but the recollections of my hearers will doubtless bring before them many instances of confusion and delay caused by the fact of our having no properly constituted official guide for prescribing.

I will only mention one more instance out of others which I have met with in practice, and that was when, on taking the hospital duty of a friend, I prescribed 20 minims of belladonna for a child of three years old. I shall never forget the consternation with which the pharmaceutical official presumed that I had dashed off at least 10 minims too many in the bustle and hurry of out-patient work, and his surprise when I told him that it was my common custom to prescribe much larger doses with benefit.

Now, although we have seen that the Medical Council did not primarily intend the British Pharmacopœia to be a rigid standard of dosage, and although they also expressly state that the quantities are "intended to represent average doses in ordinary cases for adults," we have also seen that the public have stamped a thoroughly official character on the book, and it has come to this, that the maximum and minimum quantities there enjoined, are now all but universally held to represent the limits within which drugs may be safely or even legally prescribed. Let us, therefore, see in how far the teaching thus laid down is in accordance with modern therapeutics.

To begin, then, with conium, to which reference has already been made, we find that the authorized dose of the succus is represented as varying from ℥x. to ʒi. Now the largest of

these quantities is probably without any influence on the human frame, and it is hardly necessary for me to remind you that the experiments of John Harley have shown that we must give from one to four or six ounces before we can expect to derive real benefit from the drug, eight ounces even having been reached without ill effect.

Belladonna, again, is allowed in extract only up to half a grain, which is too small, and to ℥xx. of the tincture, which is far within the mark, as I have given from a drachm to ʒijss. to patients suffering from incontinence of urine with marked advantage.

There is also a curious timidity shown in the directions about quinine, 10 grains of which is held to be the maximum dose. Now, I suppose no fact in medicine is better established than the necessity for administering 20 or 30 grains, or even more, in bad cases of intermittent fever, and the valuable antipyretic properties of the drug only come into play when the dose reached is three or four times in excess of that allowed by the Pharmacopœia.

Then in the case of aconite two mistakes occur, the minimum quantity of ℥v. is too large, for we have all seen the remarkable power of drop doses frequently repeated in checking various inflammatory conditions; and the maximum is also too large, 15 minims being far from a safe prescription in the case of most adults who have over-passed middle life. We have already seen that tincture of digitalis is restricted to ʒss, and we know that the successful treatment of delirium tremens by means of ℥ss. doses is now one of the commonplaces of medicine; and Dr. Anstie draws special attention to the insufficient quantity ʒi. of tincture of hyoscyamus allowed, telling us that ℥ss. is often required in asylum practice.

It must be within the experience of all to have prescribed pot. bromide in larger doses than 30 grains, and the absurdity of restricting iodide of potassium to 10 grains is almost too patent to require further remark. We all know that some of the most brilliant successes of medicine and surgery have been secured by the administration of 20, 30, 40, and even 60 grains.

Coming next to ipecacuanha, we find that, although its properties as an expectorant and emetic are recognized, no mention is made of its specific anti-dysenteric powers; and a dispenser would therefore probably consider it his duty to cut down a prescription in which doses of from ʒss. to ʒj. of the powdered root were ordered to be taken every two hours.

The tonic dose of sulphate of zinc is put down at from one to two grains, although it is well known that more than double this quantity is often well borne in chorea; and 30 minims is considered the maximum quantity of tinc. of ferri perch., although in erysipelas and acute rheumatism ʒj. is often administered with benefit. The minimum doses of liquor of morphi, hydrate of strychnia, and tincture of nux vomica, are all placed too high at

℥x. gr. $^{1}/_{30}$, and ℥x. respectively; and the researches of Ringer have shown that we derive little benefit from the use of tincture of lobelia in asthma unless we carry the dose beyond that laid down by authority at ℥30. Now, although these are undoubtedly the principal instances in which the Pharmacopœia is hopelessly at variance with the modern development of therapeutical science, there are many other examples which I will not weary you by detailing.

Enough, I hope, has been said to convince you of the necessity for some alteration in the rules laid down for our guidance in the matter of dosage. The experienced medical man of course orders his drugs according to the dictates of his own personally acquired knowledge, and often arrives at practical conclusions, for which we might look in vain in our text-books; but the beginner feels himself hampered by authority, and the dispenser has his hands tied. On his counter lies the Pharmacopœia for constant reference, and, although not originally endowed with absolutely official powers, it has had that character forced upon it, and must abide the consequences. In any court of justice, in any professional controversy, its decision may at any time be invoked; and we have a right, therefore, to expect that we shall not be misled when its influence is thus brought to bear upon us. Not only should the scale of doses be at once raised, but pains might be taken to indicate the largest quantities which may be, or have been, given with impunity. And the important question of minimum doses, on the principle which is so rapidly gaining ground, of the advantages to be derived from keeping the system saturated with a drug, prescribing it—that is, in minute quantities—at such short intervals that its influence on nervous or vascular function shall not be temporarily arrested by elimination, might also receive attention. In short, without converting the Pharmacopœia into a treatise on therapeutics, the attention of those who have so ably superintended its construction might be called to the propriety and even necessity for some alterations in the rules which it lays down for the prescribing of drugs. To this it may of course be objected that therapeutics is not in a sufficiently settled state, nor is medical opinion on the subject sufficiently unanimous to justify any authoritative utterance on these points, and in particular the question of frequent divided doses has not yet been fully worked out. This objection was foreseen by Anstie, and it remains with you to decide whether something might not be done by us to carry out his suggestions, and thus most effectually prove our reverence for the memory of one who was ever foremost in advocating the cause of truth and progress. Let me quote the concluding words of his paper: "No greater service could be performed by the colleges or great medical societies than the formation of a committee of competent men for the special investigation of this question of dosage, for it is a subject which is only in its infancy, and the best knowledge which exists about

it is undoubtedly confined to a very small section of the medical profession. Now, although it may be true that the *best* knowledge of dosage has not yet become the common property of the profession, there is no doubt that enough is known to justify a pretty complete official classification; and as the expense of frequent reprints of the British Pharmacopœia would be considerable, I venture to suggest the occasional publication of a posological table in the form of addendum, which might give effect to recent investigation, and supply the not unnatural wish which generally prevails, for trustworthy and authoritative information on the subject of maximum and minimum doses.

Before leaving the subject of the British Pharmacopœia, I may lay before you another anomaly connected with dosage, which has been more especially exposed by Mr. J. A. Cope, of Derby, in the *Pharmaceutical Journal* for April 17th, 1875. He there points out how inconsistently the doses of various drugs vary according to their preparations. Thus, the quantity of tincture of ergot sanctioned by official authority is equivalent to 13½ grains of the powder, whereas that of the powder or liquid extract corresponds to 3 grains. Thirty minims of tincture of digitalis equals three grains of the dried leaves, whereas the ordinary dose of the infusion is only equivalent in value to 1½ grain.

Aloes varies in its different preparations from three grains to eight grains; of tincture of belladonna, ℥ 30 equals gr. j. of leaf, whereas gr. j. of the extract corresponds to ʒj. of the tincture, whilst nux vomica supplies a still more glaring example, seeing that ℥ 20 of the tincture corresponds to two grains of the powdered seeds, whereas of the extract two grains equal ʒss. It is difficult to see that these curious discrepancies have been made with any deliberate intention, and the inference is therefore fair that they have merely crept in from some carelessness or want of method on the part of the constructors of our national Pharmacopœia. Whilst fully acknowledging the great benefits which have resulted from the pharmaceutical fusion of Scotland and Ireland, and the establishment of one national standard in the United Kingdom, it appears to me to be the duty of every one to make such suggestions for the improvement of future editions as may seem founded on reason; and it has been a great gratification to me to bring a subject before you which specially engaged Anstie's attention, and to the due furtherance of which he was about to summon all the resources of his energetic intellect when his career was unhappily brought to a close. There can be no doubt, however, that caution is a safe side on which to err, and the restrictions under which our chemists and druggists are now placed are our great safeguards against accident and disaster; and we may congratulate ourselves on this all the more when we see the looseness which prevails in homœopathic pharmacy. We all know of the change which has recently

taken place in the principles of this class of practitioners, and how the feeble dilutions of former years have been replaced by excessively strong tinctures. This change, however, has not been followed by any alteration in the laws regulating prescribing; and we accordingly find these deadly poisons dealt out freely to all comers without restriction, and compounded by druggists who are not necessarily possessed of any legal qualification. In a letter from "A Chemist." published in the *Pharmaceutical Journal* for June 29th, 1872, this point is strongly urged, and the anomally exposed of permitting homœopathic druggists to evade the Pharmacy Act by practising their trade without registration or examination, and making up patent and poisonous medicines under the same conditions as when their operations were confined to sugar globules and distilled water.

That many of the modern homœopathic preparations are of dangerous strength has long been generally known, but to Dr. George Johnson is undoubtedly due the credit of bringing the matter home to us more directly. It is unnecessary for me to do more than remind you of his paper read before the Clinical Society, and which, supplemented by additional cases, is printed in vol. vii. of their *Transactions*. Dr. Johnson brings forward five cases, occurring in his own practice and in that of others, in which unpleasant and even dangerous symptoms, consisting of epileptiform convulsions, violent pain in the head and spine, nausea, stupor, etc., were caused by doses of the concentrated homœopathic solution of camphor, ranging from eight 2-minim doses up to twenty 25 minims, and a teaspoonful. In some of these entire recovery only very slowly took place, and various distressing nervous sensations were experienced in the case of a young lady for fully eight months, after a single dose of 25 drops. As a contribution to our knowledge of the actions of camphor on the healthy organism, the interest of these cases is much enhanced by the accurate way in which the various poisonous influences on brain and spinal cord correspond with the account given of the physiological action of this drug as deduced from experiment by Nothnagel. From an analysis obtained by Dr. Johnson, it would appear that this homœopathic solution of camphor contains one ounce to one and a quarter ounce of spirit, being stronger than the spt. camph. of the B. P., in the proportion of $7\frac{1}{2}$ to 1; and, considering the freedom with which it is used in domestic medicine, Dr. Johnson has undoubtedly done good service by directing attention to its dangerous properties.

Feeling desirous of obtaining some approximate idea of the strength of the strong or mother homœopathic tinctures, I procured some of the tinct. aconiti, buying it over the counter at a chemist's shop without any difficulty, and made the following experiments: At six minutes to three o'clock on Wednesday, January 19th, I injected five minims beneath the skin of a full

grown rabbit, and no effect being produced in five minutes I injected 15 minims more. In three minutes, violent convulsive movements of the diaphragm set in, with attempts at vomiting, and a peculiar fighting motion of the fore-paws, as though trying to remove some obstruction about the mouth. A paralyzed condition of the hind-legs followed, and death ensued, after a paroxysm of general convulsions, in exactly five minutes after the injection was performed. Ten minims proved fatal to a rather smaller animal in twenty-five minutes, the symptoms following exactly the same sequence and regularity. I find that 90 drops, dropped from the ordinary homœopathic drachm tincture bottle, correspond to 60 minims; and we therefore see that 15 drops is sufficient to kill a rabbit.

I have no doubt that even a smaller quantity would also have caused death, but being unwilling to multiply these experiments, I lay before you my present evidence, which seems enough to show that we have here a potent and dangerous poison, sold publicly to any one, and doubtless recklessly used in domestic medicine.

So far as I can make out, the mother tincture of homœopathic practice about equals in strength our liniment of aconite, which we all know to be a very much stronger preparation than the tincture of the British Pharmacopœia.

Coming now to the tincture of belladonna, I have found on personal experiment that ℥ℙx of the homœopathic mother tincture taken at night caused some dryness of the throat, with disturbed sleep and much dreaming; and three more doses at intervals throughout the next day were sufficient to keep up the same parched feeling about the mouth and throat, with an uncomfortable sensation of dryness and irritation over the skin generally.

This is therefore evidently much stronger than our own tincture, which may usually be given in doses of from 15 to 20 minims, without the induction of physiological symptoms until the drug has been persevered with for some time. I have once seen ten doses of 10 minims cause some discomfort to a delicate young woman; but, on the other hand I have now a girl of fourteen under treatment for incontinence of urine who is taking with marked benefit ʒii. ss. thrice daily. An unpleasant dryness and thickness about the throat always precedes dilatation of the pupil as the first indication that the remedy is beginning to exert its constitutional influence, and the early development of these effects when experimenting on myself shows how strong the preparation in question really is. I have not made observations on any of the other vegetable mother tinctures, but find from the Pharmacopœia that they are as a rule constructed on the uniform principle of one part of the juice of the plant to one of spirit, a strength which must render their use most dangerous, unless under strict medical supervision.

As a fair sample of the metallic preparations of the homœopathic armamentarium, I have selected arsenicum and mercurius, both of which remedies are in extensive use; and being unable to obtain an accurate idea of their strength from the pages of the now antiquated Pharmacopœia, I applied to my friend Mr. Barker, who most kindly placed at my disposal the services of Mr. Brownen, the able analytical chemist of Messrs. Savory and Moore. This gentleman has favored me with the following careful report on the amount of the active principle contained in the first potency of arsenicum and mercurius—

Analysis of Homœopathic Solutions.—Two solutions were received for analysis.

Solution I. was labelled "Arsenicum Alb. Poison. Dose for an adult, one to five drops." This solution was examined for arsenic and arsenicum, as arsenious acid was found

The menstruum was water, and it had a slight alkaline reaction.

The arsenic was estimated by volumetric and gravimetric methods with the following results:

	Volumetric.	Gravimetric.
Arsenious acid.....	grs. .994	.893
Water.....	grs. 100.000	100.000

Or, reduced to fluid measures, one grain of arsenious acid in 102 minims of water. The corresponding solutions in the British Pharmacopœia are each one grain in arsenious acid in 120 minims of solvent.

Analysis II. labelled "Mercurius Cor. Poison. Dose for an adult, one to five drops," etc.

This solution contained the amido-bichloride of mercury, dissolved in alcohol.

The solution was estimated volumetrically as regards its chlorine, and colorimetrically as regards mercury.

These operations gave the following results:

Mercuric chloride.....	grs. .75
Water.....	grs. 100.000

or about one grain in two fluid drachms, and about four times the strength of the solution of the perchloride of mercury as ordered in the British Pharmacopœia,

Both preparations were therefore strong solutions of potent substances, and were rightfully labelled "Poison," as they were within the scope of the Poisons' Act.

Although we have seen that the precaution was taken to label these preparations "Poison," I am not sure in how far they were freely sold, but in any case we find the ground cut from under the feet of the homœopathists, one of whose great boasts used to be that no mercury or injurious metallic substance was ever prescribed by any of their practitioners. Now I feel quite con-

scious that the slight sketch just given of the strength of some of the principal homœopathic tinctures cannot be looked upon as much more than suggestive, and as a text for the remarks of others. I have not ventured to say one word upon, nor do I know anything of, the principles which regulate those who practise homœopathy. It is pretty evident, however, that to dose diseases solely by their names, and to prescribe infinitesimal dilutions, has not proved sufficiently captivating to the enquiring intellect of this sceptical age, and that, in order to sustain the principle of subdivision, excessive concentration still enables the practitioner to prescribe a minute quantity of his remedy. The strong tinctures, which, as we have seen, are freely vended to all comers, have luckily not yet been taken into very general domestic use, or one might anticipate a long series of tragical events, before which even Dr. Johnson's interesting cases would hide their diminished heads. The dangers to be anticipated would seem to me to be fourfold:

1. The free purchasing of these poisons with homicidal or suicidal intent.

2. The rash confidence engendered in the minds of old-fashioned homœopathists regarding the weakness of their drugs and the confidence with which they may be used. A mistake of this sort being made with aconite would not be likely to occur to the same patient a second time.

3. The great probability of the mother tincture being mistaken for some of the dilutions, and recommended right and left in the usual free-and-easy way by amateurs. This might also be serious.

4. And finally, the possibility of the strong homœopathic tincture being mistaken for, and used instead of, our weaker preparations; and in a competition of this nature, we, the allopathists, who are supposed to ruin the constitutions of our patients with enormous quantities of deleterious substances, must undoubtedly yield the palm of potency of dosage to those practitioners, the very essence of whose professional existence was formerly believed to depend on the magical effect of their infinitesimal dilutions.

It is fortunate that those amateurs who delight to dabble in drops and globules use as a rule the third dilutions, which are in all probability powerless for good or evil. I have never been able to get any physiological effects from personally testing any of these tinctures, and Mr. Brownen has been unable to obtain the slightest indication of the presence of even the smallest trace of arsenic or mercury in the attenuations of that strength. But we must remember that the potent mother tinctures are quite open to the public, that any one may go in and buy any quantity for any purpose, and that they are invariably prescribed in the most effective way, by small and very frequently repeated doses. Such being the case, I feel that I require no justifica-

tion for having brought the case forward for your consideration and discussion.—*Practitioner.*

ON SALICYLIC ACID AS AN ANTIPYRETIC.

By Dr C. A. Ewald,

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It is only a few months since that Dr. Butt, from Basle, published a short paper on the effect of the internal administration of salicylic acid (*Centralblatt für die Medic. Wissenschaften*, 1875, No. 18) in reducing the temperature of the body, and to-day we have in our German literature no less than eight or nine authors writing on the same subject. There is ample evidence that some of these authors have committed the mistake of coming to premature conclusions from insufficient experience. But the greatest, and at the same time most trustworthy, portion of these observers has pronounced on the whole such a unanimous verdict upon the effects of salicylic acid that we can come to definite conclusions as to its value.

Since last summer I have myself made use of salicylic acid, and its salts, in Professor Frerich's wards in the Charité Hospital, and I communicated my observations to the Berlin Clinical Society at a meeting held some time ago. I believe myself to have arrived at an independent estimate of the action and the value of this drug; and since the subject seems to have received but little public attention at the hands of the profession in England, I gladly avail myself of the opportunity of publishing the results of my observations in the pages of the *Practitioner*.

My experience extends over upwards of one hundred cases, and the administration of from three hundred to three hundred and fifty single doses. The majority of these cases were cases of typhoid fever. The remainder included nearly all other acute diseases accompanied by high fever, and also cases of phthisis. The general action of the drug was the same in every case, the only difference being one of intensity. The administration of salicylic acid and its mode of operation must therefore be the same in every case, where reduction of temperature is the end desired. I will now consider the several points in detail.

1. *Preparation and Dose.*—It is a matter of indifference whether the pure acid or one of its salts, best the sodium salt, be used. As, however, impure preparations, containing carbolic acid, etc., have a strong astringent and even caustic action, and since, in all probability, the acid undergoes conversion into the sodium salt in the blood, it is better to use the sodium salts at once. Whether however, the acid or its salt be employed, it is necessary that each dose should be a large one, as small or divided doses have little or no effect. Generally speaking, the minimum dose re-

quired to reduce the temperature effectually is 5.0 grammes (77 grains.) Should such a dose have no effect, one may after four or five hours with safety give a second, or indeed even a third similar dose. I have seen cases in which 15 or 20 grammes of the salt have been given during twenty-four hours without any ill effect. The salt is readily soluble in water, and is taken by most patients without complaint. In those rare cases in which malaise or vomiting occurred, three or four drops of chloroform sufficed to remove them.

2. *Action on the Temperature.*—As a matter of course, the effect of the salicylic acid was not the same in each case, but it has proved to be more trustworthy and efficacious in its action than all other antipyretics. I have collected the results of one hundred single doses in cases of typhoid of nearly equal severity. In order to test the value of the drug more accurately, it was always given at midday, before the usual afternoon rise of temperature. Almost immediately, the temperature began to fall, the maximum result being reached, in most cases, from four to five hours after the administration of the medicine, but in some cases not less than eighteen to twenty hours were required. The subsequent rise of temperature was as gradual as its fall, but in mild cases it never reached the same height as before. These facts were established in many cases by thermometric observations made every ten minutes in the axilla and rectum. The following are the results obtained in this way, which have been confirmed by further experience. Where the drug had an effect the maximum fall, after its administration, was 4.3° C., where it had none, the maximum rise was 1.5° C. The temperature at 5 o'clock on those days on which, at 12 o'clock, 5 grammes of salicylic acid had been given, was more than one degree lower than the temperature at 8 o'clock in the morning of the same day, in 45 per cent., and less than one degree in 35 per cent. of the cases. On the whole, then, a reduction in temperature was observed in 80 per cent. The temperature was increased in 20 per cent., and in four cases the increase exceeded 1° C. These results prove the superiority of salicylic acid over all other known antipyretics.

3. *General Action.*—Within fifteen minutes, or even less, after the administration, a copious perspiration breaks out, first on the face, then on the thorax, abdomen, and the rest of the body, accompanied by reddening of the skin, more especially of that of the face, and may be so copious that the patients may lose 500–750 grammes of water. Almost simultaneously with the outbreak of this sweating, sometimes a little later, the temperature begins to decline, the gradual fall lasting much longer than the perspiration. Nor is there, indeed, any constant relation between the fall of temperature and the amount of sweating, there being in many cases great reduction of temperature with little or no sweating. Generally the pulse and respiration are not at all affected, though the pulse may become a little slower.

Where the pure acid or the sodium salt are employed, the intestinal tract does not appear to be at all affected. The recorded accounts of irritant effects on the mucous membrane of the œsophagus, stomach or intestines, even of erosions and hæmorrhages, are due to admixture of irritant substances, such as carbolic acid, with the salicylic acid. This is shown by a comparison between my earlier experience with my later, as I have not met with any such results since using the pure drug. The evacuations on the other hand, became more frequent and fluid. The salicylic acid appears in the urine, which is otherwise unaltered, as salicyluric acid. The cerebral functions appear little or not at all interfered with, for so far as my own experience goes, only three patients have complained of buzzing in the ears and dizziness, and only one of hallucinations. Nor does such a collapse occur as one might have expected from the great fall of temperature. I have not, nor indeed have any others, ever seen a fatal case of collapse, and although several patients, especially such as have sweated profusely, appear during the fall of the temperature or shortly afterwards, much exhausted and very pale, this condition is at most rare and transitory. As it is quite possible that owing to so great a reduction of the heat of the body, a fatal collapse may occur, I have not been in the habit of giving the acid to very debilitated patients, or when I have done so I have at the same time administered analeptic and stimulating remedies.

4. *Physiological Action.*—Of this, strange to say, we know nothing. One thing only is certain, that Dr. Butt was wrong in his opinion that the similarity between the action of salicylic acid and other antiseptic remedies upon the temperature was due to its antiseptic properties, for the sodium salt, which has little or no antiseptic properties, is identical with the acid in its effect upon the temperature. The question clearly is, whether the process of oxidation is diminished throughout the whole body, or whether only those parts in which we make our thermometric observations are reduced in temperature owing to altered thermic conditions. This can only be established by comparative measurements of the heat of internal and external parts of the body. I am engaged in comparing the temperature of the stomach and peripheral parts by means of a thermo-electrical apparatus, and hope to arrive at interesting conclusions.

5. *Action in different Diseases.*—In most diseases accompanied by acute or chronic fever, it is certain that salicylic acid has no effect upon the local process. For example, in pneumonia, erysipelas, acute exanthemata, phthisis, pleurisy, etc., where the temperature has been reduced by the action of the drug, we see no change in the local processes. All authors indeed are unanimous in asserting its uselessness in ague. In two diseases only, typhoid fever and acute rheumatism, has no definite conclusion been arrived at, though Dr. Riess, whose experience is so far certainly the largest,—more than 100 cases (*Berl. Klinische Wo-*

chenschrift, 1875, No. 50)—is of opinion that by the use of salicylic acid the course of typhoid fever is shortened. Dr. Goltdammer (*Berl. Klin. Wochenschrift*, 1876, No. 4) and myself, however, whose material is second only to that of Dr. Riess, regard this question as not yet settled. Indeed we all agree that the mortality this year has been certainly no less, and perhaps even greater than in former epidemics of typhoid, while on the other hand, we are also unanimous in the observation, that under the daily treatment by salicylic acid, cases which entered the hospital during the first or second week of the disease with the temperature from 40–41° C., became free from fever after the second or third day, although the local processes (tumor of the spleen, roseola, diarhœa, etc.) continued. It is far easier to arrive at a definite conclusion regarding the influence of the acid in acute rheumatism than in typhoid. Indeed, one may say with certainty that in *many cases* after three or four doses, or even after five or ten grammes, not only is the fever reduced but the *articular pains* also are dispersed, so that *in a few days acute cases may be looked upon as cured.* Whether, however, the tendency to relapses and inflammation of serous membranes is lessened is doubtful, and indeed from my own experiences must be negatived.

It will, I trust, be clear from these remarks, that we have not to do with a drug of ephemeral notoriety, such as jaborandi and others, but with one which must take a permanent place in our pharmacopœia.—*The Practitioner.*

THE TREATMENT OF RHEUMATIC FEVER WITH SALICYLIC ACID.

Like all new remedies, salicylic acid is being tested in a number of different diseases, and among these of course rheumatic fever occupies a prominent place, not only on account of its frequency, but also of its markedly febrile character. The results which have been obtained in Prof. Traube's wards at Berlin, certainly afford not a little encouragement to indulgence in a hope that in salicylic acid a real remedy for acute rheumatism has at last been found. We extract the following details from a paper by Staff-Surgeon Stricker, in the *Berliner Klinische Woehenschrift* of January 3d, 1876. For several months all the cases of acute rheumatism in which the local symptoms were strongly marked (fourteen in all), were treated with salicylic acid. The preparation used was, however, not the ordinary impure commercial acid, but one that by repeated crystallization had been rendered almost perfectly pure. Thus prepared it consists of shining white needles, which have no smell, and dissolve completely in water and alcohol so as to form a clear solution. This pure acid can be given internally in considerable doses without any of those unpleasant results which have followed the use of the com-

mercial acid, which probably owes its caustic properties to the presence of other substances—for instance, carbolic acid. The pure acid only excites some dryness in the mucous membrane of the mouth and pharynx, followed by an increased secretion from their surfaces. This inconvenience can, however, be obviated by giving the acid in half-gramme or gramme doses every hour, in the form of powder and enclosed in a capsule; and in the treatment of rheumatic fever the administration is continued until the joints which were previously affected can be moved without pain. To quote Dr. Stricker's words, "All the patients thus treated were not only relieved of their fever, but also of the local symptoms—*i. e.*, the swelling, redness, and especially the painfulness of their joints—within forty-eight hours; most of them even within a much shorter period." The largest quantity of pure salicylic acid which was found necessary to produce this effect was fifteen grammes (230 grains), and the smallest five grammes; but that even larger quantities can be taken internally without injuring the digestive apparatus is proved by the fact that one patient actually took twenty-two grammes in the course of twelve hours through an excess of zeal on his own part; but, nevertheless, his tongue became clean, and his appetite returned in the course of this vigorous drugging. As far as Dr. Stricker's observations go, the more acute the case the better the action of the acid. He finds it best to begin the treatment in the morning, for then its effects are generally so decided by the evening that it is unnecessary to disturb the patient's rest to give him his medicine. The general phenomena which were observed to follow large doses of the acid were copious perspiration, ringing in the ears and slight deafness, and in two cases the patients became more than usually lively. Dr. Stricker does not pretend to express any opinion at present on the effect exerted by the acid on the cardiac complications of rheumatic fever. Most of his cases had either old valvular disease or else were suffering from a recent endocarditis at the time of their admission. The details of five cases are appended to Dr. Stricker's paper, and the temperature-sheets are given in graphic form in four of them, and we can only say that they confirm in the most striking manner what has been above stated as to the value of the salicylic treatment.—*Medical Times and Gazette*, Feb. 5th, 1876, from *Berliner Klin. Wochensch.*

AMERICAN MEDICAL ASSOCIATION.

On Tuesday, June 6th, 1876, Dr. W. K. Bowling, of Tennessee, retiring President, called the Association to order at 11 a. m., and introduced Dr. J. Marion Sims, President elect.

Vice-presidents Dr. S. Lilly, N. J., E. D. Seelye, Ala., N. Pinkney, U. S. N., were at their posts.

The session was opened with prayer by Rev. E. R. Beadle, D.D., of Philadelphia.

Dr. Wm. Pepper, Chairman, on behalf of the Committee of Arrangements, welcomed the delegates and announced the programme for the meetings.

He offered, as Members by Invitation, Dr. Wywoodzoff, of St. Petersburg, Russia; W. Roth, Surgeon General of the German Army; Assistant Surgeons, H. Heymann and Max Brille; Surgeon General J. K. Barnes, of the U. S. Army, and D. Saffray, of Paris, France.

On motion, the reading of the roll was dispensed with, and all on the roll were accepted as properly accredited.

He reported several disputed cases, which were referred to the Judicial Council.

The Permanent Secretary read a letter from Dr. W. Baldwin, of Ala., regretting his inability to be present.

Vice-President Dr. S. Lilly having taken the chair, the President then delivered the Annual Address.

On motion of Dr. W. Brodie, of Michigan, the thanks of the Association were tendered to the President for his address, and it was referred to the Committe of Publication.

Several volunteer papers were offered and appropriately referred.

On motion of Dr. Toner, the Address in surgery was made the special order for Wednesday, at 10 a. m., the Address in State Medicine for 12, and that on Obstetrics for 10 on Thursday.

The list of Committees was called, and as they reported they were referred to the appropriate Sections.

On motion of Dr. Busey, D. C., the States were requested to select their members of the Committee on Nominations, and report them at 9½ on Wednesday. Adjourned.

Wednesday, June 7th.

The President called the session to order at 9½ a. m.

The Permanent Secretary called the roll of States, and the names of the members of the Committee on Nominations were reported.

On motion of Dr. Keller, it was agreed to erect a platform in front of the present one, as the speakers could not be heard.

The Secretary read a report from the Judicial Council, as follows:

The Judicial Council have decided that the delegates from the Arkansas State Medical Society, or the New Society, be admitted as the proper represention from that State.

Dr. R. C. Kedzie, Michigan, read the address on State Medicine and Public Hygiene. His subject was "Natural Purifiers." It was referred to the Committee of Publication.

On motion of Dr. Jones, of Ohio, the resolution attached was adopted.

Resolved, That it is the first duty of States and municipalities, first in importance, and first in the order of time, to make a sanitary survey of the water supply, to preserve it against all unnecessary and unavoidable contamination. 2. That no municipality should introduce a water system without at the same time providing a corresponding and coextensive sewer sytem.

On motion, Drs. W. Hiorth and H. C. Holst, of Norway, were elected members by invitation.

Dr. A. Garcelon, of Maine, delivered the Address in Surgery. Referred to Committee of Publication.

The report of Dr. E. Seguin was read, and the accompanying resolution adopted, as follows:

Dr. Edward Seguin, in the name of the previous commission, reports—

Since several years, the American Medical Association has given its support to a measure of great interest for those who have at heart the advance of physics, namely, *The establishment of uniform means of observation, and of medical records, for the physicians of all countries.*

This action of the American Medical Association has been expressed by the adoption of successive resolutions, and by the sending of delegates charged with the mission of advocating this reform:

In 1873. To the British Medical Association, meeting in London; and to the French Association for the Advancement of the Sciences, meeting at Lyons.

In 1874. To the British Medical Association meeting at Norwich; and to the French Association for the Advancement of the Sciences, meeting at Lille.

In 1875. To the International Medical Congress, meeting at Bruxelles.

In 1876 (next September) the same Congress will meet in this very place; and now the American Medical Association is called to decide what position it will assume in this matter.

Will it recede from its former position, and leave the task to second-hand promoters; or will it continue its initiative before the International Council?

This is not only a question of pride for the Association; it is also one of justice to the American physicians at large. If the constitution and by-laws of this Association prescribe an annual transfer of its meetings from one part to another of this vast country, it is to give us opportunities to study and express the wants of the whole profession. Of these wants, none has been found more deeply felt than the one of partaking, as givers and receivers, in the discoveries of our art. But this want is not ours alone; it is universal; and the American Medical Association will deserve the thanks of all for having planned and carried into execution the most important instrument of internationalization in medical progress.

Therefore it is hoped that the Association will charge its dele-

gates of former years to continue to advocate the uniformity of means of observation before the various Medical Societies, and particularly at the next International Medical Congress, and report next year what success they will have met.

Resolved, That this Association charges its delegates to advocate the uniformity of means of observation as hitherto, and especially at the International Medical Congress to be held at Philadelphia, September, 1876.

On motion of Dr. Atkinson, Drs. Seguin and Bowditch were made members of the delegation to the Congress for that purpose.

Invitations from the Academy of Natural Sciences and the University of Pennsylvania were read, and thanks returned.

The Secretary read the resignation of Dr. F. G. Smith, from membership on the Committee of Publication, which was referred to the Committee on Nominations.

The report of the committee on a paper entitled Excision of the Joints was read, as follows:

PHILADELPHIA, May 20th, 1876.

To the American Medical Association:

Your Committee, appointed at the last session of the Association, to examine and report upon an essay entitled "Upon Excision of the Larger Joints of the Extremities," bearing the motto, "*Labor omnia vincit*," begs leave to report that it has thoroughly examined the same. The committee finds in the essay carefully prepared statistical tables of three thousand eight hundred and ninety-eight cases of excisions of joints. Anatomical details and special surgical considerations connected with the several joints in question are included in the article, together with a full bibliography.

Upon opening the sealed envelope which accompanied the essay, the name of its author was found to be Dr. H. Culbertson, of Zanesville, Ohio,

Your committee decided that the essay was in every way worthy of the prize offered by the Association.

While venturing to express its own opinion that the article is too bulky for insertion in the Transactions of the Association, the committee would recommend that the article be referred to the Publication Committee, and asks for its own discharge.

SAMUEL ASHHURST.
S. D. GROSS.
D. HAYES AGNEW.

On motion of Dr. Sayre, the report was adopted, and the paper referred to the Committee of Publication.

The Committee on Prize Essays reported as follows:

PHILADELPHIA, May 20th, 1876.

To the President of the American Medical Association:

Dear Sir—The undersigned, a committee appointed at the last meeting of the Association, to report on prize essays, have the honor to state that only two essays have been handed in, entitled, respectively, "Explorations in Physiology," and "Experimental Therapeutics," and that, in their opinion, neither of them is worthy of the reward.

S. D. GROSS, *Chairman.*
ALFRED STILLE.
ELLERSLIE WALLACE.
HORATIO C. WOOD, JR.
FRANCIS GURNEY SMITH.

The report was accepted.

On motion of Dr. Thompson, the Committee of Publication were instructed to publish the Transactions in several volumes, if necessary.

A communication was read from the American Pharmaceutical Association:

At a meeting of the American Pharmaceutical Association, held in Boston September 9th, 1875, a committee, whose names are annexed, was appointed to confer with the American Medical Association, and to suggest to that body the advantage which would result from selecting a list of dangerously active medical preparations, noting their maximum doses and the maximum quantity which may be administered safely during twenty-four hours, and which quantity ought not to be exceeded in prescriptions, without the addition of some caution mark, previously agreed upon, by the physician. In case a prescription is presented to be compounded with articles ordered in quantities exceeding these maximum doses thus laid down, and without the caution marks annexed, the pharmacist should return the prescription to the physician, in order that the requisite caution mark or marks should be added.

It is believed by us that this observance would often prove of practical value, not alone to the physician and pharmacist, but also to the patient. It is intended by no means to indicate in any way the limit to which the medical attendant may prescribe any remedial agent, however powerful. Yet as pharmacists, we must confess that very often we would feel greatly relieved if excessive or unusual doses of potent medicines were marked in some definite way by the prescriber, to show that they were thus intended to be administered. For the double purpose, then, of guarding in some degree the safety of the patient, and at the same time relieving the pharmacist from an unpleasant responsibility, we earnestly request the American Medical Association, in any way it may judge most expedient,

to submit this subject to the careful consideration and action of their body; for we believe it belongs to the medical profession, rather than to the pharmacists, so to act.

You may be aware that in some European countries a list, as here suggested, is framed by legal enactment, and published by authority, and appended to the pharmacopœia, becoming thus obligatory on every pharmacist. We believe the same action might be carried into effect in this country under the authority of the medical and pharmaceutical societies.

W. H. PILE, Philadelphia,
LOUIS DOHME, Baltimore,
CHAS. L. EBERLE, Philadelphia. } *Committee.*

On motion of Dr. Atkinson, it was referred to a committee, consisting of Drs. Stillé, Biddle and Rogers.

On motion of Dr. S. D. Gross, it was

Resolved, That those medical gentlemen present at this meeting who were permanent members, but who are now excluded from membership simply on account of being in arrears, be reinstated to membership, if full payment be made at once of all dues.

The reports of the Treasurer, showing a balance in the treasury of over $7000, and of the Committee of Publication, were read and accepted.

The report of the Librarian, showing continued increase in the library, and with the following resolutions attached, was received and the resolutions adopted:

Resolved, That the Librarian be furnished yearly with one hundred copies of the volume of Transactions, for exchange with foreign medical and scientific societies and prominent foreign medical journals.

Resolved, That as complete a set as practicable of the Transactions be furnished to the Inspector General of Customs, Shanghai, China, and to the Académie Royale de Medécine de Belgique; and further, that, if practicable, vols. 4, 14, 15, 16, 17, 18, 19, 20, 21 and 22 of the Transactions be furnished to the Royal Medical and Chirurgical Society of London.

The bill of the Librarian, $8 55, was ordered paid.

Dr. Barr was made a member by invitation.

An invitation to visit their building was received from the College of Pharmacy, and accepted.

A memoriam of Dr. Logan, of California, was read and ordered to be entered on the minutes.

Dr. H. T. Reynolds, of Md., offered a resolution that five thousand copies of that part of the President's address referring to syphilis be printed for general distribution.

Dr. Quimby, of N. J., offered an amendment, which was accepted by Dr. Reynolds, that ten thousand copies be sent to the Secretary of each district or county association, to be distributed

among the clergy and other educated members of the community.

Dr. Ohr, of Md., offered, to amend, that they be sent by the permanent Secretary to the members of this Association, with the request that they distribute them. After some discussion the amendment was adopted, and the resolution as amended was adopted.

The delegates to Brussels reported as follows:

Mr. President and Gentlemen of the American Medical Association:

Sirs—At the last meeting of your honorable body, held at Louisville, Ky., May 4 to 7 inclusive, 1875, the following resolution, offered by Dr. Edward Seguin, of New York, was adopted, viz:

"Therefore, the American Medical Association resolve to nominate new delegates, commissioned to again advocate in Europe the unity of clinical observation, and charge them to report progress, in brief, at the meeting of 1876."

In accordance therewith, the following gentlemen were commissioned as such delegates, namely:

Drs. H. D. Holton, of Vermont; A. E. M. Purdy, H. B. Sands, John Draper, J. C. Hutchison, E. C. Harwood, of New York; H. R. Storer, and L. F. Warner, of Massachusetts; E. T. Easley, of Texas; J. A. Adrain, of Indiana; and John Morris, of Maryland.

Arriving at Brussels, Belgium, the American delegation was found to consist of only two members, Drs. J. A. Adrain, of Indiana, and E. C. Harwood, of New York. They felt great regret at not finding a larger number present.

They were received with distinguished consideration and marked courtesy by the International Medical Congress, there convened, on the 19th day of September; and as soon as their presence was officially announced to that body, they were enthusiastically and unanimously made Honorary Presidents.

Feeling the responsibility which devolved upon them, as the only representatives present from the American Medical Association, they at once proceeded to forward the measures which they had been appointed to advocate. They are not at the present time able to present the result of their efforts, owing to the fact that the transactions of the International Medical Congress have not yet reached this country. The serious illness of the Secretary-General, M. Warlomont, has also delayed that publication several months. They can, therefore, merely report progress. However, from conversations held with various distinguished gentlemen present on the occasion, they feel quite fully warranted in saying that their propositions in your behalf would be very favorably entertained.

Your delegates wish to express the great pleasure and gratification which they experienced in the manner of their reception by the Congress, by the City of Brussels—having been made its

guests—and by his Majesty the King of Belgium, at the royal palace.

They desire also to acknowledge courtesies from Drs. Edward Seguin, of New York; Henry Collignon, of Brussels, and Alexander Ogiston, Surgeon to the Aberdeen Royal Infirmary, Scotland.

They have referred to the fact that, owing to the illness of the Secretary-General of the International Congress, the publication of its Transactions, *in extenso*, has been delayed several months.

They are happy to say that they were fortunate enough to secure and bring with them an official copy of the minutes of the Congress, published in a small pamphlet in the French language. From this document, through the courtesy of Dr. Geo. W. Wells, of New York city, a translation of the essential points of what transpired has been made and compiled, under the title "Brief Résumé of the Proceedings of the International Medical Congress at Brussels, 1875," etc., a copy of which is herewith submitted as a portion of this report.

To the English reading portion of our profession, this Résumé will be found of special interest; but the French reading physician is referred to the full "Transactions," which may be obtained from the Secretary-General at a cost in gold of about the same as our own Transactions.

All of which is respectfully submitted in behalf of the American Delegation to the International Medical Congress, Brussels.

EDWARD C. HARWOOD, M.D., of New York,
Chairman.

New York City, June 6th, 1876.

The report was accepted and referred to the Committee of Publication.

On motion of Dr. Toner, an obituary of Dr. Armsby was ordered to be read. The Permanent Secretary read a part, when it was referred to the Committee of Publication.

On motion, the Association adjourned until Thursday at 9½ o'clock a. m.

THURSDAY'S SESSION.

Adjourned to the Alhambra, by reason of want of power to hear in the Horticultural Hall.

On motion of Dr. Keller, the acceptance of the roll of members was reconsidered.

The Secretary then called the roll in part.

At 10 o'clock Dr. Busey delivered the Address in Obstetrics.

On motion of Dr. J. L. Atlee, it was referred to the Committee of Publication, and to the Section, for discussion.

Dr. Murdoch, of Pennsylvania, moved to dispense with the

further call of the roll, and that it be referred to a committee, Dr. Toner, chairman, for examination.

On motion of Dr. Toner, this was laid on the table.

The Secretary continued to call the roll.

Dr. Frothingham objected to all from the State Medical Society af Michigan, and asked that they be referred to the Judicial Council.

The Secretary at this point read a partial report of the Judicial Council:

The Judicial Council have decided that the delegates from the Michigan State Society be admitted as delegates to the American Medical Association. S. N. BENHAM, *Secretary.*

As the name of Dr. Sarah Hackett Stevenson was called, Dr. Brodie moved that the names of all female delegates be referred to the Judicial Council. This was, on motion, laid on the table.

With the few exceptions of the names of those not now permanent members, and those registering as delegates from hospitals and bodies not entitled to representation, on motion of Dr. Toner, the roll as called was then confirmed.

On motion of Dr. Holton, of Vermont, the Secretary was directed, at future meetings, to print each day the names as enrolled.

Dr. Reese, of New York, offered a resolution on patents, which, on motion of Dr. Jones, of Ohio, was referred to the Judicial Council.

Dr. Hunt, of New Jersey—

Resolved, That the Judicial Council consider that portion of the President's Address which relates to ethics, and report next year if alterations are needed.

Dr. Reese—

Resolved, That a committee be appointed by the Chair, to consider upon and propose such revision of the Code of Ethics of this Association as they may deem practicable, and report at the meeting of the Association next year.

On motion of Dr. Busey, it was laid on the table.

The address of Dr. E. L. Howard being in order, he was not well enough to respond.

Dr. Keller read the report from the McDowell Memorial Fund:

REPORT FROM TRUSTEES OF M'DOWELL ESSAY FUND.

Total amount of Subscriptions received to date.....	$494 00
Amount of Expenditures.....	340 00
Amount in hands of Treasurer.....	$154 00

* * * * * * *

Resolved, That until the sum of ten thousand dollars be raised, the annual fee of membership be increased from five dollars to

six dollars, and that this increase of one dollar be set aside to create the fund.

On motion of Dr. Toner, the report was accepted.

Dr. Busey objected to the change in the dues.

Dr. Waterman, of Indiana, moved to appoint a committee of seven to take up a collection at once.

On motion of Dr. J. L. Atlee, it was laid on the table.

Dr. Toner moved to appropriate $1000 from the treasury.

Dr. Howard rose to a point of order, that such matters could be considered only on the first and fourth days.

On motion of Dr. Raymond, Dr. Toner's resolution was laid on the table till to-morrow.

Dr. Woodward urged that the regular order of business be resumed.

Announcements were made of papers in the Sections.

Dr. Henry A. Martin, of Massachusets, offered the following:

Resolved, That the subject of bovine or animal vaccination is one demanding serious investigation from this Association, that approval and endorsement may be given to it if considered worthy; condemnation if it shall be considered, as compared with the usual or "arm to arm" method, unworthy of such approval; therefore,

Resolved, That a Committee on Animal Vaccination be formed, to consist of a chairman and two associates to be selected by him, which shall report upon the whole subject of animal vaccination at the next meeting of this Association.

On motion, the President was directed to appoint the committee entire.

Dr. H. W. Jones, of Chicago, Ill., was appointed a delegate to foreign medical societies.

On motion, adjourned till Friday at 9½ a. m.

Friday, June 9th.

The Association met again at the Hall, the Alhambra being occupied.

A charge, by Dr. E. Richardson, against the Illinois State Medical Society, was presented and referred to the Council.

On motion of Dr. Toner, it was

Resolved, That members of the medical profession who in any way aid or abet the graduation of medical students in irregular or exclusive systems of medicine, are deemed thereby to violate the spirit of the ethics of the American Medical Association.

Dr. Atkinson presented the following:

To the American Medical Association:

In obedience to the resolution adopted at the session of 1875 (p. 50 of Minutes), I have to report that, in reply to my inquiries, I am informed that Boards of Health now exist in Alabama,

California, Georgia, Massachusetts, Michigan, Minnesota, Virginia and Wisconsin—but eight States in all.

The Secretaries of the several State Societies have been applied to for the proper information, and in many instances they have informed your committee that their State body is urging the matter upon their State Legislature.

I have written to the Governors of Delaware, Indiana, Iowa, Nebraska, New Jersey, New York, South Carolina, Texas and Vermont, with almost negative results. The present year is too full of excitement over the Centennial, the approaching Presidential election, and the like, to yield much fruit in a matter so unselfish as the one in hand.

The boards of all the States named are constantly proving the great importance of such bodies, except that of Virginia, which seems crippled for want of sufficient funds to do what is necessary.

With the hope of a better showing in my next report,

I am, very respectfully,

WM. B. ATKINSON.

A note of regret from Dr. P. F. Eve was read and entered.

On motion of Dr. H. C. Wood, of Pennsylvania, it was

Resolved, That a committee be appointed by the Chair to solicit from Congress an appropriation for the publication of the subject catalogue of the National Library, and that the State Societies are requested to take such action as may be deemed fit to further said object.

Committee: Drs. H. C. Wood, Toner and Chadwick.

The Secretary read the following:

WAR DEPARTMENT,
OFFICE OF MEDICAL STATISTICS,
WASHINGTON, D. C., June 5th, 1876.

J. Marion Sims, M.D., President American Medical Association:

Dear Doctor—I have the honor to transmit herewith a copy of the Medical Statistics of the Provost Marshal General's Bureau, for presentation to the American Medical Association at its present meeting in Philadelphia.

Very truly yours, J. H. BAXTER, M.D.,
Chief Medical Purveyor U. S. Army,
Permanent Member Amer. Med. Ass.

It was received with thanks.

Dr. Frothingham offered a communication, which was referred to the Council.

The Nominating Committee reported as follows:

REPORT OF COMMITTEE ON NOMINATIONS.

The Committee on Nominations respectfully report the following gentlemen for the various offices named:

President—H. I. Bowditch, of Massachusetts.

Vice Presidents—N. J. Pittman, of North Carolina; Franklin Staples, of Minnesota; Joseph R. Smith, of U. S. Army; Samuel C. Busey, of District of Columbia.

Treasurer—Dr. Caspar Wistar, of Pennsylvania.

Librarian—Dr. William Lee, of District of Columbia.

Committee on Library—Dr. Johnson Eliot, of District of Columbia.

Assistant Secretary—J. H. Hollister, of Illinois.

Committee of Arrangements—Drs. N. S. Davis, I. W. Freer, H. A. Johnson, T. D. Fitch, H. W. Jones, Joseph P. Ross, and Lester Curtis.

Committee of Publication—Dr. W. B. Atkinson, Chairman; Drs. T. M. Drysdale, Albert Fricke, Samuel D. Gross, Caspar Wistar, Richard J. Dunglison, all of Pennsylvania, and William Lee, of District of Columbia.

Next place of Meeting—Chicago, Illinois.

Time of Meeting—First Tuesday in June, 1877.

The Committee also report the following nominations for Chairmen and Secretaries of Sections for 1877:

1. *Practice of Medicine, Materia Medica and Physiology*—Dr. P. G. Robinson, of Missouri, Chairman, and B. A. Vaughn, of Mississippi, Secretary.

2. *Obstetrics and Diseases of Women and Children*—Dr. James P. White, of New York, Chairman, and Robert Battey, of Georgia, Secretary,

3. *Surgery and Anatomy*—Dr. D. Hayes Agnew, of Pennsylvania, Chairman, and Dr. Moses Gunn, of Illinois, Secretary.

4. *Medical Jurisprudence, Chemistry and Psychology*—Dr. Eugene Grissom, of North Carolina, Chairman, and Dr. E. A. Hildreth, of West Virginia, Secretary.

5. *State Medicine and Public Hygiene*—Dr. Ezra M. Hunt, of New Jersey, Chairman, and Dr. D. R. Wallace, of Texas, Secretary. Members: I. B. Gaston, of Alabama; D. A. Linthicum, of Arkansas; W. F. Cheney, of California; Charles Denison, of Colorado; Charles A. Lindsley, Conn.; William Marshall, Delaware; F. Howard, D. C.; W. F. Westmoreland, Ga.; H. Johnson, Ill.; L. D. Waterman, Ind.; A. G. Field, Iowa; D. W. Stormont, Kansas; Samuel Brandeis, Ky.; S. M. Bemiss, La.; E. F. Sanger, Maine; Charles H. Orr, Md.; H. I. Bowditch, Mass.; W. L. Lincoln, Minn.; I. M. Taylor, Miss.; F. G. Porter, Mo.; M. W. Russel, N. H; Elisha Harris, N. Y.; H. L. Black, Ohio; Benj. Lee, Pa.; E. M. Snow, R. I.; R. A. Kinlock, S. C.; Thos. A. Atchison, Tenn.; T. J. Heard, Texas; J. L. Cabell, Va.; L. C. Butler, Vt.; John Frissell, W. Va.; H. P. Strong, Wisconsin; G. W. Betton,

Fla.; Chas. J. O'Hagan, N. C.; Jno. S. Billings, U. S. A.; Jos. Wilson, U. S. N.; H. O. Hitchcock, Michigan.

Committee on Necrology—Dr. S. C. Chew, of Maryland, Chairman, and L. C. Butler, of Vermont, Secretary. Members: Drs. John M. Barclay, of Alabama; Martin Baker, California; G. W. Russell, of Connecticut; R. G. Jennings, Arkansas; L. P. Bush, Delaware; W. W. Johnson, District of Columbia; E. J. Kirkscey, Georgia; W. M. Chambers, Illinois; Wm. Lomax, Indiana; J. W. H. Baker, Iowa; L. P. Yandell, Sr., Ky.; S. C. Gordon, Maine; A. Sager, Michigan; A. J. Steele, Missouri; John Blane, New Jersey; Gouverneur M. Smith, New York; George Mitchell, Ohio; W. C. Warriner, Oregon; Horatio C. Wood, Pennsylvania; Charles W. Parsons, Rhode Island; A. N. Talley, South Carolina; B. W. Avent, Tenn.; L. E. Locke, Texas; L. S. Joynes, Virginia; E. Burk Haywood, North Carolina; Darius Mason, Wisconsin; —— Fawcett, Vermont; P. F. Whitehead, Mississippi; C. B. Mottram, Kansas; Levi G. Hill, New Hampshire; Robert W. Hazlett, West Virginia; J. R. Bronson, Mass.; J. J. Woodward, U. S. Army; Joseph Wilson, U. S. Navy; A. W. Stinchfield, Minnesota.

Judicial Council—Drs. N. J. Davis, of Illinois; E. L. Howard, of Maryland; W. O. Baldwin, of Alabama; H. W. Dean, New York; A. N. Talley, South Carolina; J. P. Logan, of Georgia; D. W. Stormont, of Kansas, in place of the seven whose terms expire at this meeting. The rest of the present Council continue.

Committee on Prize Essays—Dr. S. N. Davis, Illinois, Chairman: Edmund Andrews, E. Ingalls, Moses Gunn, E. P. Cook, all of Illinois.

Special Committee, on Influence of Climate on Pulmonary Diseases in Florida, Dr. E. T. Sabal, continued.

Delegates to the International Medical Congress, to be held September 4th 1876, at Philadelphia: Dr. H. I. Bowditch, of Massachusetts; E. Seguin, of New York; Thomas L. Madden, of Tennessee; J. S. Welford, of Virginia; A. Dunlap, of Ohio; John T. Hodgen, of Missouri; Joseph Carson, of Pennsylvania; John C. Dalton, of New York; W. O. Baldwin, of Alabama; D. W. Yandell, of Kentucky; N. S. Davis, of Illinois; Austin Flint, Sr., of New York; T. G. Richardson, of La.; W. F. Westmoreland, of Georgia; A. M. Pollock, of Pennsylvania; Frank Hastings, Hamilton, New York; S. M. Bemiss, of Louisiana; L. A. Dugas, of Georgia; Francis Bacon, of Connecticut; Hunter McGuire, of Virginia; A. J. Shurtleff, of California; E. M. Moore, of New York; O. W. Holmes, of Massachusetts; G. A. Otis, U. S. Army; F. E. Gunnell, U. S. Navy.

Respectfully submitted. SAMUEL LILLY, *Chairman.*

JOHN H. CALLENDER, *Secretary of the Committee.*

JOHN C. HUPP, *Assist. Secretary of the Committee.*

Resolved, That the delegation now appointed to the International Medical Congress be authorized to fill vacancies in their body, caused either by absence or by those holding duplicate appointments.

On motion of Dr. Brodie, the report was adopted.

Dr. J. L. Atlee moved that $1000 be appropriated to the Permanent Secretary, which was adopted.

Reports from Sections were presented and referred to the Committee of Publication.

On motion, the hour of 11 was fixed to hear Dr. E. R. Squibb on the revision of the Pharmacopœia.

The President appointed as Committee on Bovine Vaccination, Drs. Martin, Foster, and S. N. Troth.

The Secretary read the following:

The Secretary of the Judicial Council was directed to report to the Association, that, "In the matter of the charges against the Michigan State Medical Society, the Council is unable, at this time, to come to a decision, because of the large amount of documentary and other evidence; and it withholds any expression of opinion until it shall have been able to give the subject the consideration it merits."

S. N. BENHAM, *Secretary.*

On motion of Dr. Bell,

Resolved, That there be appointed a committee of three persons, members of this Association, in each of those States where there has been no action taken for the establishment of Boards of Health, to urge upon those States the necessity of the establishment of such Boards.

The Section of Medical Jurisprudence reported, and it was referred to the Committee of Publication.

The Surgical Section recommended, by a vote, that Dr. J. W. Thompson, of Kentucky, be appointed a Committee to report on "The Inheritance of Syphilis." E. T. EASLEY, *Secretary.*

The Secretary presented the report on Necrology, which was referred for publication.

On motion, Dr. R. J. Levis was made delegate to foreign societies.

The Secretary read the following:

OFFICES OF THE COMMISSIONERS FOR VICTORIA,
FOR THE PHILADELPHIA EXHIBITION OF 1876,
PHILADELPHIA, June 7, 1876.

To the President of the Medical Association of America, Philadelphia:

Sir—I have the honor to request the good offices of the Medical Association of America, under the following circumstances.

I have been asked by the Medical Association of Victoria to make some inquiries into the status of the medical colleges and schools of medicine in this country, and the validity of the degrees conferred by them. The laws of Victoria allow any person to practice medicine who possesses a diploma which shows that he has received such a medical education as would enable him to practice in his own country, and the Medical Society of Victoria, while well aware that in America, as in other countries, the professional status of the alumni of certain colleges is much higher than that of those in others, have no power or desire to cavil at the provisions of the laws.

It is, however, notorious that persons who cannot and have not received any medical education, who in some instances have not been absent from the colony for many months, and who, prior to their departure, had no acquaintance with any of the branches of medicine or surgery, return to Victoria with what purport to be American degrees or diplomas, upon the strength of which they apply to have their names enrolled on the list of legally qualified medical practitioners of Victoria. It is quite clear that these distinctions which they hold must have been gained improperly, and without study or examination; and it is upon this head, and with the hope of being able to prevent such frauds upon the public and the profession, that I have been requested by the Medical Society of Victoria to address you.

I have, therefore, to ask that you will, at your convenience, favor us with a list of the colleges and medical schools in the United States which have the power of conferring degrees recognized by the profession in America.

Hoping that the interests and honor of your common profession will be sufficient apology for my troubling you, I have the honor to be your most obedient servant,

GEORGE COLLINS SAVAGE,

Secretary to Royal Commissioners from Victoria.

On motion of Dr. J. L. Atlee, it was entered on the minutes.

He moved, also, that the Judicial Council give the information.

Dr. Compton moved that a committee of three be appointed to reply to it.

Dr. H. C. Wood moved, as a substitute, that this Association deems it not best, at present, to give such sanction to any colleges.

After much discussion, Dr. Lilly moved to amend, that it be referred to the Council, and the Secretary acknowledged its receipt.

The amendment was adopted and the matter was so referred.

Other discussions arising on this subject, on motion of Dr.

Toner, all questions relative to this matter were laid on the table.

On motion of Dr. Richardson, Ky., thanks were tendered the Committee of Arrangements for their efforts to provide for the Association.

On motion, Dr. I. P. Davis, Pa., offered the following:

Resolved, That the Committee of Arrangements be requested to provide a post office or other means of communication between members attending conventions of this Association and also a hotel register.

Dr. Pepper moved to amend, that a permanent Committee on Business and Arrangements be created, who shall take into consideration this subject.

Dr. Davis accepted the amendment, and it was adopted. Committee: Dr. N. S. Davis, Illinois, Chairman; Drs. W. Pepper, Pa.; W. Brodie, Mich.; I. P. Davis, Pa.; and J. M. Toner, D. C.

On motion of J. C. Hupp, W. Va., it was

Resolved, That the thanks of this Association be and are hereby tendered to Drs. D. Hayes Agnew, J. Solis Cohen, Louis A. Duhring, H. Lenox Hodge, John H. Packard, Wm. H. Pancoast, Wm. Pepper, and Ellwood Wilson, for marked courtesies and attentions to the members of this Association.

The minutes and papers of the Section on Medical Jurisprudence, etc., were referred to the Committee of Publication.

On motion, the President was requested to appoint a committee to conduct the President elect to his post, which was composed of Drs. J. L. Atlee and Toner.

The President elect, Dr. H. I. Bowditch, of Massachusetts, then assumed the Chair.

The retiring President, Dr. Sims, made a farewell address, to which Dr. Bowditch replied in appropriate terms.

On motion of Dr. Waterman, of Indiana, it was

Resolved, That the thanks of this Association be given to the retiring President and officers of this Association, for their services to this body during the year past.

On motion of Dr. Garcelon, of Maine, Dr. Bowditch was requested to serve as a delegate to the International Medical Congress, and use his own discretion as to all questions which might come before it.

Dr. E. R. Squibb, of New York, then offered the following resolutions, which, after a very full explanation by that gentleman, were unanimously adopted:

WHEREAS, The usual time for a decennial revision of the United States Pharmacopœia is drawing near; and,

WHEREAS, The plan of revision and publication in force since 1820 may not now be the best that could be devised; therefore, be it

Resolved, That the American Medical Association take the

whole subject of the National Pharmacopœia into consideration, for a review of its management, and for the present time with especial reference to the following questions—

First, Whether the present plan of decennial revision and publication be practically sufficient for the needs of the materia medica and pharmacy of the present time; and, if not sufficient, whether a plan could not be devised which might offer probable advantages enough to justify an attempt to disturb the present one.

Second, Whether this Association be the proper custodian in this country of the interests involved in the National Pharmacopœia; and, if it be the proper source of the National Codex, whom can it invite to coöperate with it in the work?

Third, If it be a work for this Association, in what way can its details be wisely undertaken with any prospect of material improvement upon the present plan?

Resolved, That in order to facilitate mature and general deliberation upon so important a subject, the final discussion of these resolutions be laid over for at least one year, and that the matter be recommended to the President of the Association for consideration in his annual address for the meeting of 1877.

On motion of Dr. Sayre, Dr. Squibb was requested to reduce to writing his plan, that it might be published with the Transactions, and that it be made the special order for 10 a. m., on the second day of the session of 1877.

Dr. Woodward, U. S. A., moved to amend, that the whole subject be made the special order at that time, and that Dr. Squibb be requested to give his views in detail. The amendment was adopted, and the resolution as amended was adopted.

Dr. Bell, Iowa, offered the following, which was, on motion, laid upon the table:

Resolved, That, as a Centennial memento, there be prepared by this Association the history of the original discoveries, improvements, and observations of the past century of American medicine, surgery, obstetrics, and such collateral branches as may be claimed as original productions, and that a committee of experts be appointed to report at our next annual meeting.

On motion of Dr. W. C. Jacob, of Ohio, it was

Resolved, That this Association is under *marked* obligations to Prof. L. A. Sayre, for his admirable practical demonstration of his appliance for Pott's disease, which, indeed, makes a new era in surgical science.

A vote of thanks was tendered to the Messrs. Kiralfy, for the use of the Alhambra Theatre.

On motion, adjourned to meet in Chicago, in June, 1877.

NOTICES OF NEW BOOKS.

Zell's Popular Encyclopedia and Universal Dictionary.

We acknowledge the receipt of Nos. 13, 14, 15 and 16 of this great work. It will be remembered that the edition now going through the press has undergone thorough revision, and contains many important additions. The work is worthy of full commendation. Price 50 cents per number. For full information respecting the work, the General Agent, J. W. Marsh, may be addressed at 722 N. 4th Street, St. Louis.

Micro-Photographs in Histology, normal and pathological. By Carl Seiler, M.D., in connection with J. Gibbons, M.D. and Jos. Richardson, M.D. Philadelphia: J. H. Coates & Co., publishers, 822 Chestnut Street. Copyrighted, 1876, by Joseph H. Coates.

Nos. 1 and 2 of Vol. I. of this work have been received from the publishers. The intention is "to replace the microscope, as far as is possible, for those physicians who have neither opportunity nor leisure to make observations with the instrument for themselves, and also to furnish microscopists, for comparison, correct representations of typical specimens in the domain of normal and pathological histology." To what extent the work will be able to subserve the former purpose, it is somewhat difficult to determine, but it will unquestionably meet the last intention. The plates and printing are admirably executed, and the terms reasonable at $6 per annum.

The Student's Guide to the Practice of Midwifery. By D. Lloyd Roberts, M.D., M.R.C.P., Physician to St. Mary's Hospital, etc. Philadelphia: Lindsay & Blakiston. 1876.

This manual is very carefully compiled and well adapted to the wants of students, or of practitioners whose lack of leisure prevents a study of larger works. It is a duodecimo volume of 317 pages, printed on good paper, and illustrated by numerous

beautifully executed wood-cuts. The book was sent through the courtesy of James A. Gresham, 92 Camp street.

The Effect of Small Doses of Mercury in Modifying the Number of the Red Blood Corpuscles in Syphilis: a Study of Blood-Counting with the Hématimètre. By E. L. Keyes, M.D., Adjunct Professor of Surgery and Professor of Dermatology, Bellevue Hospital Medical College, etc. [Reprinted from the American Journal of the Medical Sciences for January, 1876.] Pp. 23.

Dr. Keyes does not claim originality for the recent discovery that small doses of mercurials increase the number of red corpuscles in the blood, nor for the counting of the corpuscles by a micrometrical attachment to the eye-glass of a microscope, which is also a novelty. It is found necessary to dilute largely (250 volumes to 1 is the scale adopted) the blood used for examination, and a desideratum has been to obtain a fluid which will not soon undergo changes by the development of bacteria, putrefaction, etc. This has been achieved by the author, with the assistance of his friend Dr. Stimson, and the following is the process:

"Take urine, neutral, slightly phosphatic, easily obtainable after eating, about 1020 sp. gr., and make of it a saturated solution with borax. Clouds of earthy phosphates are thrown down. Filtration yields a clear, alkaline fluid, sp. gr about 1030. Add one-half volume of water, or enough to reduce the sp. gr. to 1020, and the fluid is ready for use."

The conclusion reached by his investigations is thus epitomized:

"1. 5,000,000 red blood corpuscles in the cubic mm. is a full, high average for the adult healthy male. Anæmia very rarely goes below 3,000,000; fine conditions of physical health reach above 6,000,000. In ordinary seasons, in the city, 4,500,000 would indicate a fair state of health.

"2. Mercury decreases the number of the red cells when given in excess, especially in hospitals (Wilbouchewitch).

"3. Syphilis diminishes the number of red corpuscles below the healthy standard.

"4. Mercury in small doses continued for a short or for a long period in syphilis, alone or with the iodide of potassium, in-

creases the number of red corpuscles in the blood, and maintains a high standard of the same.

"5. Mercury in small doses acts as a tonic upon healthy animals, increasing their weight (Liègeois, Bennett's report, above referred to). In larger doses it is debilitating or fatal.

"6. Mercury in small doses is a tonic (for a time at least) to individuals in fair health, not syphilitic. In such individuals it increases the number of the red blood corpuscles."

It will, undoubtedly, be gratifying to our senior brethren to find their long-tried and approved servant, Mercury, in the list of tonics; and their admiration will equal that of Molière's worthy, who discovered that he had been speaking prose all his life.

S. S. H.

Veratrum an Antidote to Opium. By. J. L. Todd, M.D. [Read before the Atlanta Academy of Medicine.] Pp. 8.

In this essay the author maintains that the action of antidotes is necessarily reciprocal and absolute, like the antagonism of acids and alkalies. With regard to neurotic remedies, we must hold that such a doctrine is untenable, though in some instances the antagonism is doubtless true to a partial extent. That of morphia and atropia, for instance, is held by some to be reciprocal and total, as respects their toxic properties; while others, and notably Dr. H. C. Wood, regard atropia as antidotal to morphia by virtue solely of antagonizing the sedative action of the latter on the respiratory process; and, on the other hand, he disallows the antagonism of morphia to the toxic properties of atropia.

Dr. Todd claims a reciprocal antagonism for veratrum and opium, founded on such testimony as recovery from the alarming effects of veratrum by exhibiting opium *and* whiskey; and, on the other hand, in opium poisoning, by the hypodermic use of tincture of veratrum viride *and* whiskey, together with the use of atropia in some instances and coffee whenever it could be administered.

In the former case, we should give more credit to the whiskey than to the opium; and in the latter, the action of the veratrum, in the instances alleged, is rendered very indeterminate, by reason of the use of various other agents.

On the whole we do not think he has made out a strong case for the reciprocal antagonism of opium and veratrum.

S. S. H.

On the Administration of Digitalis in the Weak-Heart of Continued Fever. By E. T. Easley, A.M., M D., etc. [From the Proceedings of the Medical Association of the State of Arkansas, 1875.] Pp. 14.

This is an able exposition of the now well-established doctrine of the tonic action of digitalis on the muscular structure of the heart. Its applicability to diseases characterized by failure of cardiac action, particularly the later stages of continued fevers and delirium tremens, is an obvious consequence. In regulating the dose, the author is governed by indications and the effect of the remedy upon the pulse, rather than any rules heretofore established by authority. S. S. H.

An Address delivered before the McDowell Medical Society of Kentucky, at its semi-annual meeting in Madisonville, Ky., Nov. 4th, 1874. By Wm. T. Briggs, M.D., of Nashville.

The author here takes occasion to commemorate the most noted medical worthies who have illustrated their profession in Kentucky and Tennessee, down to a recent period.

On Auscultation of the Œsophagus. By Louis Elsburg, M.D., Professor of Laryngoscopy and Diseases of the Throat, University of New York. [Extracted from the Transactions of the American Medical Association.]

This practice was introduced about five years ago by Dr. Hamburger, a Bohemian physician, as a means of diagnosis. By auscultation posteriorly along the line of the œsophagus, the practised diagnostician may determine the location of stricture, impacted foreign body, retained bolus of food, organic dilatation, paralysis or rupture. Other diseased conditions in this portion of the alimentary may also be detected by deviations from the normal sounds.

This method of diagnosis has not yet been practised sufficiently to determine its actual value, and the author recommends the appointment of a special committee to report on the subject at the next meeting of the Association. S. S. H.

Cactus: Its History, Classification, Proving and Therapeutical Application. Read before the Eclectic Medical Society of the State of New York, in annual session at Cooper Institute, N. Y., October 22d, 1874. By Richard E. Kunzé, M.D., of New York City. Pp. 33.

This pamphlet is given a notice here less for its intrinsic merits than as an illustration of the standard of matters published by certain schools in medicine. The first fifteen pages are occupied with the natural history of several species of cactus, and remarks on their properties and uses. The best testimony in favor of its value is from a Dr. Porter, a regular practitioner of Boston, who ascribes to the cactus family properties quite similar to those of digitalis on the heart and kidneys.

The following shows the extent of Dr. Kunzé's researches into the composition of the plant: *The chemical analysis of Cereus Grandiflorus,* so far as we had the leisure and the ability to continue investigation up to the time of writing this article, we find as follows: "A large percentage of mucilage (gum), much oxalate of lime, oxalic and tartaric acid in small quantity, lignine, chlorophylle, starch and ashes." No attempt seems to have been made to isolate an alkaloid, or active organic principle.

The last eleven pages contain a series of "provings," by John H. Fitch, M.D., of New Scotland, N. Y., evidently a homœopath. Dr. Fitch undoubtedly has a genius for this kind of scientific investigation, and it may be well to give a specimen of the fruits of his researches.

Of Opuntia albaspina or White-spined Prickly-Pear Cactus, by John H. Fitch, M.D.

October 7. 1874, 6:30 p. m, took 10 minims tinct. Opuntia albaspina, made by Dr. R. E. Kunzé, of New York. Horripilation at swallowing. In a few minutes desire to be at prayer, go there, and in a minute or two desire to go out and "tidy" up. Soon thereafter went out on an errand down stairs, then come up and go again to prayer. 7:40 p. m., urgent desire to stool, evacuation rather loose, pain through the spleen and heart, pain in the left arm just below the elbow, palmar aspect, sticking pain through the heart. 11:45 p. m., took one drachm tinct. Opuntia albaspina; pain in the right testicle: priapism with lascivious desire.

October 8, 8 a. m., took one drachm tinct. Opuntia albaspina; heaved single respiration. 9.25 a. m., oppression in the chest relieved by a single heaving respiration. 9:45 a. m., single vio-

lent chest-heave to the respiration producing an agreeable feeling at chest; pain in head of left fibula; pain at the proximal end of the first and second metacarpal bones of left hand; pain in muscles on the inner side of left leg. At night dreams of women.

October 9. Fit of swearing at evening after coming home. Praying in the morning, swearing on disappointment in plans. Fit of rage at 6 p. m., on thwarting of plans. 6:20 p. m., took one drachm tinct. Opuntia albaspina. Sensation that the head is transfixed with a lance or spear. Urine free. Bowels move oftener than natural. Appetite good. Throat feels sore in afternoon, choked or pinching feeling around the top of the larynx. Saliva in the mouth. Heaved respiration, which does not give relief of chest oppression.

October 10, 12:25 p. m., pain in muscles of the neck left side anteriorly. Pain in the muscles of the right side of the neck, below ear, momentarily on the right side anteriorly of the neck. Pain and ache on both sides of the neck below ears, coming and going. Saliva in the mouth. 6 p. m., took one drachm tinct. Opuntia albaspina.

October 11. Pale at face. Appetite not first-rate at breakfast. Restricted at dinner. Headache of rather a mild form. A tensive feeling at the brain. Bad feeling involving the nervous system.

October 12. Appetite good. Neglect business all day. At evening stool, at first easy, afterwards hard.

October 13. Urging to stool in the morning. Stool soft but difficult. Lazy. Diffident in transacting business. Great raising of mucus (phlegm from the throat) at 4 p. m. Nervous at night.

October 14. Bloatedness at the abdomen. Urine increased all day in quantity, not in frequency. Afternoon, fit of petulance. angry at near relatives. Swearing mood, not at all pleased, Cannot get over the thought of injuries done by friends. Very cold and chilly (the day is cold and weather changing), considerable mucus from the throat. Slight bloody mucus discharge from the left nostril. Bite the inside of the cheek in evening on right side. Cold feet, the teeth appear sensitive (I may have taken a little cold). The mind appears to be much affected and does not appreciate its morbid condition. Much tempted to do things one should not do. 4 p. m., loose stool, urine increased in frequency, much more copious. Have had for a few days an eruption of tubercles on the neck, just back of the left ear and covering the mastoid process. Omit the first letter of a word in writing. Sometimes transfer the first and second letters, making the second first and the first second. Eruption about ear, bleeds freely. Cold feeling with ache at the neck just below the ear in the sterno-mastoid muscles near their insertion. Petulance and desire to be at work; very irritable, cannot stand the least trifle. Transpose in writing the two final letters of a word, unless write

very slowly. Tea tastes very insipid (it is not very strong), yesterday strong tea was very agreeable. Omit the first letter of the last syllable of a compound word. Respiration with a slight heave of the chest, followed by less marked heaving respiration, gradually becoming quieted and natural. Still chest feels ill at ease. Involuntary blasphemous mood. Atrophied appearance of the external genital organs. In straining at stool, varicose veins on left side enlarged very greatly. Evacuations smell like strong drugs. After kneeling or resting on lower limbs, the latter becomes numb with tingling and pricking. Left nostril discharges on picking, a little blood and watery phlegm. Cold feet, feel chilly in a warm room. Arranged one of the drawers of my desk. After kneeling, lower limbs asleep, immovable. (This is a two days old symptom.) Cold strikes straight through the chest, upper portion. No pain experienced about the head, but the mind aberrations. Not entirely conscious of the full extent of mental vagrancy.

October 15. Early pain in the globe of the right eye, continuing. Cold feet. Coldness of the body. Not able to wait on urinating. Feel an intense desire to be busy. Could scarcely give way to the wishes of friends with whom I was associated, went without dinner. Towards evening pain through the globe of the eye. Felt remarkable freedom in doing what I had to do. Mind pretty clear.

October 17. Very vindictive at night. Seminal emission.

October 20. Stopped in the midst of my work, as if by an irresistible power.

Several other species of the cactus were "proved" in a similar manner, and with like fertility of results. As the remedies may be supposed to be specific antidotes for the several symptoms produced by them, the range of their applicability must be quite astonishing, and their therapeutic value commensurate. Candor requires us to confess a degree of obtuseness for appreciation of all these niceties, and we fail to comprehend why the doctor at one time was inclined to prayer, and at another to profanity from the same drug. Indeed the conviction is irresistible that the homœopathic system is adopted only to highly ethereal natures, gifted with mysterious sensibilities; while grosser and commoner natures are insusceptible to these obscure and delicate agencies, and must be subjected to those sensible and ponderable agents which are efficacious even upon the brute creation.

Nay, more: the merits of this system having been acknowledged and appreciated, it is now time to understand that the kingdom of Laputa, the philosophers thereof and their scientific investigations, were an historical reality. In the fulness of

time the authenticity of the work known as *Gulliver's Travels* will be established, and will enjoy an authority for historical and scientific accuracy coequal with the *Pentateuch* of Moses, the *Arcana Celesta* of Swedenborg, and the *Organon of Rational Medicine* of Hahnemann.

A noticeable feature in the literary style of the author is his independence of some of the rules of syntax, generally acknowledged by adherents to the older school of medicine. We cannot undertake to decide whether this has any connection with the medical faith which he professes. S. S. H.

A Series of American Clinical Lectures. Edited by E. C. Seguin, M.D. Vol. II. No. 1. *The Principle of Physiological Antagonism as applied to the Treatment of the Febrile State.* By Robert Bartholow, M.A., M. D., Prof. Theory and Practice of Medicine, and of Clin. Med., Med. Col. of Ohio, etc.

Several interesting experiments were performed to illustrate the subject matter of the lecture. First, the recently removed heart of a turtle, still throbbing at the rate of 40 beats to the minute, was exhibited. By the application of heat this action was greatly hastened, while the application of ice reduced the pulsations to ten in the minute. Again, digitalis, aconite and veratrum viride severally were administered hypodermically to rabbits, with the effect, in every case, of lowering the temperature from 102° gradually to 98°, and even lower.

The antipyrectic action of quinine also is discussed, and the effect is attributed to its effect on the blood corpuscles, diminishing their capacity for conveying oxygen, and thus retarding the combustion process throughout the tissues.

The antipyretic action of salycilic acid is explained by its destruction of disease germs, which are supposed to increase the combustion process.

The practical application of his therapeutical views is thus summarized: "Antipyretic remedies are not to be administered without precise indications. It will not suffice to ascertain the existence of fever, and then prescribe an antipyretic. The particular conditions of the febrile state must guide our selection of the remedy. When the state of pyrexia is the most important element in the morbid complexus—cold baths, quinia, and digitalis are the remedies to be employed. In the fever of inflammation, is the action of the heart vigorous and the arterial ten-

sion high? acouite and veratrum viride are indicated; is the action of the heart feeble and the tension of the vessels low? quinia and digitalis are more appropriate. Is the fever due to putrid ferments, to disease-producing organisms? quinia, salicylic acid are required."

This lecture is highly suggestive and instructive, and well sustains the reputation of the editor's undertaking. S. S. H

No. 2. *On Certain Forms of Morbid Nervous Sensibility.* By J. S. Jewell, M.D, Prof. Nervous and Mental Diseases, Chicago Med. Col.

In this lecture reference is made to an actual typical case. At the outset the author lays down the principle of the necessary coincidence of structural with functional derangements, though it is often incapable of demonstration. The idea, at any rate, is not unreasonable, but has strong support in analogy with instances capable of demonstration.

The cause of the malady in question is found in defective nutrition, and its remedies are chiefly rest and suitable nutrition. Such restorative remedies as phosphorus, quinine, iron and strychnia are recommended. These may be supplemented by passive exercise, electricity and the shower bath. For direct action in allaying morbid nervous sensibility, he recommends the bromides, ergot and digitalis. Their mode of action can readily be understood by those familiar with their special therapeutic properties.

This lecture is correlated to No. 4 of the first series, by Dr. S. Weir Mitchell, on "Rest in the Treatment of Nervous Disease;" but, while narrower in pathological scope, is broader in therapeutical application. The author's views are judicious and practical.

No. 3. *The Treatment of Mild Cases of Melancholia at Home.* By E. C. Seguin, M.D., Professor of Diseases of Mind and Nervous System, Col. Phys. and Surg., N. Y.

The point in question is illustrated by the histories of four cases treated privately. These cases are instructive, as representing variety in the ætiology, symptomatology and treatment of melancholia of the milder type.

The determining point for choice of treatment in hospital or at home are thus enumerated: "(1) Are the hallucinations, delusions and impulses of the patient vivid and strong? (2) How obsti-

nate is his refusal of food? (3) How distinct is the tendency to suicide?" Other considerations are, liability to aggravation of symptoms by continued association with familiar surroundings, and the general advantage of early separation from the influences under which the affection arose, and confinement to the orderly arrangements of a well-conducted establishment.

Restorative remedies enter largely into the therapeusis of the malady, among which phosphorus occupies a prominent place. The favorite formula with Dr. S. is Thompson's Solution, as follows: "Phosphorus, grs. vj.; absolute alcohol, ʒxxx. Dissolve and add glycerine, ℥ix.; alcohol, ℥iss. Mix the two solutions and, while hot, add essence of peppermint, ℥ss. ʒj of this solution contains between 1-19th and 1-20th grain of phosphorus. It may be given as it is, or with more glycerine, or with cod-liver oil." S. S. H.

Extract from the Ninth Annual Report of the State Board of Charities of the State of N. Y., relating to Hospitals for the Sick and Insane. By M. B. Anderson, M.D., Commissioner 7th Judicial District; J. C. Devereux, Commissioner 5th Judicial District. To which is appended a Report relating to the Management of the Insane in Great Britain. By H. B. Wilbur, M.D. Transmitted to the Legislature, Jan. 14th, 1876. Pp. 54.

The first part is quite brief, and hardly more than an introduction to the report of Dr. Wilbur, who made a tour of inspection of asylums for idiots and the insane in Great Britain, in 1875.

The most striking features of the best establishments visited by him, are the almost total abandonment of physical restraint on the insane, and their occupation in a variety of industrial pursuits. These are recent improvements, and their success has more than justified the judgment of the originators of the plan. There can be no doubt that employment is the measure of principal importance, without which restraint could not be dispensed with, and the greatest measure of skill in treatment consists in adapting it to individual cases. Physical occupation is needed by most, in order to divert the mind from the subjective tendencies which lie at the bottom of alienation.

Attention was given also to some of the numerous private asylums, which are under the supervision of the Commissioners

of Lunacy, like the public establishments, but are supported by charges on the inmates.

The peculiar insane colony at Gheel, Belgium, was visited by Dr. Wilbur. This consists of 1300 men and women, all but 40 of whom are living in families in the close vicinity. They are first admitted into an asylum under the immediate care of the Superintendent, who studies each case personally, and assigns individuals to suitable homes and occupations. The total population of the commune is about 12,000, and most families receive such boarders, who share both the labors and the fare of their hosts. In this way the cost of support varies from $1.25 to $18 a week, according to the station and circumstances of the patient.

At the Richmond District Lunatic Asylum, Dublin, the characteristic feature is the use of school exercises as a means of employment and diversion of the mind from itself. As the Superintendent was absent, Dr. W.'s opportunity to study the workings of the plan were so restricted that he does not venture on an opinion of its merits. We should not expect mental occupation so well adapted as physical labor to withdraw the unsound mind from its disordered operations.

An appendix contains some figures illustrating the ratio of recovery to cases under treatment; particulars of the internal administration of asylums in Great Britain, including references to particular establishments; the duties of the Commissioners in Lunacy, etc.

The British public are now quite satisfied with the utility of governmental supervision of lunatics, though opposition was made to the system some 20 years ago by alienist physicians, when the act went into effect. The American plan of investigation by Legislative Committees is perhaps better adapted to the genius of our people, as officers appointed for special duties are selected with reference to partizan services rather than any fitness for their functions, and would themselves need more watching than the managers of asylums. S. S. H.

Aphonia; its Causes and Treatment. By Wm. Porter, M.D. (Reprinted from the "St. Louis Medical and Surgical Journal."

The most suitable classification of Aphonia is that which has reference to causation, and the author's is as follows:

For convenience, I have considered the causes of aphonia as affecting one of three factors in the formation of voice.

Those impairing the first element—the supply of air—are phthisis, debility, and tracheotomy.

Those that alter the condition of the second—the outline or elasticity of the vocal cords—are divided into local and constitutional affections. The former are acute and chronic inflammations and morbid growths; the latter, phthisis, syphilis, and the exanthemata.

Of the third and last class—those which impede the action of the muscles moving the cords—especially the abductors and tensors—we have just seen the principal members are mechanical obstruction, bilateral and unilateral paralysis of these muscles, and possibly a reflex nerve action from irritation elsewhere.

The author's plan of treatment in general seems rational and appropriate. When aphonia is associated with deficient nerve force, phosphorus is properly recommended; but in the form of phosphoric acid, recommended by him, we should find about as much resemblance to free phosphorus as exists between sulphuric acid and sulphur, both in sensible and therapeutical properties. S. S. H.

Transactions of the State Medical Society of Arkansas. Pp. 100.

This volume includes the proceedings of the convention which assembled in October, 1875, at Little Rock, and adopted a constitution and by-laws for the organization of a State Medical Society; also the proceedings of the first session of the Society, which took place directly after.

The latter include a health report of Little Rock from July 1st, 1873, one year, and a number of brief papers on medical subjects, chiefly reports of cases in practice. The most remarkable of these was a case of suppurative pericarditis, reported by Dr. W. B. Welch, in which the extreme dyspnœa was relieved by aspiration, but only temporarily, for the sac again filled up and the patient succumbed.

Dr. Thos. W. H. Hurley expresses a great depreciation of the value of cod-liver oil—thinks it nowise superior to any other animal or vegetable oil, and less acceptable to the stomach than some others. In this stand he is at variance with most of the profession, but it is not likely that he will suffer persecution for

opinion's sake, or even forfeit his good standing among his brethren.

It may be presumed that the publishing committee used the best material at hand in filling up the pages to an even hundred, but it is possible that they might have been excusable had they decided upon a smaller number. S. S. H.

Sixth Annual Report of the New York Ophthalmic and Aural Institute, 48 E. 12th Street, near Broadway, for the Year beginning January 1st, 1875, and ending December 31st, 1875. Pp. 16.

The Institute is composed of 49 members, six of whom only are medical men even, and only one of them being on the medical staff. Its operations comprehend a hospital and dispensary department, and a school for theoretical and practical instruction. The latter has both a winter and a summer course, each lasting from three to four months.

The report gives classified lists of cases and operations, and the Treasurer's statement. This last shows that the establishment is nearly self-supporting, about one-sixth of the expenses being made up from various other sources.

The general plan of the Institute is in every way commendable, as it subserves the general purpose of a charity, a pay-hospital, and a school; and the exhibit of its transactions speaks favorably of its administration. S. S. H.

Specimen Fascieulus of a Catalogue of the National Medical Library, under the direction of the Surgeon General of the U. S. Army, at Washington, D. C. 4to., pp. vi.; 72.

This collection was, until lately, known as the Library of the Surgeon General's Office, but is now properly the Medical Section of the Library of Congress. It is still under the direction of the Surgeon General, in connection with the Army or National Medical Museum. Although containing already about 40,000 volumes, together with as many pamphlets, it is considered as not more than half complete, in order to afford such means of reference as medical writers might desire.

The plan proposed is that of "a combined catalogue of subjects

and authors, arranged in dictionary order under a single alphabet." We agree that such a plan will be found more convenient than separate works for authors and subjects. The classification of subjects is on an anatomical basis, which is as convenient as any. The name of the publisher and the number of pages are generally stated, but not invariably, and we see no necessity for any omission of particulars of such importance. It appears to us that the most prominent word of a title, instead of the first word, should be the one selected for the alphabetical indication; but under the head of *Account* we find references to a Medical Controversy at Cork, to Influenza, to Indian or Spasmodic Cholera, to Longevity, etc. Unless the same works are noted under other heads, giving some idea of their contents, they are not likely to attract attention.

Without going into particulars about the typographical execution of the catalogue, we can say that it is well adapted to render conspicuous the important features of the work by extensive variety of types.

The magnitude of the complete catalogue is apparent, when we consider that it will include five volumes of 1000 pages each. It is greatly to be desired that a large edition may be published for extensive distribution, as it would prove an invaluable guide for medical investigators and writers to such authorities as they might wish to consult, and would be a great advantage even to those unable to have access to the library itself. S. S. H.

CORRESPONDENCE.

Case of Scrofulous Osteitis treated by Wm. T. McLeary, M.D., of Weimar, Texas.

In March, 1875, I was called in consultation by Dr. W. T. McLeary in the case of John J. Campbell, a boy about fifteen years of age, with light hair, blue eyes, and fair complexion—a perfect type of a strumous constitution. His mother stated that in 1868, when living in West Tennessee, he was taken sick with high fever, and severe pain and swelling in the left leg, about the middle of the tibia. He was under the care of the family physician, but notwithstanding his efforts to control the disease, it progressed so, that at the expiration of a week the lower third of the leg was also much swollen and very painful. After two

or three weeks, his attendant thought best to lance the inflamed and swollen tissues. This being done, a thin ichorous pus was discharged, which after a short time brought away with it small pieces of bone. His physician now opened the diseased structures more freely, examined the bone carefully, and removed a considerable amount of necrosed bone. Consultation was held with several physicians, and it was thought that amputation would be necessary; but better counsel prevailed and the limb was saved, though the boy never walked on it for eighteen months. During that time, a considerable quantity of necrosed bone was removed. He, however, made a good recovery, and came to Texas two or three years afterwards.

In March, 1875, about five and a half years after recovery from former attack, he was taken with high fever, severe pain in lower third of formerly diseased leg, accompanied with swelling and a red glossy appearance of the skin. Dr. McLeary was called in, and treated him energetically with such antiphlogistics as he deemed best suited to his case, but with no effect in arresting the disease. The swelling increased, and the pain the boy suffered was agonizing. He had to be kept constantly under the influence of large doses of morphine.

The doctor knowing the history of his patient, and fully appreciating the necessity for prompt action in his case, sent for me in consultation. After making a careful examination of his condition, we decided to make a free incision down to the bone, thinking that pus was probably formed on its surface. This was done, but not a drop of pus was to be seen, nor any sign of ulceration of the bone: this, however, we found enlarged, and presenting decided evidence of inflammation. Knowing the value of free and early incision in inflamed soft tissues when pus has formed, and thinking possibly pus might be forming in the interior of the bone, Dr. McLeary suggested that we remove a portion of the inflamed bone, and give the pus, if any, a chance to escape. To this I readily assented. Not having a trephine to operate with, we took a $\frac{3}{8}$ inch chisel and a little mallet, and removed a piece of bone one-half inch square, and extending from the surface to the centre. No pus, however, followed the operation. After carefully cleansing the wound it was closed with a couple of interrupted sutures, and adhesive strips and cold water dressing applied. The wound in two or three days suppurated freely. The pain which had been so excruciating

was entirely relieved, the progress of the inflammation arrested, the wound healed rapidly, and the boy was able to be up in a few weeks.

The operation, in its results, far exceeded our expectations. The after treatment consisted chiefly of a liberal use of cod-liver oil with phosphate of lime. It is now more than a year since he was under treatment, and there has as yet been no tendency to a return of the disease. The fortunate termination of this case, I think, may be fairly attributed to the early operation. Had it been long deferred, doubtless necrosis would have ensued.

C. O. WELLER, M.D.

COLUMBUS, TEXAS, June 17th, 1876.

A State Medical Association.

The attention of the medical profession in Louisiana is respectfully called to the following correspondence and action of the Plaquemines Parish Medical and Surgical Association. The subject is one in which we have a common interest, and suggestions are earnestly invited in regard to steps for the practical organization of a State Medical Society. The press and pages of the JOURNAL are cheerfully placed at the disposition of the physicians of Louisiana, whenever they may conclude that the proper time has arrived to ask a general convention for the purpose of organizing a State Medical Association.

SECRETARY'S OFFICE OF THE "PLAQUEMINES PARISH MEDICAL AND SURGICAL ASSOCIATION," MAY 22D, 1876.

Professor S. M. Bemiss, M.D., Editor N. O. Medical and Surgical Journal:

Dear Sir—At a meeting of the "Plaquemines Parish Medical and Surgical Association," held at Pointé à la Hache on the 9th of May, 1876, the attention of the members was called to the great necessity for a *State* Medical Association in Louisiana, and a committee of three was chosen to draft resolutions expressive of the sense of this Association, as well as to endeavor to enlist the members of the medical profession throughout the the State in this matter.

The following resolutions were reported and adopted:

Resolved, That believing the dignity, usefulness, education

and interests of the medical profession, are elevated through the influence of medical societies, we therefore suggest to our professional brethren of this State the organization of such Associations in the different parishes.

Resolved, That consequent upon the formation of a sufficient number of such societies, we propose the organization of a *State Medical Association*, to be composed of representatives from the various local organizations.

Resolved, That we respectfully invite response to these resolutions from other medical Societies which may exist, or from members of the medical profession resident in districts where such do not exist.

Resolved, That a copy of these resolutions be sent to the "New Orleans Medical and Surgical Journal" for publication, and that we invite the expression of the Editor's opinion in relation to the object of the resolution above set forth.

Resolved, That a copy of these resolutions be sent to the New Orleans Medical Association, and that its concurrence and co-operation be respectfully requested.

J. B. Wilkinson, M.D.,
D R. Fox, M.D.,
Geo. A. B. Hays, M.D. } *Committee.*

Very respectfully, Geo. A. B. Hays, M.D., *Secretary.*

Montgomery, La., May 14th, 1876.

Dr. S. M. Bemiss, New Orleans:

Dear Doctor—I see an editorial in "Medical and Surgical Journal" of May, favoring organization of a State Medical Association. This certainly will meet with the approval of the physicians of this State. I have long favored such a society, and I think this is a move in the right direction. Keep it before the public until you succeed.

I would suggest Alexandria as a suitable place for meeting and organizing, as it is near the centre of the State and is accessible.

Respectfully, Aliston A. Dunn.

EDITORIAL.

The Journal.

The present number is the beginning of Volume IV. of the new series of the Journal. This is therefore a proper moment

to inform the friends of the JOURNAL of its progress. Under a vigorous and systematic management by its present Proprietors, the JOURNAL has reached a state of financial healthfulness which justifies a pledge of continuance of its publication on their part.

When these gentlemen became its possessors, its monetary straits were of such magnitude that prompt collections became necessary to render it self-sustaining. It is not an impossible thing that the energy with which collections were pressed may have been distasteful to some who had fallen into arrears through the direful pressure of unusually hard times. If this should be true, we hope this frank avowal of existing circumstances will prove a sufficient apology.

With the dawn of prosperity, and with the hope of a better era for our country, the Proprietors and Editor now unite in invoking a continuance and enlargement of the support and patronage hitherto bestowed upon the JOURNAL. On the part of the Proprietors and Editor, the promise is made that the 4th volume of the new series shall surpass its predecessors in interest and practical value. That this promise may be most fully and satisfactorily performed, it is earnestly desired that our supply of contributions be increased in number. We want practical, instructive papers on any medical subject—reports of societies, reports of cases, of epidemics, of medical news, of anything whatever which is calculated to instruct, improve, or in any manner aid the purposes of practitioners of medicine.

New Exchange.

The *Ohio Medical Recorder*, J. W. Hamilton, M.D., and J. F. Baldwin, M.D., Editors, published at Columbus, Ohio. A 48 page monthly, filled with good material, and very well gotten up, at $2 per annum.

Convention of Medical Teachers.

I think it an error on the part of some Medical Journals to speak of the Convention of Medical Teachers which recently met at Philadelphia as a failure. It is understood that they have

formed a permanent organization. The mere fact of the existence of a corporate league of the most respectable medical schools of the United States, will have a salutary effect upon those less worthy institutions which, however ready they have hitherto been to defy single-handed opposition, will not dare to encounter the united sentiment of an association of teachers.

It is likely, therefore, that the day is near at hand, when all those disgraceful, but sometimes rather ingenious anomalies working under medical school charters, yet fostering and increasing irregularities—even quackery—will either close their doors, or procure the services of some medical "Bristow" to straighten their crooked ways and reform them.

Association of Medical Officers of the Confederate States Army and Navy.

Those of our readers who desire information respecting this organization can obtain it by addressing the Secretary, John M. Payne, M.D., 210 West Grace Street, Richmond, Va,

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University of Louisiana.

The Chair of Obstetrics made vacant by the death of Prof. Hawthorn has been filled by the transfer of Prof. Ernest Lewis from Materia Medica to Obstetrics. Dr. T. J. Heard, of Galveston, Texas, has been appointed to the Chair of Materia Medica, Therapeutics and Clinical Medicine.

Our Circulars.

The attention of medical practitioners is earnestly invited to the circulars printed below. Their aid is solicited in carrying into effect this method of study. In my opinion, a liberal and pretty full coöperation will bring an amount of information into the general possession of the profession, whose interest and value it is impossible to estimate. Physicians whose lots are cast in the malarious districts of the United States have often realized the importance of their positions when at the bedside of patients

suffering under the graver forms of miasmatic poisoning. The object of the call made in one of these circulars is to gather and summarize individual observations and experience relating to these affections, so as to place each contributor in possession of the accumulated wisdom of the whole mass. It is hoped that the profession will approve the undertaking and give it general and efficient help.

(Circular.)

STATISTICS OF DEATHS, OR INJURIES, FROM LIGHTNING STROKES.

Physicians who receive these blanks are respectfully requested to fill and return them as early as possible. It is desired to publish the report in the September number of the NEW ORLEANS MEDICAL AND SURGICAL JOURNAL. The cases reported are requested to be limited to the 12 months ending June 1, 1876. This period is fixed in order that comparisons and ratios may be established by reference to the U. S. Census Reports. Physicians are at full liberty to report observations relating to other periods of time under head of "General Remarks." If sufficient space is not afforded upon the blanks, please extend remarks at pleasure upon other sheets of paper, preserving as nearly as possible the same headings.

It is hoped that those who have no observations to report, will be good enough to forward blanks to those of their brethren who are known to have had opportunities for observation.

Please return to S. M. BEMISS,
P. O. Box 2188, New Orleans.

1. Total number of cases observed in 12 months.
   Male
   Female
2. Date of occurrence, month . day
3. Number fatal
   (a) Instantly
   (b) After longer or shorter time.
4. Number of recoveries.
   (a) Quickly and completely
   (b) Slowly but completely
   (c) Recoveries incomplete
5. Character of Sequelæ resulting
6. Condition when first seen
7. Treatment
8. Surroundings at time of Stroke: (in open air, near trees, or other objects; metal upon or near the person, &c., &c.)
9. General Remarks.

(Circular.)

STATISTICAL STUDY OF MALARIAL DISEASES.

Physicians who receive these blanks are respectfully requested to fill and return them as early as may be convenient after their reception. It is desired that no cases be reported under the various headings of the circulars for Statistical Study, except such as occurred during the 12 months ending June 1, 1876. This arrangement is determined upon in order that facts obtained may be compared with those found in the Mortality Tables of U. S. Census Reports. Physicians are, however, requested to report important observations relating to other dates under the head of General Remarks. As sufficient space cannot be afforded upon the blanks for extended observations, it is hoped that full reports may accompany the return of the blanks, observing as nearly as practicable the same headings. The report, based upon the returned blanks, will be published in November number of the "*N. O. Medical and Surgical Journal.*"

A copy of the report will be sent to each contributor.

Return to S. M. BEMISS, *P. O. Box* 2188.

I.—REMITTENT FEVERS.

1. Total number of cases.
   (a) Notes respecting age.
   (b) Sex.
   (c) Color.
   (d) Occupation.
2. Symptoms, clinical observations, etc.
3. Durations of attacks.
4. Recovered.
5. Died:—from intense fever—from exhaustion, insomnia, etc.
6. Treatment.

II.—SIMPLE INTERMITTENT.

1. Total number of cases.
   (a) Notes respecting age.
   (b) Sex.
   (c) Color.
   (d) Occupation.
2. Symptoms, types, clinical observations, etc.
3. Recovered.
4. Died.
5. Treatment: (a) to break succession of paroxysms.
   (b) to prevent relapses.
6. General Remarks, etc.

III.—PERNICIOUS MALARIAL ATTACKS.

First. Algid or congestive form (aggravation of cold stage). 1. Number of cases.

2. Symptoms, clinical observations, etc.
3. Recovered.
4. Died.
5. Treatment: (a) to bring about reaction; (b) to prevent return of paroxysm.

Second. Comatose form, (patient exhibiting complete reaction, sometimes intense fever, but with more or less stupor.)

1. Number of cases.
2. Symptoms and clinical observations.
3. Recovered.
4. Died.
5. Treatment.

Third. Hemorrhagic form (cases attended with hemorrhages, whether upon free surfaces; as Stomach, Intestines, Kidneys, Uterus, Lungs; etc., or into solid structures, as Brain, subcutaneous tissues, etc.)

1. Number cases.
2. Symptoms, clinical observations, etc.
3. Recovered.
4. Died.
5. Treatment.

IV.—CHRONIC MALARIAL INTOXICATION.

Remarks upon. Especially with reference to tendency to produce acute inflammations. Its influence upon death rate from other diseases, or traumatism. Influence in the production of abortion or still births, etc. Treatment.

V.—MASKED OR ECCENTRIC FORMS AND MANIFESTATIONS OF MALARIA.

1. Symptoms.
2. Treatment.

VI.—PREVENTION OF MIASMATIC INTOXICATION.

VII.—GENERAL REMARKS.

The reader will understand that this schedule of the circulars is simply printed in the JOURNAL in order that the same headings and itemizing of information returned, may be preserved which is adopted in the blank circulars.

OBITUARY.

Died, at Biloxi, Miss., JAMES JONES, junior, Professor of Diseases of Women and Children in the Charity Hospital Medical College.

METEOROLOGICAL REPORT FOR NEW ORLEANS.

Table I---May.

Day of Month.	Temperature.			Mean Barometer Daily.	Relative Humidity—Daily.	Rain fall—inches
	Maximum.	Minimum.	Range.			
1	85.5	70	15.5	———	—	.00
2	79	70	9	———	78	.05
3	70	53	17	30.042	70	.00
4	77.5	57.5	20	29.941	73	.00
5	82.5	66	16.5	29.955	83	.01
6	———	71	———	29.920	88	.00
7	82	———	———	29.878	—	4.10
8	74	65	9	29.952	88	.00
9	70.5	59	17.5	30.048	68	.00
10	78	61.5	16.5	30.142	68	.00
11	81.5	64	17.5	30.204	66	.00
12	83	65	18	30.170	67	.00
13	85.5	67	18.5	30.103	63	.00
14	89	69.5	19.5	30.099	61	.00
15	85.5	69.5	16	30.091	69	.00
16	86.5	72	14.5	30.120	69	.00
17	87	71	16	30.158	73	.00
18	88	71	17	30.124	69	.00
19	87.5	71	16.5	30.111	71	.60
20	87	73.5	13.5	30.084	76	.00
21	———	———	———	30.040	74	.03
22	87	70	17	30.006	77	.00
23	85.5	72.5	13	30.025	76	.00
24	84	72.5	11.5	30 041	79	.06
25	83.5	72.5	11	30 042	89	1.34
26	80	72	14	29.993	77	.00
27	80	72 5	7.5	29.962	87	.66
28	85	72	13	29.970	—	.11
29	86	72	14	29.898	83	.00
30	87	74	13	29.812	—	.00
31	89	74	15	29.815	69	.00
Mean..						Total.

Table II---June.

Day of Month.	Temperature.			Mean Barometer Daily.	Relative Humidity—Daily.	Rain fall—inches
	Maximum.	Minimum.	Range.			
1	90	77	13	29.944		1.58
2	83	71	12	29.882		.00
3	90	72.5	17.5	29.888		.20
4	90	75	15	29.970		.00
5	84	71.5	12.5	———		.00
6	84	69	15	———		.00
7	88	74	14	———		.00
8	89	74	15	———		.60
9	88	74	14	———		.00
10	88.5	75	13.5	———		.00
11	———	———	———	———		.25
12	88	75	13	29.934		.60
13	87	74	13	29.894		.25
14	88	75	13.5	29.865		.40
15	86	73	13	30.810		.00
16	85 5	74.5	14	29.871		.00
17	91	73	18	29.952		.00
18	85	72	13	29.946		.00
19	89	72	17	30.052		.00
20	89.5	74	15.5	30.042		.00
21	91	76	15	30.097		.00
22	92	76	16	30.156		.00
23	92	77	17	30.114		.00
24	———	———	———	30.027		.00
25	———	———	———	29.957		.00
26	92	76	16	29.965		.00
27	89	80	9	29.774		2.80
28	86	79	7	30.095		.00
29	86	81.5	4.5	29.800		.00
30	88	81	7	29.799		.00
Mean..						Total.

Mortality in New Orleans from May 1st, 1876, to July 2d, 1876, inclusive.

Week End'g	Scarlet Fever.	Malarial Fevers.	Consumption.	Small-pox.	Measles.	Pneumonia.	Total Mortality.
May. 7...	3	7	14	1	27	..	137
May. 14..	5	5	22	6	13	..	154
May. 21..	4	5	19	4	16	..	154
May. 28..	1	3	15	0	16	1	156
June 4..	4	4	13	3	15	..	167
June 11.	1	1	19	2	21	5	144
June 18.	..	11	12	2	16	4	157
June 25.	1	9	20	3	11	5	147
July 2...	3	15	19	3	6	3	141
Totals...	22	60	143	24	141	18	1257

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ORIGINAL COMMUNICATIONS.

BLACK VOMIT OF YELLOW FEVER.

BY JOSEPH JONES, M.D.,

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The following observations on the black vomit of yellow fever, are the results of labors commenced in 1856, and pursued in various portions of the Southern States up to the present time.

I have shown by numerous careful post-mortem examinations, and by analysis of the blood, black vomit and urine during life in various stages of the disease, that:

During the active stages of yellow fever, profound changes take place in the organs and tissues, and especially in the kidneys, heart and liver; and oil and granular fibrinous or fibroid matters (altered albumen and fibrin), transude through the capillaries and fill up the cells and excretory ducts, and arrest or impair the functions of these organs.

The liver of yellow fever does not present the soft friable condition characteristic of true fatty degeneration. The jaundice resulting from the suppression of the excretory function of the liver, would appear to be due to the same causes which induced the suppression of urine, namely, to the deposit of oil and fibrinous matters in the excretory structures of the kidney and liver.

The heart in yellow fever appears to be as fully permeated

with oil, as the liver; in the latter organ, however, a large amount of the oil is enclosed within the liver cells.

Yellow fever is not only attended with what might be called "acute fatty degeneration," but also with such profound alterations of the fibroid elements of the blood as to permit the transudation of the altered fibrin and albumen, through the walls of the capillaries, into the excretory tubes.

Black Vomit.—This ejection of altered blood, from the mucous membrane of the stomach during the period of calm or depression, although not absolutely characteristic of yellow fever, as it may occur in other diseases, is still of so frequent occurrence in yellow fever as to demand the most careful consideration, both as to its nature and origin.

The character of the matters vomited during the progress of yellow fever varies in different stages of the disease, and with the character, relative mildness and severity, and the progress of the changes in the blood and organs.

Whilst yellow fever is characterized, in common with several other diseased states, by an irritation of the gastric mucous membrane, the peculiar nature of the vomited matters does not rest entirely upon the congestion and irritation of the mucous membrane of the stomach, but is influenced to a greater or less extent by the changes of the blood, liver, kidneys, and nervous system.

The vomiting in yellow fever may also be regarded, to a certain extent salutary, and as an effort for the elimination of certain excrementitious materials from the blood. In some cases, the first effects of the black vomit may seem to be salutary: the tongue improves in appearance, the febrile heat abates, and if it were not for other profound changes in the blood, liver and kidneys, lying back, as it were, of this almost universally fatal symptom, beneficial results of the most important character might flow from the relief afforded by the removal of a certain amount of excrementitious matter, as urea and ammonia, from the blood.

The first ejections of the stomach of a yellow fever patient consist most generally of the ordinary secretions and contents of the stomach, then follow vomiting of a mucoid fluid, frequently at first tinged with bile, the reaction of which varies in different cases, being alkaline in some and acid in others.

After the first vomiting, the stomach may remain tolerably

quiet until the subsidence of the fever, on the third or fourth day, when, without any premonitory symptom of nausea, the stomach, on any trifling provocation, may eject a quantity of clear, pale, almost limpid and slightly acid opalescent fluid. At this period the disease may terminate, or make no farther progress, as if this elimination was similar to the perspiration of intermittent fever, the whole ailment vanishing at this stage. If the vomiting continues and passes on to black vomit, it becomes first streaked with dark floculi of altered blood; the reaction in many cases changes from the acid to the alkaline, and careful chemical examinations have convinced me that this change in the reaction of the black vomit was due to the elimination by the gastric mucous membrane of urea, and its conversion into ammonia.

The acid reaction of the yellow fever vomit is due not to the presence of any peculiar acid, but to several, as the phosphoric acid, existing in the form of acid phosphates, acetic and hydrochloric acids. The degree of the acidity will also vary with the character of the fluids and solids taken into the stomach: thus, if much sugar be taken, the vomited matters will be much more strongly acid, and the presence of this substance will also determine to a great extent the presence and development of certain fungi, as the yeast plant.

The rapid generation of torulæ, as well as the effervescence of the black vomit, in certain cases, is referable chiefly to the presence of sugar in the aliment and in the tea and coffee drank.

The specific gravity of black vomit, as determined by weighing, with the specific gravity bottled, varies from near the standard of distilled water to near that of blood.

It is now fully admitted that black vomit is not entirely confined to yellow fever, and that it is chiefly the secretion of the mucous membrane of the stomach, and the matters introduced from without as food, mingled with the blood which oozes slowly into this viscus, from the mucous surfaces denuded of mucous epithelium.

But in most cases, black vomit is something more; it is to a certain extent an excrementitious product, containing urea and carbonate of ammonia.

The kidneys are more or less affected in every case of yellow fever: when they act continuously and freely, the blood is freed of bile and urea, and black vomit more rarely occurs than in

those cases in which their functions are arrested, and the mucous membrane of the stomach assumes the excretory function.

Black vomit is due to several causes.

1st. To the direct irritation and structural alteration of the gastric mucous membrane, by the poison of yellow fever. This poison is most probably received into the blood and acts in this manner, or through this medium upon the gastric mucous membrane, for we find cotemporaneous changes taking place in the heart, liver, and kidneys; and these changes would most probably succeed the gastric irritation, if the poison was received in food or drink, primarily by the stomach.

2d. To the structural alterations of the blood, and especially to the marked diminution of the fibrinous element, which appears to sink to a lower figure than in any other known diseased state. It is well known that the diminution of the fibrinous element, below a certain standard of health, so deranges the capillary circulation as to lead to congestion, alteration of nutrition and secretion, and passive hemorrhages. The hemorrhages and effusions of scurvy can only be referred, with reason, to the changes of the blood, and especially of the fibrin.

3d. To suppression of the action of the kidneys, and retention in the blood of urea and other excrementitious products, and the elimination of urea, and carbonate of ammonia and ammonia, by the gastro-intestinal mucous membrane.

4th. To the direct irritant action of the ammonia, and excrementitious materials eliminated vicariously, upon the mucous membrane of the stomach and intestines.

Bernard and Frerichs long since explained, by experiments, what we observe in those cases of yellow fever attended with urinary suppression. Thus the former experimenter found that a dog, which had a fistulous opening in the stomach, passed daily with his urine about 93 grains of urea and uric acid, and yet during the succeeding twenty-four hours after the removal of the kidneys, the blood drawn from the animal exhibited only a mere trace of these constituents, but urea in abundance was detected in the gastric juice withdrawn through the fistula: and after remaining for some time in the stomach and intestine, the urea changed into ammoniacal salts; and the gastric juice was secreted continuously, and not as in the normal condition only after a meal. Not only were the manner of formation and chemical constitution of the secretion of gastric juice altered by this

vicarious excretion of the main constituent of the urine, but the mucous membrane was structurally altered, and became disqualified not only for the performance of this eliminative action, but also for the elaboration of its normal secretion.

In yellow fever, the suppression of the action of the kidneys follows immediately after, or may even commence in the midst of, a devastating fever, attended with repeated alteration and chemical change of the elements of the blood and the formation of large amounts of urea and other excrementitious matters, and the work suddenly thrown upon the already weakened and altered stomach is far greater than when the kidneys are amputated in a healthy dog, or when their sudden suppression is from the action of cold. Bidder and Schmidt have shown that the digestive powers of the gastric juice are weakened, if it be mixed with any considerable quantity of saliva, in consequence, as they suppose, of the neutralization of the free acid by the alkali of the saliva; and they also found that the addition of bile to the normal gastric juice entirely suspended its digestive property, although the mixture still exhibited an acid reaction. Bernard, Bidder and Schmidt, found that gastric juice, secreted with urea, sooner or later, not only became alkaline, but also lost its power of converting albuminous matters into assimilable forms; and Lehman also found that the digestive power of the gastric juice was much impaired by the addition of alkaline salts, or by saturating the fluid with peptones or other organic substances, either nitrogenous or non-nitrogenous.

In yellow fever, when there is an impairment or suppression of the function of the kidneys, we not only have a combination of these various causes, producing derangement of the gastric juice, but we also have the destruction of the fibrin of the blood, inducing passive hemorrhages from the congested and altered gastric mucous membrane, and at the same time such an elevation of temperature as is most favorable to the rapid decomposition of the contents of the enfeebled stomach and intestines.

5th. To the irritant and nauseating effects of the bile retained in the blood. The bile retained in the blood, without doubt produces its characteristic effects upon the nerves supplying the stomach, producing nausea and vomiting.

6th. To the degeneration of the excretory and secretory cells of the gastro-intestinal mucous membrane, attended with or characterized by the deposit of granular fibroid or albuminous

matters and oil globules in the secreting cells, and in the walls of the smaller blood-vessels or capillaries.

7th. To the capillary congestion of the gastro-intestinal mucous membrane, similar in all respects to the intense capillary congestion which characterizes all the organs and tissues in this fever.

The chief causes of black vomit therefore are: the direct irritation of the gastric mucous membrane; intense capillary congestion, in consequence of the morbific action of the poison of yellow fever, and its products, upon the vaso-motor system of nerves; suppression of the functions of the liver and kidneys, and the retention in the blood of bile and urea, and the elimination of urea from the gastro-mucous membrane, as such, and and in the state of ammonia and carbonate of ammonia; and the direct irritant and solvent effects of ammonia, and carbonate of ammonia, upon the gastro-intestinal mucous membrane, and the effects of the urea, ammonia, and other constituents of the metamorphosis of the tissues upon the blood; the alterations of this fluid by the changes excited by the yellow fever poison, and the destruction and alteration of the fibrinous element.

When careful sections of the kidneys were made with Valentin's knife, and examined under the microscope, the malpighian corpuscles and tubuli uriniferi were filled with oil globules and granular fibroid matters, which appeared to be modifications of fibrin and albumen. The excretory cells of the kidneys also contained oil globules and granular matter.

The poison of yellow fever appears to act in an analogous manner to the agent producing small-pox, or the poison of certain reptiles, which alter the constitution of the blood, and lead to the formation of altered albuminous and fibrinous products from the blood; and which in the case of yellow fever transude into the hepatic ducts and urinary tubes, and thus cause suppression of the urinary and biliary secretions.

When in any case of yellow fever the function of the kidneys is arrested, a fatal result necessarily ensues, not only from the retention of the urinary constituents, but also from the retention of the bile.

As long as the kidneys perform their normal function, the retained bile will be continuously eliminated; but as soon as these organs cease to act, the bile, as well as the urinary excretion, is retained in the blood, and certain nervous disturbances

are induced, as dulness of the intellect, uræmic convulsions, and in some cases violent agitation of the muscles resembling tetanic spasms.

Black vomit, therefore, is an *effect* or *result* of preceding actions or changes, and is not a cause; it is an error therefore to search, either by chemical means or by the microscope for the *cause* of the disease in one of its *products*.

Black vomit, from its great amount, may be one of the causes of death; but as it is, in many cases at least, the result of an effort on the part of the living organism to eliminate certain materials from the blood, it may be to a certain extent salutary.

TWO GRAVE MALARIAL CASES TREATED BY HYPODERMIC INJECTIONS.

BY A. S. GATES, M.D.

From memory I report two cases of bilious fever which I have treated with quinine by hypodermic injection.

No. 1.—A negro, Charlie W., living on Anna Plantation, five miles from my office, had fever for two or three days, and during the evening of the second or third day being light-headed, and having no attendant or nurse, left his cabin and plunged into the bayou to cool off. I saw him at about 8 o'clock on 15th July, 1875. He was comatose; breathing labored; pupils contracted; teeth clenched; pulse between 120 and 130. Not being able to get him to swallow, I injected a syringe full (ʒss.) of a solution of quinia prepared in proof spirit, with ammonia aq. containing 2 grs. to ʒi. In half an hour repeated injection and left, to call again on the next morning. In the morning found no change for the better; condition of patient worse if possible, with every symptom pointing to an early fatal termination. Being determined to make a thorough test of this method of administering quinine, I dissolved as much quinine in the solution above mentioned as it would take up, and again injected twice, making, as near as I could guess, about 3½ or 4 grs. of quinia to the ʒi. (my syringe being one of Tiemann's graduated, holding ♏ xxx.) In an hour repeated two injections, the patient getting, according to my computation, about 8 grs. of the salt in the two hours. Saw the case again at 3 p. m.; repeated in-

jections as before, making 16 grs. during 24 hours, administered subcutaneously. There was no perceptible change in the patient's condition, except the slightest evidence of pain and uneasiness when the injection was being thrown in. On the morning of the 17th again saw the patient, who was sitting up eating his breakfast of chicken soup; left a solution of quinia in tinct. ferri chlor. to be continued during the day, and discharged patient, as his employer would not be responsible for any more visits. I heard after 4 or 5 days that the nurse, a negro boy from the plantation, had not given the quinine as directed, and that the man had fallen back into the coma and died 5 days afterwards.

No. 2.—Was the case of a white boy, J. R., aged 15, who had fever two or three days before I saw him. I found him excessively jaundiced, with tenderness over hepatic region; bowels constipated, tendency to delirium, eyes yellow as saffron; tongue coated with yellowish fur, shading off to dark brown in the centre; urine port-wine colored and passed involuntarily; pulse 130. Ordered a brisk cathartic of podophyllin and ext. colocynth co. with ext. taraxa, in pill form. These he chewed up and spat out, as I learned in the morning when I saw him again (first visit made on night of 20th July, 1876). No evacuation from bowels; bed linen stained with urine passed during the night; pulse 130. Ordered a solution of quinia according to ℞—quiniæ sulph. ℈j., acid arom. sulph. ʒi., liq. opii sedat. (Battley) ʒi., aq. menth pip. q. s. ad. ℥i. ℿ. Sig. 30 drops to be taken every two hours in cold tea or toddy. At night, found that he had not taken the ℞ at all. Bowels being still confined, I ordered effer. cit. magnesia, hoping that the pleasant taste would induce the boy to take it (as he is a hard case to manage, doing just as he pleases with his mother). This he knocked out of her hand when she offered it to him. Was called again later and found the patient almost comatose; intense heat of body and head; pulse 130; breathing very labored. My prognosis had been unfavorable from the first. I was now almost certain that the boy would die, as we could not force his teeth apart to get him to swallow anything; ice or toddy it was impossible to force down him. He seemed to be almost "in extremis." I commenced, as a "dernier resort," the use of the syringe with the quinia solution, increased to 6 grs. per ℥j., using one syringe full every two hours, staying by the case myself to watch its effects. After the third injection, the pulse began to show that the medicine

was having a good effect. being fuller and not quite so fast, encouraging me to persevere in my plan of treatment (I had opened his bowels with an enema during the day). At 11 p. m. I administered the last injection of quinia, making 15 grs. administered, and left to call in the morning.

Morning, 23d July.—Found J. unconscious; pulse 100; icterus almost entirely disappeared; enema had brought an offensive bilious discharge early this morning; patient promises to take his medicine. As his father, who was absent, had returned during the preceding night, concluded to let up on the subcutaneous injections, as the boy thinks that he is going to have a rising on his arm, which is very sore; had injected three times into one arm and twice into the other; complains of only one arm, the one that received three injections. No redness about the points of insertion; no evidence of sloughing, or any of the unfavorable circumstances said to be connected with the use of quinia hypodermically. Ordered the mixture containing quinia to be given every two hours during the day.

24th.—Patient still improving; no fever, though the pulse is still too quick. Ordered the podophyllin pill again, which he took with good effect upon the bowels; tenderness over liver decreasing, and patient with care will convalesce.

In these cases it was impossible to administer quinine by the mouth. Quinine, we all know, is *the* remedy for these cases. But it seems to me that even in those cases that are tractable, and who will swallow anything that the doctor orders, this method should receive more attention than it does, for two reasons. First, and in some patients the best reason, is its cost, where such enormous doses are required as we read of in medical journals, where 60, 70, and 80 grains of quinia are given in 24 hours. In its use hypodermically it is universally admitted, that medicine introduced directly into the circulation requires not only less time to produce any given effect, but also a smaller quantity—some writers say one-third the quantity required by the mouth. The other reason, and the one which to my mind is conclusive, is that in this disease the materies morbi affects the stomach, as well as its contiguous viscera the liver and spleen, taking away from it its power of assimilating food, (witness the vomiting of a patient who attempts to eat solid food), as well as its property of dissolving and absorbing medicine. Quinine, it is generally admitted, is more efficacious when

administered in solution, and such has been my experience with it. If we can then relieve the stomach of this burden of absorbing the remedy, and inject it directly in solution into the circulation, which is the home of this malarial poison which we wish to fight, is it not better to do so when there is so little risk of unpleasant sequelæ in its use subcutaneously? I hope that some other physician may try this, and record the results with more skill than I have.

I annex the formula for making the alkaline solution, 4 grs. to ʒi.:

℞—Quiniæ sulph. grs. xxxij.,
Alcohol dilut. ʒvijss.,
Aq. ammon. ʒss. ℳ

For this formula I am indebted to Mr. R. Batterbee, chemist.

Franklin, La., July 26th.

CARBOLIC ACID POISON—WHAT IS THE TREATMENT?

BY C. M. WORTHINGTON, M.D.

July 5th, 1876.—Called to see ——, aged two years, who had drank carbolic acid that had been put out to kill insects; saw the patient in 25 minutes; skin pale, with cold sweat; features livid; breathing labored; mucous rales almost to suffocation; pulse 110, small and hard; pupils partially dilated; insensible in a few seconds after taking the acid; had convulsions in 15 minutes after insensibility (as near as those with the child could tell in their fright) that returned every few minutes.

Olive oil had been given, followed by warm sweet milk, with no apparent relief.

Ordered hot bath, and prepared to give spirits ammonia, when Dr. W. A. Morris came in. He indorsed the proposed treatment. Ammonia was given, then the child was plunged in the water; the shock from the water aroused it from the profound stupor it was in, so much it became frightened; when fully roused, was wrapped without wiping in a thick sheet, the ammonia given every 10 minutes until the pulse went down to 90, soft, when the intervals were lengthened to entire recovery. The corrosive effects treated in the usual manner.

"Dr. D. J. Hamilton, *American Journal of the Medical Sciences*,

1873, p. 279. Death from nervous depression—Dr. J. Bond confirms and reports 3 deaths."

"*London Lancet*, Dec. 1875, p. 566. Dr. Shaw one case," after the usual remedies had been tried, "dissolution seemed inevitable, when ammonia was injected in the veins, when recovery followed."

What antidotes have we for this dangerous and active poison? Will some of our learned teachers give us light on so important a subject?

ABSENCE OF VAGINA.

BY DR. C. N. WORTHINGTON, M.D.

On 4th February, 1875, called to see Mrs. ——, aged 19 years, married one year, to cut down imperforate hymen.

Found vulva normal, but beyond that no vaginal opening, and the urethra and rectum so close 1½ inches back, no opening could exist.

The rectal touch developed a round hard body, about the size of an ordinary fist, in the womb's place.

The incisions were made through the supposed hymen from right to left with the knife, and carried backward and downward 3½ inches, guided by the finger in the rectum; this was followed by a free flow of black blood; a sponge tent was then introduced, and a gutta percha tube ¾ in. diameter, with a small hole in the inner end, was afterwards put in place of the tent and confined by T bandage, and through it the parts kept cleansed by injecting hot water. As the case progressed the tubes were enlarged, and the opening extended by further cutting, until the depth in 62 days was 4½ inches, receiving a Hodge pessary 2 inches wide, permitting the patient to go where she pleased and making all the applications herself.

At the end of 90 days the vagina had every appearance of being normal, with a very small os uteri presenting through the speculum.

Before the operation her skin was sallow, bowels often swollen, pains in the back, and general poor health, expectorating blood monthly.

I occasionally see her in apparent perfect health. Whether the menstrual moliman or the act of sexual connection is normal

I cannot say, for from personal difficulty I have been barred from proper inquiries.

AUSTIN, TEXAS, July 10, 1876.

PUERPERAL SEPTICÆMIA.

BY JOSEPH HOLT, M.D.

A PAPER READ BEFORE THE NEW ORLEANS MEDICAL AND SURGICAL ASSOCIATION.

Mr. President and Gentlemen.—In the subject Puerperal Septicæmia, we resume this evening the discussion of puerperal fever; for indeed the two are so intimately blended, if not identical, as to render impossible the consideration of one without that of the other.

In order to avoid misapprehension and confusion of ideas, it will be necessary that we agree as to the special signification of terms, as they arise, wherever there may be a doubt; for in the whole range of medicine, no subject has suffered so disastrously from an uncertain and faulty use of terms as this one of puerperal fever. The very name is ambiguous, and conveys in itself no special idea further than that of a fever in a puerperal woman.

I speak with all deference, gentlemen, when I say that, taking medical men generally, one has no certain idea as to what another understands by puerperal fever; and a great many educated physicians have no clear and fixed idea as to what they themselves mean when they speak of puerperal fever.

This is easily tested by each asking himself the question, and noting candidly his ability to give himself a prompt and satisfactory answer.

How can it be otherwise when our authorities are themselves equivocal in their use of terms, and are wofully disagreed concerning puerperal fever.

These creators of medical literature express opinions so contrary, that for the student there remains but one alternative—to read the works of one author, to adopt without questioning and in perfect faith all that he may teach, right or wrong; or, utterly ignoring the absolute authority of any *one*, to read the works of all, and from the sum of all that has been written endeavor to extract a general truth.

When we read Tyler Smith and Meigs, Schroeder and Ramsbotham, Meadows and Fordyce Barker, how shall we decide between them? How shall we escape confusion and perplexity? I have adopted the following plan.

Considering the high integrity, the devotedness to the cause of our profession, together with the masterly intellect and accuracy of observation, of such writers as represent the English, German, and French schools, we are forced to conclude that their want of harmony must be due to some other cause than downright error. There is an accord in their testimony of clinical facts, even if they interpret phenomena differently. Is there not likely to exist a thread of truth running through this mass of evidence—a few principles in accordance with which all may be harmonized?

My whole effort this evening will be to attempt certain generalizations, presented finally in a few brief propositions, which, I trust, may furnish us with a precise and satisfactory view of this question.

I shall limit myself to the more prominent points in the etiology and pathology of puerperal fever.

It would be instructive and curious, just here, to review the several schools of doctrine concerning this disease.

Fordyce Barker, with great patience and industry, has classified them according to their opinions.

First, the localists; those who believe there occurs primarily an inflammation of some one or more of the organs or tissues connected with the process of parturition—Meigs, Alonzo Clarke, Beau, Jacquemier, Trousseau, Velpeau, Béhier, Mathis, Pajot, Berne, Dr. Robert Lee.

The second school "regards puerperal fever as analogous to traumatic fever, and the severer forms of it as being due either to septicæmia or pyæmia"—Cruveilhier, Raciborski, Simpson, Hervey de Augoin, Bouilland, Billroth, Sir James Paget, D. Espine, Schroeder, Spiegelberg, Tilbury Fox, Evory Kennedy, McClintock, Tyler Smith, Barnes, Leishman, Meadows, and Ramsbotham.

"A third school regards puerperal fever as primarily a blood disease, developed like other zymotic diseases, by epidemic, endemic, and contagious causes; that in this disease a modification of the general organism occurs antecedent to the local lesion, and consequently the local lesions are secondary; that is,

they are the result of the disease, and not the cause; in short, that it is an essential fever—Guirard, Dubois, Depaul, Dangau, Lorraine, Turnier, Mouneret, and Fordyce Barker.

The fourth class includes under the term puerperal fever all the zymotic diseases, such as typhus fever, scarlet fever, erysipelas, diphtheria, hospital gangrene, septicæmia, and all the severe primary inflammations when they occur in puerperal women. This class does not reject the idea of a primary vitiation of the blood, but terms the disease a puerperal fever, whatever may be the specific nature of the primary poison. In this class is probably included a majority of the most eminent obstetricions of Great Britain.

Fordyce Barker reckons himself of the third class. And in what he calls his confession of faith he says: "There is a fever which is peculiar to puerperal women, and is, therefore, appropriately named puerperal fever.

2. "The symptoms of this disease are essential, and are not the consequence of any local lesions, and it is as much a distinct disease as typhus fever, typhoid fever, or relapsing fever.

3. "It belongs to the class of zymotic diseases, and results from some unknown blood changes."

If the cause of this disease is essential or specific, as small-pox or yellow fever are, why should it single out one small class of individuals who are in every respect, except the puerperal state, as those about them? How do we account for cases sporadic, and absolutely isolated? This is not the history of any of the known essential diseases. To the unacclimated, small-pox, yellow fever and scarlatina, except neither age, sex, nor condition. The essential virus of diphtheria does not single out children of a particular age, complexion, or condition, but seizes upon the aged as well as the infant. Relapsing fever, typhoid and typhus, do not limit themselves to a particular sex. Nor is it conceivable that there can exist a specific entity called the puerperal poison, which can affect puerperal women only.

To confirm these conclusions of legitimate reasoning, we have irrefragible proof in the fact that puerperal fever can result from infections from a multitude of sources; that not only can the woman originate her own contamination, but can originate the poison and contaminate another puerperal woman, without she herself being poisoned. While, on the one hand, she can be infected by the non-puerperal subjects of different diseases, on the

other, she, having puerperal fever, can occasion in the non-puerperal a variety of morbid processes. This is demonstrated clinically: a physician having a case of putrid sore throat, attends an accouchement; the woman is attacked with puerperal fever. Presently her nurse, having a scratch on her finger, is seized with erysipelas of the hand, followed by phlegmonous cellulitis; apscesses form in different parts of her body, and she (the nurse) dies eventually of pyæmia. A physician having a case of typhus attends an accouchement, and the woman is seized with malignant puerperal fever. He attends in succession several cases of labor, and all the women die of puerperal fever, and two of the infants of diffuse cellulitis. A physician suffering with an ozæna connected with caries, attends during a period of many months a number of cases of labor, "his path is *tracked* with puerperal fever." Ignorant of the source of their infection, he bathes, shaves, uses every detergent, quits practice for several months, and resumes it with the same unfortunate luck. He is at last apprised of the nature of the case by another physician calling his attention to the ozæna. Tyler Smith positively affirms that surgeons attending puerperal fevers have often started erysipelas and other unhealthy actions in their surgical cases. Instances of this kind can be cited by the score; all going to disprove the essential nature of puerperal fever, but to establish the unity of a poison found under a variety of diseased conditions.

What, then, is the nature of this virus? That it is zymotic, therefore organic and living, is proved in its unlimited power of reproduction. We have the same evidence here as is furnished in regard to vaccine.

It is tenacious of life, and clings to whatever it touches with remarkable pertinacity. It may be conveyed by touching with the hand, or in fomites, *and to this idea of touch* we will limit the term contagion. It is infectious; that is, capable of transmission without a visible medium of conveyance.

It is itself life out of death; though a living entity, it is the offspring and product of the putrid disorganization of animal matter.

We give to this *essence of rottenness* a name, and call it the septic virus. Its action of reproducing its own kind, and in doing so, of inducing rottenness, putrid disorganization, wherever brought in contact with flesh or animal fluids, we call septic.

The state or condition, the result of being so poisoned, we call sepsis.

Being invariably the result of putridity, it is found associated with every essential or specific virus whose morbid action is *characterized by putridity.* This is its relation to scarlet fever, putrid sore throat, diphtheria, small-pox, typhus, phagedenic chancre, and erysipelas.

In *putridity* we find its relation to caries, cellulitis, the ichorous discharges of cancer, decomposing lochia, coagula, or placenta, or a stinking fœtus. Every virus has an identity of its own, and is not convertible into another by altered conditions. Hence it is, that puerperal fever cannot be directly induced by the scarlatinal or any other specific poison.

Each produces its kind under any and all circumstances favoring its increase. Much error and confusion have arisen from the unqualified manner in which writers speak of measles, scarlet fever, small-pox, etc., as producing puerperal fever.

While some are inadvertant on this point, others speak of these diseases as immediate causes. Tyler Smith, for example, says: "*Exposure* of the puerperal woman to the poison of scarlatina will give rise to puerperal fever in patients proof against the reception of scarlet fever itself."

Such women die, not from the scarlatinal poison itself inducing puerperal fever, but from contact with the putridity so often resulting from that disease.

When the virus of one of the specific eruptions or of yellow fever comes in contact with a puerperal woman already acclimated, she escapes as others do; when, however, it comes in contact with a puerperal woman not acclimated, she takes the disease more readily, and it runs its specific course more rapidly and with far greater violence than is usual in others. The reason for this we will presently see. If true puerperal fever complicates the attack, it is because the septic virus is produced in and absorbed from the putrid products of the disease. She is first poisoned with the specific virus, and then with the virus of putridity.

Why is not putrid virus ranked as one of the essential or specific poisons, as the scarlatinal, etc.? A virus is called specific when in its morbid action it produces a series of associated pathological phenomena, under any and all circumstances the

same. This series of phenomena is the rule of its action, and specifies the nature of the virus.

The septic poison, though as much a living entity as small-pox, shows no fixed series of pathological phenomena. In one it is superficial erysipelas, in another phlegmonous cellulitis, in another phagedenic ulceration, in a fourth septicæmia, in a fifth an ichorous ulcer, in a sixth puerperal septicæmia, and so on.

Why is it that the puerperal woman is of *all persons* the most susceptible to septic infection, and why, being infected, should *she* suffer more intensely than any one else?

The same question may be asked in relation to all the zymoses. The reply to this inquiry is furnished in the modified blood of the pregnant and parturient woman. Her blood has been long burdened with the excreta of her child.

Blood is at best an unstable compound, made up of elements apt and quick to suffer change. Added to this, into the blood of the parturient women there is being poured the nitrogenous detritus resulting from the retrograde metamorphosis of the whole genitalia, uterus and all, undergoing rapid involution.

Besides this, the blood is now loaded with the elements from which is to be evolved the milk, a fluid more unstable than the blood. Of all known organic substances, caseine is perhaps the most unstable, the quickest to take on putrefaction.

Caseine, as such, has been detected in the blood of the parturient woman. However, it is unnecessary to raise this question, as it matters little whether caseine as such, be in the blood or not, since its representative, protein, is there, in an abundance commensurate with the demand to be made in the approaching lactation. Sugar of milk is there, too. Thus we have in the blood of the puerperal woman a fluid, which of all known organic compounds is the readiest to take on putrefactive change. Her blood is in the same condition of fitness for the septic ferment that the must, beer wort, and dough are for the mycoderm of yeast. The introduction of an *infinitesimal atom* is sufficient to leaven the whole lump, to disorganize the whole mass.

The action of this septic virus, then, is to induce putrid fermentation, with rapid and complete breaking down of the blood.

As to the essential nature of this virus, whether animal or vegetable, or what particular mycoderm it may be, with this we

have nothing to do at present. Among its other qualities, it is endowed with pyrogenetic and phlogogenetic properties; that is, it is capable of itself of exciting general fever and local inflammation. Wherever the blood circulates, according to the degree of its infection, there also does it carry fever and light up acute inflammation.

In malignant puerperal fever every tissue in the body is the seat of acute inflammation; if not perfectly evident, certainly discoverable by the microscope. The organs of vegetative life are particularly vulnerable, and therefore undergo the most rapid change.

The simultaneous occurrence of a very slight acute inflammatory change occurring in the heart, liver, kidneys, and lungs, is incompatible with life. This accounts for the cases of sudden death from malignant puerperal fever, without a discoverable pathological lesion post-mortem. We can readily imagine corresponding changes in the nervous centres.

Why is it that one woman is stricken from the beginning with a mortal collapse which terminates in a few hours, while another lingers along with symptoms comparatively mild, and finally recovers? First, the degree of predisposition brought about by the state of the woman, and the conditions under which she lives. Secondly, the rapidity of primary infection.

All of the causes likely to depress the vital powers, or to vitiate the blood, as residence in a hospital, mental depression, as in women seduced—all such as these predispose to malignant puerperal septicæmia.

An intense or an overwhelming septic intoxication is spoken of as *acute septicæmia*, in contradistinction to ichœrhæmia, which denotes the gradual introduction of the poison, by the contact of an ichorous discharge, for instance, with a non-granulating puerperal ulcer in a woman under more healthy conditions. This is a distinction of intensity and not of kind.

What are the possible and what the usual channels through which septic virus is introduced into the woman's blood?

Tyler Smith, and many with him, maintain that contamination may occur through the lungs or alimentary tract.

Schroeder, with many others, without positively denying this, affirms that as a rule the virus enters the blood by way of the

genetalia, through fresh lesions of the mucous membrane incident to delivery, or through these lesions later in the event of an injury to their granulations.

As to an indefinable miasm absorbed, they utterly deny it.

To cover every possible case that may occur, Schroeder makes this observation: "It is possible, also, that septic substances floating in the air of the lying-in room may come in contact with recent wounds. These substances never exist as gaseous miasms, but rather as organic compounds suspended in the air. On the whole, there is no cogent reason for such an assumption."

That septic contamination of the blood can take place through the mucous membrane of the lungs or of the alimentary tract, we cannot positively deny, though it is highly improbable. The weight of evidence is against it.

In the case of those serving continually in dissecting rooms, surgical wards, in making frequent autopsies, and in like occupations necessitating the inhalation of air contaminated with animal effluvia, and the swallowing of saliva impregnated with it, the blood becomes impaired but not infected. To infect with the septic virus, the evidence from all of these sources goes to prove that the poison must be introduced through a wound, however slight. It is not possible to conceive a case wherein a puerperal woman can escape contact of the vulva with the air and all that it contains. In every parturition the vulva and genital tract are the seat of open wounds.

But granting that puerperal fever may result from septic contamination through the lungs, it only shows the greater necessity of care in the prophylactic management of obstetric cases.

Certain structures are peculiarly liable to be the seat of pathological changes in this disease. These are the vagina, the uterus with its appendages and surrounding connective tissue, the peritoneum, and the lining membrane of the veins draining these parts. The skin is in many instances the seat of an erysipelatous blush.

Why the genetalia, the pelvic cellular tissue, and the overspreading peritoneum should be so frequently implicated, is easy to perceive when we consider the enormous development of these structures, their vital activity, the retrograde metamorphosis going on in them, together with the wounding and bruising inci-

dent to delivery, the raw placental site, and presence of the lochia—a disorganized animal fluid. These are all conditions favoring inflammation. Now when we remember that the septic poison is not only fever-producing, but phlogogenetic also, and that its local inflammation is diffuse in its kind, breaking down lymph barriers, in other words, erysipelatous, and that it is introduced directly into these structures—at least in the vast majority of instances—the result is evident; it lights up a local diffuse inflammation at the same time that it infects the blood. It is no longer difficult to understand why erysipelatous vaginitis, metritis, peritonitis, pelvic cellulitis, and diffuse phlebitis, are such common complications of puerperal fever.

In some instances, as mentioned, the putrefactive disorganization of the blood is so rapid as to destroy the patient before any marked inflammatory change can occur.

In very rare instances a woman may be the subject of puerperal fever, and escape inflammation of the genitalia and peritoneum, but may suffer with an inflammation elsewhere, as of the pleura, or from metastatic abscesses.

From clinical observation, and from a careful analysis of the investigations of writers, there seems good reasons to believe:

1st. That as essential factors in the process of animal putrefaction, there are living organism, exceedingly minute, tenacious of life, transmissible through the air by fomites, and indeed by anything with which they come in contact, capable of rapid and unlimited multiplication under favoring conditions, breaking down complex animal compounds and resolving them into simpler forms.

2d. That the living blood possesses the conditions favorable to the growth of these organisms, and especially the blood of the parturient woman.

3d. That these organisms can have access to the blood only through lesions of continuity, and that the parturient tract of the newly-delivered woman is the constant seat of abrasions and ruptures.

4th. That there is no sufficient reason to believe these living germs may be absorbed, or may pass through the unbroken skin or mucous membrane.

5th. That this septic virus—the name we give these organ-

isms—may be conveyed from without, but may also originate in the decomposition of the lochia, remnants of placenta, etc., and then the woman poisons herself.

6th. That puerperal fever and puerperal septicæmia are convertible terms, and mean essentially the same. The clinical features of puerperal fever, its origin from a great variety of sources all known to possess the septic virus; its power of inducing septicæmia, erysipelas, diffuse cellulitis, and kindred conditions in the non-puerperal; its tendency to the rapid putrefactive spoliation of the blood; its frequent association with pyæmia; the tendency of diffuse inflammation of the serous membranes—all go to prove unity of tissue.

All efforts to classify as separate and special diseases the variety of phenomena wherein septic infection expresses itself, can only lead to confusion.

The differential diagnosis between puerperal fever and puerperal septicæmia, however apparent on paper, is inextricably confounded in practice.

7th. That if the foregoing conclusions are correct, the treatment of puerperal fever must be antiseptic. That our first duty is to guard every obstetric patient against septic contamination, from without, by refraining from attending such cases if we have reason to believe that our hands or clothing are infected; by the liberal use of disinfectants about the apartment or premises, and even removing the patient if we suspect the unhealthiness of the locality.

We are to guard against auto-infection by cleanliness, by the free use of vaginal injections when there is even the slightest putridity of the lochia, by the immediate removal of any remnant of decomposing placenta or coagula, by the avoidance of anything likely to check the lochial discharge, as cold and dampness, and when it is checked, inviting it again by the repeated warm douche. As a disinfecting wash, I earnestly recommend the formula of Dr. I. L. Crawcour: Acidi carbol. ʒi.,tinct iodinii comp. ʒss., glycerine ʒiiss. ℳ A tablespoonful to be stirred into a quart of tepid water, and injected high up in the vagina two or three times daily, as the case may require.

If infection has already occurred, we are to look to antiseptic remedies as offering the most reasonable hope of success. It is

a sad truth that all the plans of treatment heretofore in vogue have either failed utterly, or have succeeded so lamely as to leave no encouragement for their adoption. If puerperal fever is septicæmia, it is irrational to expect a positive controlling influence from opium or calomel, purgatives, emetics, venesection, cardiac sedatives, or any other remedy not having the quality of directly disinfecting the blood.

There is no doubt but that some of these drugs and expedients are extremely useful in the treatment of this disease, but as a mainstay experience has taught that none of them are to be relied upon. I have administered, with an apparent speedy amelioration of symptoms, the following formula: Carbolic acidi gtt. xx., sulpho-carbolate of sodium ʒss., glycerine ʒj., water ʒv. ℞ Tablespoonful every three hours. My experience with this is too limited to permit a positive expression of opinion as to its efficacy. Time and repeated trial alone can determine the most efficient antiseptics to be used.

Under no circumstances would I forego the old remedies approved by experience, when specially indicated, as, in many cases, keeping the bowels freely open by mercurial purgatives, the pill of calomel and comp. extr. colocynth, subduing excessive heart-action with veratrum viride, blistering when the inflammation localizes itself, and attending to the state of the lochial discharge.

In cases where the local inflammation is attended with excruciating pain (of such common occurrence), I have been able to control it perfectly by applying over the suffering part a fly-blister, removing the cuticle, and then laying on a plaster composed of ext. belladonna and ext. opium, of each ʒj., lard ʒj. The effect of this plaster is so tranquilizing as to do away with the necessity of narcotics given internally. The physician must carefully watch its effect, and remove it for awhile if much narcotism is induced, protecting the blistered surface in the mean time with an emollient poultice. The strength of it may be increased or diminished according to the effect. These plasters are useful as long as abdominal tenderness continues.

Of one thing we may rest perfectly assured, that unless we improve our treatment of puerperal fever, a correctly diagnosed case of this fearful disease will continue to be the equivalent of a death-certificate.

CLINICAL STUDIES FROM SERVICE IN WARDS 18, 19, 20 AND 21, THE CHARITY HOSPITAL, FROM OCTOBER 1, 1875, TO APRIL 1, 1876.

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FEVERS TREATED.

Malarial affections presented their usual large ratio to the whole number of cases treated in the wards. My case-book shows one hundred and sixty-nine cases diagnosed according to the various classifications of the malarial fevers. This is 42.25 per cent. of all examples of disease treated. The number of deaths directly referrable to malarial symptoms is three, which is 5.66 per cent. of the aggregate number of deaths occurring in the wards under study. In the city of New Orleans, during the year ending December 31, 1875, there occurred 483 deaths which may be attributed to malarial symptoms. This is 7.89 per cent. of the aggregate number of deaths occurring in the whole urban population. It is to me a little surprising that such a result should obtain. While it is well understood by medical practitioners in the city that malarial attacks, distinctly recognizable by the boldness of their symptomatic phenomena, may originate in every district of the city, it is not a very frequent event that deaths occur from this cause among the favorably circumstanced of our population. It is in the suburbs chiefly, that fatal cases of malarial disease exhibit themselves. Again, it is to be remembered that this is a commercial city, and that commercial pursuits involve travel and exposure to all the causations of disease which different climates develop. There is every probability that many of the victims of malarial attacks in the private practice of the city have received the poison into their systems outside the limits of the city.

If the same ratio of mortality (1.77 per cent.) to the number of attacks, prevailed in the city, that my wards exhibited in the hospital, it would indicate that very nearly 30,000 attacks of the various forms of malarial fever had occurred during the period under consideration. I am satisfied that this computation is not correct. The sources of error are: first, that the report of the

Board of Health includes the mortality returns from the hospital, and consequently are to a certain extent affected as to results by these returns. Next, it is a reasonable inference that the death-rate of malarial cases is very much greater in private practice than in hospital practice. It is easy to perceive why this difference in results should obtain. The cases occurring outside of the hospital are for the most part in the suburbs, remote both from the physician and the apothecary. The physician is often not called until the symptoms are of the gravest character. Valuable time is thus lost in a form of disease which requires the most prompt and energetic treatment. Superadded to all these obstacles, a medical attendant has never the experienced judicious nursing a hospital affords, and is often doomed to experience the mortification of beholding his best matured plans of treatment thwarted by ignorant and inefficient efforts to put them in practice. The year 1875 was remarkable throughout the Mississippi Valley for an unusual amount of rain-fall and an unusual prevalence of malarial cases. In the City of New Orleans the aggregate depth of rain, as measured by the guage at the Board of Health office, was 48.83 inches for the first half year, and 34.21 for the latter half. A similar meteorological condition seemed to extend over the greater part of the Mississippi valley, and to furnish the requisites for wide-spread and intensely active evolution of swamp poison.

In previous papers upon the subject of malarious affections,* I have more than once alluded to the fact, so well known to practitioners, that certain epidemics of miasmatic fevers are liable to be marked by symptoms seldom seen, or it may be, altogether wanting in other epidemics. While as yet there has been no satisfactory explanation of the influences which occasion these changes of livery, they are still interesting subjects to be noted, for they become the salient points which call for essential modifications of treatment.

In the present paper, it is my intention to confine the remarks I shall make upon malarial affections to differences in symptomatic phenomena, whether relating to the epidemic of 1875 or to individual cases, and the modes of treatment which I have found most efficient in combatting the morbid states which these various groups of symptoms represent.

Two pathological changes were so common to the malarious

* N. O. Medical and Surgical Journal, New Series, July, 1873.

attacks presented during last winter's term of hospital service, as to have formed a topic of almost daily study and comment. These were a degree of anæmia altogether unusual, both as it respects commonness to the aggregate number of cases, and as it respects the profound degree of blood changes often attending its presence; and splenic enlargements. Many patients entered the wards whose "tallow skins" and bloodless tongues revealed at a first glimpse the almost utter devastation wrought upon the vital fluid. In a large majority of these typical cases of anæmia, effusions were found to have occurred into the areolar tissues—generally of the lower extremities, often of the face—sometimes in the lungs to a degree sufficient to give rise to limited œdema, and not at all uncommonly a greater or less amount of ascites was found to be present. Under these circumstances it was quite natural that the appropriateness of the new nosological epithet, "pernicious anæmia," should become a subject of discussion. Certainly, while in the presence of one of those worst examples of blood deterioration and anæmia produced by the swamp poison, the observer is forced to confess that the adjective is applicable to the case even when used in its most intensive sense. A simple exsanguinated state of the system, carried to the extent that serious lesions of secretory functions result, is in itself a condition of perniciousness, since the continuance of these functions is vital in the sense of being essential to life. But the anæmia of malarial intoxication has a quality of perniciousness superadded to that of mere exsanguination, because it is associated with a positive blood inquination, due to the presence of the primary, or some secondary poison in a fluid which has also undergone structural lesions. These considerations help us to apprehend the difficulties in our pathway, when we undertake to cure the anæmia of malarial disease. We have not only on the one hand to endeavor to restore the blood to a healthy state as it concerns its own normal constitution, but in the mean while we have continually to guard the patient lest his incompetent circulatory fluid—incapable of relieving his system of waste material through the usual emunctories—should undergo further deterioration from effete accumulations.

There is yet another point to be vigilantly observed, which is, to protect the patient as much as may be in our power, against malarial paroxysms. We are somewhat prepared to understand that a well-marked malarial paroxysm shall involve anæmic

changes, through the circulatory remora of the first stage—through the abnormal temperature of the second stage, and through the excessive function of the sweat glands of the third stage. But my experience has on more than one occasion taught me, that an almost undiscernible approach to a paroxysm is capable of increasing in a very obvious manner the patient's anæmia. I think this statement applies with more certainty to those instances in which the paroxysmal phenomena are attended by marked elevation of temperature, and formerly I believed that the damage was due to this cause. Later observations indicate that similar, if not equal results, follow paroxysmal returns where elevation of temperature is so slight that an appeal to the thermometer is necessary to determine the question. Perhaps, after all, the most reasonable explanation may be found in the assumption, that lesions of nutritive changes throughout the whole system, belong essentially to the assemblage of disturbances of nerve function attendant upon the malarial paroxysm.

In accordance with the ideas of pathology as just announced, we may formulate the indications for treatment under three propositions:

1. To restore a normal constituency to the blood.
2. To rid it of impurities, secondarily accumulating in it.
3. To ward off malarial paroxysms.

The first indication mentioned, suggests chalybeates as the remedies best suited to the physician's purposes. I do not wish to under-estimate their great value. But when I recall the large number of cases in which their use has, in my hands, failed to cure, together with a small number in which their exhibition was not tolerated, I feel obliged to enter a protest against their indiscriminate employment. The forms of iron from which most benefit has been obtained are mentioned very nearly in the order of their estimated value.

Iron by Hydrogen. I prescribe this preparation in my hospital practice more frequently than any other chalybeate. A combination from which great benefit is often obtained is: ℞—Reduced iron; sulphate quinine (or sulphate cinchonidia), aa ʒss.; arsenious acid, gr. j. Make xv. pills. S. One twice or thrice daily, given at times of taking food. Occasionally, with a view to combat unusual nerve exhaustion, the arsenic was omitted, and extract nux vomica, or strychnia, was substituted, the former in doses of gr. ss. to gr. j. to pill, the latter one-thirtieth grain to pill.

Citrate of Iron and Quinine. This was generally prescribed in solution of ℈j. to ʒss. in infusion of gentian, ℥iv. S. One tablespoonful twice to thrice daily. Sometimes ʒj. tinct. nux vomica was added to this solution. The dose is exceedingly bitter, and often not well borne, but in many cases its benefits are striking.

Tinct. Ferri. Chloridi. was often exhibited in doses varying from fifteen drops to half a drachm. In truth the most usual mode of prescribing was to order an ounce mixture containing equal parts of tincture of iron and simple syrup, and direct a teaspoonful in water twice or thrice daily. It sometimes occurred that I made solutions of quinine by means of the tincture of iron, and found the combination a valuable one. The prescription commonly used was sulph. quinine ℈j., mur. tinct. iron ʒij., cinnamon water ʒvj. ♏. & Sol. S. Teaspoonful every 6 to 8 hours mixed in sweetened water.

Wine of Iron was often prescribed, and not uncommonly the solution of arseniate potash was added in suitable proportions.

Ammonio-Sulphate of Iron, and Quinine, made into a solution by the addition of dilute sulphuric acid, was exhibited principally to those patients whose cases showed greater than usual tendency to serous effusion. The formula was: ℞—Ammonio-sulph. iron, ℈ij.; sulph. quinine, ℈j.; dilute sulph. acid, ʒi.; cinnamon water, ʒvij. ♏ S. Teaspoonful in sweetened water twice daily. When indicated, strychnia may be added to this prescription.

Iron alone is not a cure for malarial anæmia. It is probable that the agency it exerts in effecting such cures is far more inconsiderable than is generally reckoned. While the physician should not fail to employ it when called for, he should not fall into the error of assigning to it a role quite beyond its sphere of capabilities. It is known to be capable of adding a missing constituent in retrograde lesions of the red corpuscles, but to effect this, it is necessary that certain not well-understood conditions should obtain which are essential for its absorption and specific appropriation. It is probable that these conditions are quite as often absent as present. Admitting that every condition and circumstance shall concur to favor the administration of iron, there is no doubt that other elements of nutrition are required to coöperate with it in the blood-renewing process, before its therapeutic value can be made manifest. The alimentation of anæmic malarial patients is with me a most important consider-

ation. They should be liberally supplied with carefully selected and well prepared animal food, to which such vegetables and fruits may be added as are regarded suitable to their condition. Digestion may be aided by acid solutions of pepsine, or by mineral acids diluted in some bitter infusion. In my hospital wards the latter are more frequently used, and by preference, the nitro-hydrochloric or the nitric alone. The list of promoters of digestion is incomplete if we omit to mention alcoholic drinks, or for many patients coffee and tea. A very common prescription in my practice is the following: ℞—Compound tinct. cinchona, ℥iv. S. Dessert spoonful in water after each meal. Whenever considered indicated, from five to eight drops of nitro-muriatic acid were added to each dose. Alcohol may also be given in the form of wine or beer. To a few anæmic patients I have recently given a table-spoonful of Trommer's extract of malt after each meal, and have added to it, after mixing it with water, either pepsin, the mineral acids, or a small amount of whiskey, or all of them together. The prescription is worthy of further trial. It is needless to say that pure air, and such exercise as the patient is able to endure, are matters essential to his improvement.

The second indication includes measures of treatment so often called for, that the medical attendant should constantly observe for the presence of symptoms justifying a resort to them. These symptoms are a coated tongue, with vitiation of the sense of taste; a muddy skin; cephalalgia, or vertigo; slight feverishness, and urine for the most part highly colored and heavy. These symptoms contra-indicate the employment of analeptic remedies. Eliminants and alteratives should be appealed to. It is true that I have occasionally adopted a compromise method of treatment, which looked to the association of restorative and eliminant medication. The prescription generally employed for this purpose is: ℞—Sulph. magnesia, ℥j. to ℥ij.; sulphate iron, ℈ij.; sulphuric acid, dilute, ʒj.; syrup orange peel, ʒvij; water to ℥vj. ℿ S. Table-spoonful in water twice daily. I hold it to be a wiser and more satisfactory mode of practice to direct our energies to the removal of mischievous materials whose accumulations obstruct function. Mercurials are our most efficient remedies. In hospital I usually prescribe the mild chloride. From one to five grains are given, generally in powder combined, with bicarb. soda and white sugar, or with the soda alone. These small doses are repeated, at intervals vary-

ing from four to forty-eight hours, according to the urgency of the case. In certain cases it is desirable to avoid the nausea and free catharsis liable to be produced by calomel and soda. A very efficient as well as mild mercurial dose will be found in the combination of three grains severally of blue mass, comp. ext. colocy., and castile soap: make two pills and give at one dose. It is by no means infrequently the case that a lienteric state of the bowels requires the combination of opiates with the mercurial which may be indicated. Under these circumstances the following prescription answers a most valuable purpose: ℞—Blue mass, pulv. rhubarb, aa gr. x.; sub-nitr. bismuth, ʒi.; morphia, gr. j.: make ten pills. S. One each night; or, twice or thrice daily. Again, in certain inveterate cases of malarial intoxication with anæmia, I have found this prescription useful: ℞—Bichloride mercury, gr. ss. to gr. j.; comp. tinct. cinchon., ʒiv. Dessert-spoonful twice daily—after meals and largely diluted with water.

In a few cases, more especially of young persons, adenitis, or some suspicions of scrofulous taint, have induced the exhibition of iod. pot. and the bichloride in combination. An eligible prescription may be made by dissolving them in desired proportions in a menstruum consisting of syrup pyrophospate of iron and pure water.

I am free to confess that, although I have prescribed chloride of ammonium for a number of years, and to many patients, I am quite unable to single out those symptoms or conditions of disease in which its use is most likely to prove of service. It is to be admitted, however, that remarkable benefits sometimes follow its use.

The third indication is best subserved by the preparations of cinchona. These may be given habitually, as for example, from three to five grains of quinine in one or two ounces of black coffee, morning and evening. In case the patient is sufficiently intelligent to note the prodromes of a paroxysm, and I may add, fortunate enough to have his paroxysms attended with prodromes, the exhibition of the drug may be deferred until the patient is warned of the approach of a paroxysm, when it should be given in positive quantity and in solution.

Splenic Enlargement, in its association with malarial intoxication, is an interesting subject to the physician. It is an easy matter for the medical observer to satisfy himself that splenic

enlargement, to a greater or less extent, attends malarial paroxysms. It is so unexceptionable in its occurrence, that when not present we may attribute its absence to a firm, unyielding capsule. The greater capsular elasticity may also explain why chronic enlargements of the spleen more certainly attend malarial toxæmia of early life than those of adults. But while admitting the influence of a paroxysm in mechanically distending the spleen, and admitting also, that a frequent repetition of this cause may set up an actual new growth, or true hypertrophy, there is still ground for the belief that chronic malarial intoxication, without paroxysmal manifestations, is capable of producing a similar result. Hertz writes: "The very evident and almost constant way in which the spleen is involved in intermittent fever, suggests the idea that the two are very nearly related. With our present knowledge we can no longer attribute the swelling of the spleen to an over-filling of the organ with blood during a chill alone, as it may attain to the very largest size in chronic infection without chills." (Ziemssen's Cyclopædia, Vol. II., p. 265.) According to either of these views, when endemic or epidemic prevalence of malaria is attended with an unusual number of cases of splenic enlargement, it indicates longer exposure to the poison rather than intensity of toxic action. It is not at all improbable that the climatic conditions of the Mississippi valley during 1875 were so continuously favorable to the evolution of the swamp miasm, that a more perpetual dosing (so to speak) of persons exposed, was the consequence.

However we may differ in respect to the mode of production of splenic enlargement, there can be but little question in regard to its troublesome influence when a complication of malarial anæmia is present. Serous effusions are more common events under such a complication, and aside from their occurrence, the anæmic state—the destruction of ratio between the red and white corpuscles, is more hopeless of cure. Close clinical observation may show that these remarks are more especially true in instances where the enlargement is a genuine hypertrophy, and thus establish a relation between such cases and the leucocythemia of Bennett, or splenic anæmia of Wagner. At present I am unable to make this distinction.

None of the cases of enlarged spleen required any treatment to be addressed to inflammatory states of the organ. Well-marked splenitis is, under my observation, an unusual event. I

have, however, seen two cases of abscess of the spleen occurring in chronic malarial disease. One was after a very long horseback ride by a man unaccustomed to such exercise. On the other hand, the capsule is often the seat of inflammation to such an extent as to roughen its surface, giving rise to such illustrative examples of friction murmur that I am in the habit of auscultating all very large spleens to determine if it be present.

I know of no treatment having any specific influence in reducing an enlarged spleen. The treatment previously advised for the cure of anæmia, is as effectual for its cure as any treatment by drugs known to me. I have repeatedly tried Maclean's ointment of biniodide of mercury, as suggested in Reynold's System of Medicine (Vol. I. p. 68), but I am unable to report an instance in which benefit resulted from its use. In the meantime, both my own experience and the teachings of the older authors lead me to believe that constipation, and its attendant visceral engorgements, should be very carefully avoided. A daily dose or two of the solution of sulphate magnesia and iron mentioned on a previous page is an excellent prescription. Sending the patient, whenever possible to do so, out of a malarial region, is a wiser course to pursue. In the meantime it is proper to be mentioned, that, even in those cases where the enlargement appeared to be an unquestionable hyperplasy, a striking degree of diminution in size would accompany and follow convalescence from the malarial cachexia. The lesson to be derived is important clinically, since we are able to assure those unfortunate patients to whom immense spleens are an incumbrance and source of mortification, that they may at least hope for some reduction of volume.

Simple Intermittents. The number of simple intermittents admitted in my wards was 147; about 87 per cent. of the whole number of malarial cases treated. It is not my intention to occupy any portion of the space at my command with remarks concerning the symptoms, or treatment of the simple intermittents under observation. Nothing new or valuable would be revealed by such a history. In my remarks upon the cases of remittent fever admitted for treatment I shall, by way of comparison, place in juxtaposition records of temperature of both simple and pernicious intermittents, and remittent cases.

Pernicious Malarial Attacks. These attacks are matters of

the most serious concern to the practitioner, since the exercise of all his energies and of his highest skill is requisite to avert fatal results. They are also full of intense interest as points of abstract scientific study, since they involve many abstruse questions of pathology. The term "*pernicious*" is not limited to some one form of malarial diseases, but includes all those cases which are attended by the quality of "perniciousness," or unusual gravity, or which are more than usually injurious, or hurtful to life. This element of danger, possessed in such a notable degree by pernicious malarial attacks, is a marked point of distinction between them and simple intermittents. Simple intermittents are never fatal except through some complication; the pernicious cases are accompanied by frightful mortality. As an abstract nosological classification the distinction is easily drawn; at the bedside, it is often a more difficult matter than the bold contrast just presented would indicate. This difficulty of diagnosis arises from the fact that the mode in which pernicions attacks destroy life is by an exaggeration of some symptom, stage, or pathological state, normally connected with the simple forms of malarial disease. For example: it is well understood that more or less congestion of organs in the shut cavities attends all simple intermittents, but an exaggeration of the congestion to a dangerous degree converts the simple intermittent into a pernicious case. Exaggeration of the cold stage is a common cause of perniciousness. Again, it is true that the presence of the swamp poison in the blood interferes with its chemical and metamorphic changes, and in this manner occasions the accumulation of secondary poisons in that fluid. Ordinarily this does not reach a limit which is at all inconsistent with the performance of vital functions. An aggravation of this condition so as to approach, or pass this limit, transfers the case to the class of pernicious.

Hemorrhage in any considerable amount and from a deeply-situated surface, is always a grave complication of fevers, and its occurrence at once places the case within the classification of pernicious. The symptoms and conditions which, in accordance with these illustrative examples, characterize perniciousness as connected with malarial attacks, afford a division of pernicious cases, quite true to nature, into three forms.

1st. *The algid, or congestive form*, in which the perniciousness is due to an aggravation of the cold stage, or to dangerous congestion of some important viscus.

2d. *The comatose form*, in which the perniciousness is due to a state of blood impurity sufficient to impair, or destroy its nutritive functions.

3d. *The hemorrhagic form*, in which the perniciousness is due, first, to the hemorrhagic diathesis present; second, to the localization of the bleeding—often occurring at points where extravasated blood produces dangerous lesions and obstructions of function; third, and least often, to the amount of blood lost to the system by the hemorrhage.

This classification does not include the diaphoretic, or sweating form, nor the ardent or intensely inflammatory form. It must be a rare event—in this country, at least—that the sweating stage of a malarial fever is exaggerated to such a degree as to place life in danger, while it is well understood that unusual elevations of temperature call for the physician's ministrations, whatever may be their cause or the conditions of their occurrence.

Five cases of pernicious malarial fever were admitted to the hospital under my charge during my term of service. These were classed as follows: congestive, 1; died, 1; comatose, 3; died, 1; hemorrhagic, 1—recovered.

Case of Congestive Chill. Nicholas Della, aged 16 years, by profession a hotel waiter, was brought to the hospital on the third of February. No history was procured, except that he had been unconscious since the preceding day, and that he had been spending some months in a very unhealthy place near the lake shore. The assistant house surgeon, Dr. G. W. Lewis, prescribed ʒss. bromide potash in enema to be repeated in two hours. The next morning, when I saw the patient he was entirely unconscious; all efforts to arouse him or induce deglutition unsuccessful; pulse irregular, and feeble; skin bluish, moist with perspiration, but not cool; pupils a little dilated, but correspond in movements; sensibility to light diminished; no paralysis; urine passed in bed; no stools. A scruple of quinine made into a solution with dilute sulphuric acid, and twenty drops tinct. opium, were given in two ounces of flaxseed emulsion as an injection. During the day two injections were given, each consisting of ℥j. of water, ʒj. bromide potash, and twenty drops of laudanum. The quinine was repeated at night, and again on the morning of the 5th.

The patient died during the night of the 5th. An autopsy was not permitted.

This is an illustrative case of the algid form of pernicious malarial fever, in which a partial reaction has occurred. Congestion, however produced, may destroy life either through its sheer physical force in arresting function by infarction, or through the inevitable consequences which arrested circulation entails upon the blood. It is highly probable that the latter mode of producing death more often prevails. Separation of blood constituents due to its stasis, entails as results the formation of coagula in the congested vessels, the deposit of pigmentary matter, and a general damage to function proportionate to the lesions inflicted upon nutrition. Where death occurs as long after the chill as in this instance, it is reasonable to suppose that it is due to some condition included in the latter class of causes.

The cure of a congestive chill is one of the most difficult problems the physician can possibly encounter. It is nothing less than a proposition to cure an altered mechanism of the system supposed to be dependent upon some influence exercised over a nervous apparatus, whose therapeutics or experimental physiology are illy understood. While a satisfactory solution of this problem is probably a remote achievement in medicine, it was long ago empirically ascertained that certain agents exercised some degree of control over the cold stage of febrile attacks. For the most part these agents are addressed to the nerve element in the pathology of a chill, and are identically the same remedies which we use to allay other forms of nerve irritation. Opium, chloroform, belladonna, chloral hydrate, and bromide potash, have proved more or less valuable according to the idiosyncrasy of the patient or the circumstances under which they were used. I consider opium the most valuable of these agents, and nearly always combine it with such other drug as I may select as an adjuvant. It is better to use it in moderate doses, and repeat these at short intervals. Twenty drops of laudanum with half a teaspoonful of chloroform is an efficient prescription. One-sixth of a grain of morphia with one-fortieth of a grain of atropia may be injected subcutaneously. Nitrite of amyl is highly recommended upon another page of this issue of the JOURNAL. I have never used it, but have no question in regard to its value. These remedies may be used at any stage of the chill without fear of prejudicing the subsequent career of the case. It is true,

however, that expectations of abridging the congestive stage must vary with the length of time the chill has endured before the remedies have been applied. Frictioning the extremities, and indeed the whole surface with ice, is another mode of practice which I have never used, but which is well worthy of attention and trial. In the event of inability to procure ice, douches of cold water, followed by frictions with coarse towels, may be substituted. The value of the hypodermic syringe in congestive chills must not be lost sight of. The suspension, or even reversal of normal systemic currents, is made evident by the serous vomiting and purging attending congestion of the abdominal cavity. Medicine placed in the stomach under these circumstances is virtually thrown away. It does not reach the circulation.

Comatose Cases. Case 1.—Bernard A. Hagan, a laborer, 35 years of age, was brought into ward 21, December 29th, in an insensible condition. At time of admission his temperature was 103°. Dr. Lewis ordered ʒss. of quinine by enema. Morning of 30th still unconscious, but able to swallow fluids placed upon the base of the tongue; urine and stools passed in bed; skin of a muddy yellowish hue; temperature 100.2°; pulse 120; respirations 33. A scruple of quinine in solution was given immediately, and during the day carbonate of ammonia in five grain doses, was alternated with the same quantity of quinine every fourth hour. A liberal quantity of milk, concentrated beef-essence, and milk punch was given, both by mouth and rectum. Evening temperature 103.1°. December 31st.—But little change in patient's condition; temperature 100.3°; pulse 130; bowels and bladder voided in the bed; continue treatment. Evening temperature 103.2°. January 1st.—Morning temperature 102.3°; pulse 130; respirations 42. Death during the day.

Case 2.—Charles Lacrosse, fisherman, aged 44; brought into ward 20 in an insensible condition, November 18th. Temperature at time of admission 104.3°; pulse 120; respirations 40; able to swallow liquids placed far back in his mouth. Ordered ℈ij. of quinine in solution, ten grains to be given every fourth hour. Nov. 19th.—Patient has taken and retained all the quinine ordered, is perspiring profusely; temperature 97.8°, pulse 88; more conscious; takes food and water when offered him. Ordered blue mass, comp. extr. colocy., aa gr. v. Make two pills; take at once; to drink through the day bitartrate potash ʒj.,

dissolved in lemonade, until the bowels are moved. Evening temperature 99.3°. November 20th.—Temperature 98°; patient placed under convalescent treatment; discharged from hospital November 29th.

A third comatose patient was admitted to ward 19 on the 29th of October, entirely insensible. He was treated by large doses of quinine in solution per rectum, and by calomel xx gr., bicarb. soda gr. v., placed in the fauces and a tablespoonful of water trickled over it.

As the patient began to improve, it was discovered that his right arm was paralyzed. A history subsequently obtained showed that the patient was an engineer, and had been engaged in making some land surveys in a swampy portion of the State, and had been often obliged to wade or swim across the bayous, and to sleep at night in the open air, sometimes without any protection from the weather. He had previously enjoyed good health, and was altogether unable to account for the paralysis of his arm. During convalescence he was treated by iron, strychnia, and the preparations of cinchona, and by cold douches, and frictions to the paralyzed arm. Convalescence was slow, but he was discharged completely recovered on the 20th of November. It would appear that Romberg's instructive apothegm, that "neuralgia is the prayer of the nerve for healthy blood," may be properly extended to include cases of paralysis also.

It is not necessary to make further remarks regarding the "comatose" form of malarious disease. In typical cases the differential diagnosis between the congestive form and this, is made without difficulty. In congestive chill the surface is cold, blue, or livid, the pupils dilated, the pulse generally slower than natural and irregular. In the comatose form the surface is preternaturally warm, of a muddy, semi-jaundiced hue, the pulse and temperature both indicating the feverish rather than the algid state. In congestion, impeded function associates itself with the above mentioned symptoms, and unerringly shows not only its presence but which one of the shut cavities is the seat of the congestion.

I have seldom lectured to students upon the subject of congestive fevers, or congestions, without feeling it my duty to admonish them against the employment of the term in that indefinite and inconsiderate manner which has become common among some of our profession. If the death certificates which

were sent in to the Board of Health of this city, in 1875, were based upon correct diagnoses, it would indicate that one person in every 1088 of the population living in New Orleans died of some form of congestion during that year. Is any one prepared to believe that this represents a truth? If the term is abused at all, it is more often in respect to its use in accounting for mortality from brain symptoms. In New Orleans, in 1875, 117 deaths are returned as having been due to congestion of the brain. This is 1.90 per cent. of the whole mortality of the city, and one death from this cause in every 1794 persons living in the city. In New York city, in 1873, 167 deaths are ascribed to congestion of the brain—.57 per cent. of total mortality, and one in every 5988 of the living population. According to these figures, the danger of death from congestion of the brain is more than threefold greater in New Orleans than in New York. Observation teaches me that such is not the case.

Hemorrhagic Malarial Attack. The only case treated was an Irish laborer, 44 years of age, admitted to ward 18 on the 26th of October, with malarial hæmaturia. No notes of the case are preserved, but the patient was discharged, cured, on the 6th day of December.

In this, as in all grave forms of malarial disease, the leading indication is the production of early and decided cinchonism. After this, the most important question is, how the hemorrhage is to be treated? In my observation it has seldom been so considerable as even to jeopardize the life of the patient by the amount of blood abstracted from the circulation. We might therefore dismiss the hemorrhage from among those symptoms calling for special remedies if it were poured out upon a free surface only, and escaped at once from the system. But this is not the case; it is liable to accumulate in the kidneys, impeding or destroying function, perhaps by physical pressure upon the vascular supply of these organs. It is therefore a symptom of the most serious concern when viewed in this connection. Recent observations have satisfied me that hæmostatics often afford valuable aid in curing renal hemorrhage in malarial disorders. To give them every opportunity for beneficial effect, they should be resorted to at the earliest practicable moment, before serious damage has been produced by extravasated blood. Turpentine, ergot, gallic acid, the astringent salts of

iron, or mineral acids, may be employed in accordance with the practitioner's estimate of especial applicability to the case or his convenience. Some of the best practitioners in the South have expressed perfect satisfaction with the action of turpentine. The revulsive effect over the circulation from the application of cups over the loins must not be lost sight of.

Remittent Fever. Seven cases of remittent fever were treated, all of which recovered. The thermometer, or generally the unaided senses of the physician, are sufficient to establish the differential diagnosis between remittent and intermittent fever. This difference, as it regards the febrile march in the two forms of fever, is the salient point of varying indications respecting treatment. In intermittents, febrile movement is for the most part a very unimportant event; in remittent attacks, the fatal result is often to be attributed to excessive elevations of temperature.

Case.—Robert Lesley, 24 years of age, was admitted to ward 18, bed 265, on the 9th of February. The attendants who brought him to the hospital stated that he had been attacked with fever three days before admission. When the patient was first seen (February 10th), he presented the suffusion of face and eyes so illustrative of this form of fever. His tongue was dry and covered in the middle with a brown coat; abdomen tumid and tympanitic. Attendants state that he has been freely purged by catharties taken without medical advice. He was so delirious and restless that a nurse was constantly required to keep him in his bed. Morning temperature 103°; evening temperature 104.8°. Ordered quinine ℈j., blue mass gr. vj, pul. opium gr. j. Make 6 pills: two every third hour until all are taken. February 11th.—Patient had short snatches of sleep through the night; still delirious, but calls for drinks; had two liquid stools; passed urine; temperature 102.2°; evening temperature 103.1°. Ordered teaspoonful of the house solution of quinine every fourth hour; cloths wrung from hot water to be applied over abdomen. Diet of milk, milk punch, and beef soup, ice and iced drinks to be given often.

12th.—Patient has slept rather more during the night; is less delirious; temperature 102°; pulse 100. Ordered solution acetate ammonia, ℥iiiss; spts. nitre, syrup morphia, aa ʒij. Mix. Tablespoonful every fourth hour; to be omitted during night.

13th.—Condition same; morning temperature 102°; evening, 102.8°. Continue treatment and diet.

14th.—Morning temperature 102°; evening, 102.2°; pulse 100. Patient more rational.

15th.—Patient slept quietly for several hours; had free perspiration. Morning temperature 99.3°; pulse 80; evening temperature 102.1°. Ordered house solution of quinine, teaspoonful every fourth hour during day.

16th.—Morning temperature 99.2°; evening temperature 102.6°. Continue quinine.

17th.—Morning temperature 99°; evening temperature 103°. Continue treatment.

18th.—Morning temperature 99°; evening temperature 100°. Patient had profuse perspiration during night; is now convalescing. Ordered ʒij. comp. tinct. cincho. every fourth hour.

19th to 21st.—Temperature oscillated between 99° and 100°, but on the evening of the 21st suddenly mounted to 102.1°. Two teaspoonfuls of the house solution were given, and on the morning of the 22d the temperature was normal. From this period until the 27th, the morning temperature of the patient varied but little from the normal standard, while the evening temperature was extremely variable, reaching on the 24th 102°; 25th, 101°; 26th, 100.5°, 27th, 101°; after which records of temperature were no longer kept. The patient was discharged from hospital March 29th.

The above resumé has several instructive points connected with it. First, the patient came under observation after having been submitted to improper attempts at cure by purgatives prescribed by unprofessional persons. In my opinion this is one of the most serious complications which physicians encounter in treating remittent fever. Popular prejudice and usage both agree in instituting this mode of practice before the physician is called. One of the tendencies which remittent fever possesses to a degree far beyond other forms of malarial fever, is to set up local inflammations. The liability of the alimentary canal to become the seat of these inflammatory disturbances, is a fact sufficiently well known to have become the foundation of a special school of pathology. Surely, arguments and cases concur in teaching that excessive purgation complicates the career of the disease: 1st, by producing irritation and inflammation which it is probable that the patient might otherwise escape;

2d, by interfering with nutrition in a disease which runs a prolonged course. Again, there is an instructive item to be gained from this case by observing the cooling of the body during a sweating stage. On the evening of the ninth day of the disease the temperature was 102.2°; the next morning it had fallen to 99.3°, or very nearly 3 degrees.

In treating remittent fever, I make it an invariable rule to increase the quantity of quinine largely above the amounts prescribed for intermittents. From one to two, or even three scruples should be given, preferably in solution, but I often give it in pill form, combined with calomel or blue mass. I need not advert to the happy manner in which this drug acts in a large number of remittent cases, as an apyretic to cut short the fever present when its administration was begun, and as an antiperiodic to prevent its recurrence. These are among the marvellous and beautiful results therapeutics is sometimes able to exhibit. But it is equally well known that in a certain proportion of cases, very small benefit, or it may be, no appreciable degree of benefit follows the administration of the drug. Under these circumstances my practice is to suspend the use of quinine, and to practice only such medication as may be best calculated to allay fever and quiet the patient. Solutions of acetate ammonia, or acetate potash, with small opiates either in combination or separately, cold and cooling drinks; if vomiting is troublesome, effervescing drinks, competent doses of opium or chloral, or bromide potash given at night to relieve insomnia if present, constitute all the medication I regard as admissible. The patient's room should be well ventilated, his hair cut close, his surface frequently sponged with tepid water, his bedding and clothing changed often, and all his surroundings rendered cheerful and quiet. The question of diet is an important one. From the inception of the case, the physician should keep in view the fact that the febrile process involves waste and decay. The wear and tear of the economy consequent upon seven or eight days' persistent elevation of temperature, must be provided for by timely and proper attention to diet.

After a few days of careful watching and patient persistence in the course suggested, the abatement of temperature to a lower figure than it had previously reached, or sharper angles of oscillation than the lines had previously shown on the diagram, will indicate the arrival of a period in the disease, when another attempt should be made to control it by antiperiodics.

Hemorrhage in remittent fever is an event generally to be deprecated. In a majority of cases the alimentary canal affords the surface from which it occurs. I have seen more than one case of intestinal hemorrhage prove rapidly fatal. I do not pretend to be able to explain its mode of production. It is, however, reasonable to infer that a true hemorrhagic diathesis is brought about by the changes of fluids and solids usually producing it, and that intestinal irritation and inflammation determine its point of occurrence. However we may reason about these points, I can testify to its occurrence in cases which did not present the slightest evidence of the presence of typhoid fever poison, unless the hemorrhage may be claimed as such.

Typhoid Fever. No one will dispute the assertion that this is the most pandemic of all the essential fevers. It is, however, true that New Orleans is generally more exempt from its presence than many other large centres of population in the United States. During the nine years extending from 1867 to 1875 inclusive, the returns made to the Board of Health show that 677 deaths have been attributed to typhoid fever. Murchison found that in an aggregate of over 18,000 cases the mortality rate was one in 5.4. If the same rate of mortality should apply to cases of the disease in this city, it would indicate the occurrence of 3655 cases of typhoid fever during the period mentioned. The proposition which is capable of being deduced is, that of 210,000 people living in New Orleans for nine consecutive years, one in every 57.4 will suffer from typhoid fever, and one in every 310 will die from this cause. If the population of New York be estimated at 1,000,000 for the nine years, 1865 to 1873 inclusive, and be tried for that period by the same comparisons and rates of number of cases, with number of deaths to the population, it will be found that one person in each 53.5 would suffer an attack of typhoid fever, and one in every 289.3 would die of that disease.

Whatever these figures may be understood to prove, the fact must be admitted that typhoid fever has never prevailed as a general or fatal epidemic in this city, nor has it been a common thing in my terms of service to have over two or three cases to treat during a winter's course. Prof. Chaillé's carefully studied statistics show that under the various classifications, "Typhoid," "Continued," "Enteric," and "Fever," 1262 cases were admitted to

Charity Hospital during the ten years 1856–1860, and 1866–1870. Of this number 440 died and 822 were discharged. If it were possible to eliminate the malarial fevers and other cases not really typhoid fever, it is very probable that the numbers would be reduced to one-half this present scale.

In regard to the origin and mode of spread of typhoid fever in the city and hospital, I know of no definite facts which will aid the enquirer in the solution of the various unsettled questions connected with this subject. Under my observation the disease has never communicated itself to any medical, or hospital attendant, or any patient exposed to it in the wards. No disinfecting measures have been resorted to beyond the usual cleanliness and good ventilation of the wards. Quite a number of the patients treated during my nine years of service have arrived in the city sick with the disease. Others have been brought in from various portions of the city who must have acquired the disease germs here. If we adopt Budd's theory, strongly supported by Leibermeister, that typhoid fever is insusceptible of de novo origin by any amount, or conditions of animal excreta or filth, without the presence of a germ derived from a pre-existent case, the difficulty of accounting for the appearance of the disease becomes in many instances absolutely insurmountable. It is true that Murchison's recent discoveries have taught us that milk—a food so important and universal in its use—may prove a vehicle of transmission of the special poison of the disease. We are not able to affirm that the butter and cheese which we import so largely are not liable to similar poisonous impregnations; but these are unproved hypotheses, which should have but little weight in scientific debate. Country villages, or isolated rural habitations, afford the best opportunities for studying the origin and mode of spread of infectious diseases. I am satisfied that a large number of practitioners situated where they are able to turn these opportunities to good account, will agree with me in considering Murchison's doctrines more consistent with their observations than the one which we have just quoted from Dr. Budd. These doctrines hold that the disease germs of typhoid fever may be generated anew from the accumulation of organic material and filth derived from human bodies. It is not inconsistent with this theory, to grant that certain attendant conditions are necessary to confer upon these collections of ordure capability to breed typhoid fever. It may be further

admitted, that these qualifying conditions are unknown, and that they rarely coincide in such a measure as to evolve the fatal germ, without yet overthrowing the theory that the poison is not dependent upon the introduction of a specific product of some other typhoid case for its renewed development. These questions are extremely important to the practitioner. His measures of prophylaxis are to some extent varied, accordingly as he may be governed by one or the other of these opinions. My reference to the opportunities afforded physicians situated in isolated localities for the study of this subject, is explained by an avowal on my part, that the observations made during that part of my professional life which was spent in country practice, have led me to adopt Murchison's opinions. Cases, time and again, occurred in my practice, which could not be accounted for upon any other hypothesis.

The infectious nature of typhoid fever is an indisputable truth. Whatever opinions may be entertained in regard to the mode of production of the disease germs primarily, they undergo multiplication in the bodies of the sick, and being thrown off, are capable of poisoning the well. In October, 1847, while practising in the town of Bloomfield, Ky., two students were brought to their homes from St. Mary's College, which had been suspended in consequence of a fatal outbreak of typhoid fever. A few days after their arrival both sickened with typhoid fever, and only recovered after severe and tedious illness. These two patients formed the foci of an epidemic which was so general that I treated 176 cases, from the time of the outbreak until the ensuing June. The attendants and families of the young students were the first to suffer attacks of the disease, then it became general in its prevalence in the village and its environs. The topography of the district where this epidemic prevailed, supports a belief that the disease germs reached the systems of the well principally through the drinking water. The water supply was obtained wholly from wells and natural fountains, and the dejections were generally emptied upon the surface of the soil in such positions, that they might readily reach the drinking water either by surface washing or percolation.

With respect to many of the towns in this country, it may be safely asserted that it appears as if they had been located and constructed, with the special design of affording the best facilities for the spread of those diseases which are propagated chiefly, or in part, by ingestion of their germs.

I have had no wards in Charity Hospital to which colored people are assigned, but my own observation and studies induce a belief that negroes are more liable to attacks of typhoid fever than whites. They are certainly less able to endure attacks of the disease than the whites are. I gave this subject pretty careful study in 1860, in reference more particularly to the influence the disease exerted upon the mortality rates of the two races in Kentucky. In 1858, of every

100 whites who died in Kentucky, 5.44 died of typhoid fever.
100 negroes " " " 7.03 " " " "

1859.

100 whites who died in Kentucky, 7.26 died of typhoid fever.
100 negroes " " " 10.25 " " " "

In South Carolina, during the three years 1857, 1858 and 1859, a somewhat different result is obtained:

Of 100 whites dying in 3 years, 9.78 died of typhoid fever.
Of 100 negroes " " " 8.48 " " "

The mortality statistics of the last U. S. Census Report, including the year ending June 1st, 1870, show the following figures touching these two States:

Of 100 whites dying in Kentucky, 4.84 died of typhoid fever.
Of 100 negroes " " " 3.95 " " " "

In South Carolina, same year and same authority:

Of 100 whites dying during year, 7.06 died of typhoid fever.
Of 100 negroes " " " 7.61 " " " "

Further observations are requisite to determine this question.

Two cases of typhoid fever were treated in my wards, both resulting in recovery. It is in my power to give a complete and very carefully observed record of temperature, pulse and respiration, in these cases, together with a statement of all medicines prescribed and administered to the patients. This circumstantial analysis of certain symptoms and the whole treatment, will be of interest to those young members of our profession who observed the cases.

Case 1.—David Chambers, age 21 years, by profession a slater, was admitted to ward 20 on the 23d of January. I saw him on the 24th. He was then rather listless and dull; complained of

weakness and slight headache, anorexia, and sensation of feverishness; no disorder of the bowels; patient not confined to his bed. Typhoid fever was suspected, but it was not possible to affirm a diagnosis. Ordered half a teaspoonful of the house solution of quinine every two hours until four teaspoonfuls should be administered.

25th.—At my morning visit found the patient sitting near the stove, conversing with those around him. Diagnosis not yet possible, but the patient asks for more of the house mixture, insisting that it helped him. Ordered ʒiv., teaspoonful every third hour.

26th.—No change worthy of note; insists that he is better, but a dull expression of countenance and increase of languor justify a probable diagnosis of typhoid fever. No remedies during the day; ʒij. of house mixture at bed time.

27th.—Patient in bed, complaining of weakness, feverishness; one loose stool in the latter part of the night; no tenderness, or gurgling upon pressure over abdomen. Ordered tinct. cinchon. comp. ʒj., nitro-mur. acid dil. ʒj., teaspoonful in sweetened water three times daily; Dover's powder, gr v., at night. No longer a doubt in regard to diagnosis, and records of temperature, pulse and respiration directed to be made. The following tables will show the variations of temperature, pulse and respirations throughout the case. This record began on the 7th day of the attack, as nearly as could be determined, and terminated on the 46th. It will be seen that for 18 days preceding the close of observations, they were taken in the morning only.

Day of attack.	Temperature.		Pulse.		Respiration.	
	M.	E.	M.	E.	M.	E.
7	100.5°	101.°	80	100	20	24
8	102	102	84	102	26	24
9	101	103.5	86	104	28	32
10	101	103.5	90	100	28	28
11	102.5	103	100	100	24	28
12	101	102	100	120	24	24
13	100	103	108	120	24	20
14	101	103 5	96	120	22	20
15	102	102.5	100	100	22	24
16	101	104	84	120	16	20
17	100	101.5	108	120	20	20
18	102.6	101.9	108	100	28	24
19	101	102.5	108	100	25	28
20	99	102	96	100	22	24
21	99	104	96	100	26	24
22	99.5	103	100	100	26	24
23	100	102	98	100	26	32
24	99.5	104	96	100	26	28
25	100	103.5	102	100	30	28
26	100.2	101.5	104	100	22	28
27	99.5°	103.1°	92	120	22	28
28	100		100		30	
29	103		92		20	
30	99.8		100		22	
31	100.5		104		22	
32	100		104		24	
33	100.6		106		26	
34	99		104		22	
35	100.8		115		22	
36	99.5		115		22	
37	100		112		24	
38	102.5		114		36	
39	100.4		114		20	
40	100.5		95		22	
41	100.1		110		22	
42	99.5		110		23	
43	99		112		25	
44	99 3		114		24	
45	99		105		23	
46	97.5		96		20	

28th.—Continue treatment: ʒij. of house solution of quinine ordered at bed time, as a substitute for the Dover's powder. This was done at the earnest solicitation of the patient, who from the beginning to the conclusion of his case protested that he was better after taking it. [Each ʒi. of this solution contains quinine gr. v., tinct. opium gtt. viiss., dissolved in peppermint water by sulphuric acid.]

29th.—Continue treatment; patient has had two or three stools daily, but no measures have been employed to restrain them, as they do not seem to prejudice his condition.

30th.—Bowels loose; gurgling and some tenderness in right iliac region; tongue becoming red. Ordered tinct. cinchon comp. ℥ij., tinct. opium ʒj. Mix. Teaspoonful every second hour.

31st.—Continue treatment; ʒj. of house solution at bed time, to be repeated at 2. a. m.

February 1st.—Continue treatment.

2d.—Bowels loose and patient feeble; muttering delirium during sleep. Ordered tinct. cinchona comp. ℥j., nitro-muriatic acid, tinct. opium, aa gtt. xl. Mix. Teaspoonful every three hours. This prescription was continued until the 14th of February, the intervals between the doses being varied according to the urgency of the diarrhœa.

14th.—Ordered house solution ʒvj, one drachm three times daily.

15th.—Continue.

16th.—Comp. tinct. cinchon. ℥ij., tinct. opium. ʒj.; teaspoonful three times daily.

19th—House solution ʒiv.; one drachm every three hours.

21st.—Some cough; pain in left side of the chest; dull percussion at base of left lung: hot cloths and flannel jacket over chest. ℞—Brown mixture ℥ij., carb. ammonia ℈ij. Mix. Tablespoonful every fourth hour during day. Dover's powder, gr. v., at night.

22d.—Continue treatment.

24th.—Tinct. digitalis ʒvj., syrup morphia ʒij. Teaspoonful every two to four hours, according to effect.

25th and 26th.—Continue treatment.

27th.—Pul. digitalis gr. vj., pul. ipecac, pul. opium, aa gr. iij. Make six pills; one every fourth hour. No other prescription was made.

Throughout the whole treatment of this case diet was made a point of paramount importance. The patient was carefully nourished with milk, rice and milk, essence of beef, and chicken, with alcoholic drinks as early and often as indicated. Cloths wrung from hot water were placed over the abdomen. No measures were resorted to, to check the diarrhœa, unless it became so profuse as to weaken the patient.

Case 2.—Herbert Thiele, aged 18 years, a resident of this city, was admitted to ward 18, Charity Hospital, on the 12th of February. His friends state that his sickness dates from the 6th. He has had bleeding from the nose, diarrhœa, and some delirium. The diagnosis was positive. The following table shows march of temperature, pulse and respiration, until convalescence was well established.

Day of attack.	Temperature.		Pulse.		Respiration.	
	M.	E.	M.	E.	M.	E.
8.....	102.0°	105.2°	88	100	28	20
9.....	102	104	86	88	28	24
10.....	103	102	88	80	24	20
11.....	102.3	103.1	88	84	24	20
12.....	101.7	100.5	90	88	21	16
13.....	102.3	102	90	92	20	16
14.....	101.4	103.1	86	80	22	24
15.	100.5	.....	90	....	24	....
16.....	101.2	98	88	78	16	16
17.....	99.2	.....	76	....	20	....
18.....	99.2	.....	85	....	20	....
19.....	98.3	102	80	100	18	20
20.....	99.5	102	92	96	18	16
21.....	100	101.3	80	104	18	20
22.....	101	104	88	100	20	20
23.....	101	102	88	100	16	20
24.....	100	102	92	100	18	24
25.....	100.4	101	94	100	16	16

Treatment.—When the patient was admitted, on the 12th, the assistant house surgeon prescribed ʒij. house solution, to be taken at night.

13th.—Prescription repeated.

14th.—Ordered acid nitro hydrochlor. dil., ʒij.; syrup ipecac, ʒij.; comp. tinct. cinchona, ʒiv.; water, ʒj. Teaspoonful in sweetened water every third hour; ʒj. house solution at night.

15th.—Continue.

16th.—Tinc. cinchon. comp. ℥ij., nitro-mur. acid ʒj. Mix. Teaspoonful three times daily in sweetened water. Dover's powder five grains each night. This treatment was but little varied until the patient's convalescence was well established. He was discharged from the hospital March 6th.

The treatment in both of these cases was symptomatic purely. No efforts were made to control the diarrhœa, unless it was likely to interfere with nutrition or weaken the patient by its profuseness. No attempt was made to abridge the disease by cold packing, quinine, or any other supposed abortifacient treatment. The only measures resorted to lower the excessive temperature, were frequent sponging the surface with tepid water, and a liberal supply of ice and iced drinks. Mercurials were not given to either patient, for the simple reason that I saw no indications for their use. A paramount attention was given to the nutrition and hygiene of the patients. May not this account for the fact, that the former of these was enabled to survive an abnormal temperature extending through a period of more than forty consecutive days?

Yellow Fever. Three cases of this disease were treated in my wards. Two resulted fatally, and one was discharged. They were all admitted during the month of December. All came from the same point—Eadsport—and had a similar history in regard to the quarters in which they slept. The detailed history of the first case will sufficiently develop all important facts connected with their exposure to the contagion.

Case 1.—Peter Galvin, a common laborer, aged 18 years, was admitted to ward 18, on the 6th of December. The history given in regard to him is, that he left St. Louis in the latter part of November and went to the mouth of the Mississippi river, where he had an engagement to work on the jetties. He was employed immediately after arrival in making the willow mattrasses used in forming these works. At night he slept with some fifty or sixty laborers in a barge fitted with bunks and tied to one of the wharves. Prior to the illness of these patients, the barge had been driven on the mud during a heavy gale. On Friday, December 3d, he had a slight chill, followed by severe pain in the head, back, and in his legs. He came to the city December 5th, and was admitted on the succeeding day, having walked to

the hospital and up into the ward. The patient was seen immediately after admission, and although there was a degree of suffusion of the countenance, and a puffed, tumid state of the eyelids, which attracted my marked attention, they were referred to catarrh and their serious import misapprehended. He was ordered ℞—Calomel, comp. extr. colocy., aa gr. v. Make two pills; take immediately; follow in four hours with ℥ss. castor oil. As soon as catharsis is obtained, ʒj of house solution every three hours until ʒiv. have been taken.

December 7th. Still complains of pain in the head and back, also of slight nausea and some thirst; countenance still tumid and dull in expression; complains of the weight of the hand upon the epigastrium; no stools since Dec. 2d. Ordered castor oil in repeated doses of ℥ss. Having a strong suspicion that this was a case of yellow fever, I obtained some of his urine and tested for albumen; none present.

December 8th.—Patient's bowels well evacuated during the night; condition not improved; seems dull, manifesting but little interest in inquiries, or efforts to examine him; temperature 102°; urine albuminous; diagnosis positive. Ordered broken ice, iced "seltzer water," iced milk in small quantities at short intervals; absolute recumbency; a nurse to remain continually at his bedside.

December 9th.—Worse; nausea and epigastric uneasiness somewhat increased; some jactitation; urine albuminous. Temperature, morning, 104½°; pulse 86; respiration 26; evening temperature 103½°. Ordered

℞—Sodæ bicarbonat., - ʒss.;
Aquæ laurocerasi, - ℥ss.;
Morphiæ sulphat., - - gr. ss.;
Aquæ menth. pip., - - ℥iiiss.

M ft. sol. S. Tablespoonful every two hours until nausea is quieted.

December 10th.—Delirious through the night; nausea; hiccup, and ejection from the stomach of about ℥iij. of light yellow fluid, containing brown flocculi at the bottom of the night vessel. No urine since noon of the preceding day. Morning temperature 104°; pulse 90; respiration 24. Evening temperature 104°; pulse 112; respiration 24.

December 11th.—Condition much worse; completely delirious; entire suppression of urinary secretion; black vomit in large quantity; death at 10 o'clock in the night. Post-mortem in presence of the medical class.

Case 2.—Peter Reiley, laborer, aged 22, had been employed in company with Galvin in making mattrasses, and had slept in the same quarters. Never had malarial fever. Was attacked suddenly on the 14th of December with a chill, pain in the head, back and limbs. He was admitted to ward 21 on the 18th of December. At time of admission he complained of severe head and backache, tenderness of epigastrium, nausea and vomiting of ingesta, and great restlessness. The face was flushed, eyes red and watery, and conjunctiva injected. Morning temperature 98.1°; pulse 70; evening temperature 98.1°; pulse 80; urine carefully tested, but no albumen present. Prescribed

℞—Bicarb. soda, - - ʒss.;
Cherry laurel water, - ʒiv.;
Sulph. morphia, - gr. ½;
Peppermint water, - ℥iiiss.

Mix. Tablespoonful every two hours. Mustard plaster to epigastrium; ice and iced effervescing drinks to be given; milk and milk punch for diet.

December 19th.—Very little change in patient's symptoms. Morning temperature 98.2°; pulse 68; evening temperature 98.6°; pulse 80, more feeble, and disappearing under pressure; no albumen in urine. Treatment continued.

December 20th.—Morning temperature 99.1°; pulse 75; evening temperature 98.2°; pulse 50; urine albuminous; complains of gaseous distension and sense of burning in his stomach; frequent eructation. Prescribed

℞—Subnit. bismuth;
Pul. willow charcoal, aa ʒss.;
Pul. opium, - - gr. j.

Make six powders: one to be given every three hours, placed upon the tongue and swallowed with a little ice-water.

December 21st.—Morning temperature 98.6°; pulse 75. Evening temperature 98.6°; pulse 60; urine albuminous, and reduced in quantity. Continue treatment.

December 22d.—Patient weaker and very restless. Morning temperature 98.6°; pulse 75; evening temperature 97.2°; pulse irregular, very feeble, not counted; urine scanty, and highly albuminous. Prescribed: ℞—Bromide potash ℈ij., tincture opium gtt. xv., camphor water ℥ij. Mix. Tablespoonful every three hours. In the afternoon the patient complained of intense pain in his left arm, which swelled rapidly, and became livid and tense from the shoulder to the wrist. Death occurred during the night, without black vomit or convulsions. No autopsy.

Case 3.—Patrick Roberts, common laborer, aged 40 years, admitted to ward 21 on the 8th of December. Had been working and sleeping in company with the preceding patients; was seized on the 6th of December with chill, cephalalgia and backache. This case was a mild attack of yellow fever; still, it was one in which the diagnosis was positive. The facial flushing, and intense redness and sponginess of the gengival margins and of the conjunctiva, and the epigastric uneasiness were distinctively marked. On the 7th day of the disease, temperature 97.6°; pulse 48. On the ensuing day, temperature 97.4°; pulse 44. Urine without albumen throughout the whole case.

The patient made a very slow convalescence. The presence of two complications produced this result. Firstly, he had been a subject of malarial poisoning, and occasionally chills impeded his recovery. Secondly, he heard of the death of Galvin, and witnessed the death of Reiley, who had been placed upon an adjoining bed, and knowing that they had died of the disease under which he was suffering, the moral shock depressed him to a dangerous degree. He was discharged from the hospital on the 24th of January.

In commenting upon these cases, one of the first points to be mentioned is the season of the year at which they occurred. Yellow fever is not a disease which prevails in the winter in New Orleans. But these patients acquired the germs of the disease in a locality nearly a degree south of the city. Again, the records of temperature taken at the Board of Health office, show that 36 degrees was the lowest figure which the thermometer had marked prior to the occurrence of these attacks. It follows, therefore, that no fall of temperature had taken place, inferentially sufficient to destroy the germs of yellow fever. The assumption is justifiable that they contracted yellow fever at Eadsport, and in all likelihood the germs were in some manner preserved, or nursed into renewed activity, by favorable conditions on board the barge where they slept. Many facts are on record which prove that yellow fever poison is capable of preservation for quite a long period of time. It is the opinion of many observers, and one in which I fully concur, that cases of yellow fever occurring out of season are more to be dreaded than those attacked during an epidemic visitation. Perhaps it may not be susceptible of proof that the rate of mortality of these sporadic cases is largely increased over that of epidemics, but it is certainly true that they are more prone to run irregular

careers and thus place the physician in fault regarding diagnosis, prognosis and treatment. The quiet manner in which the yellow fever poison sometimes produces death is a curious characteristic of the disease. Indeed, no greater surprise could be prepared for a physician brought for the first time in its presence, than to observe a case as devoid of violent symptoms as that of Reiley. It would prove difficult to make him believe that a morbific force as resistless as the tornado, could work its fatal ends so covertly and silently.

The swelling of the arm noted to have occurred in Reiley's case, was undoubtedly due to arrest of circulation by coagulated blood. I think it was in the autumn of 1868 that I witnessed a similar event, but connected with an approach to convalescence. The patient ultimately died and post-mortem examination by Prof. Chaillé, showed a thrombus occupying the axillary vein and perhaps a portion of the subclavian. There were also many points of purulent accumulation dispersed through the lungs, probably due to embolism. Yellow fever affords certainly two of the physiological causes of thrombus: blood alterations and slowing of the circulation. It is more than likely that the last mentioned is the predominating factor in its production. Slowness and feebleness of the heart's action are well known characteristics of yellow fever.

In relation to treatment, these cases afford nothing new or especially instructive. I am opposed to the perturbating treatment of this disease, but if favoring it ever so strongly, all these cases had passed the period of its applicability when admitted to the hospital. A yellow fever case in its incipiency, will endure an amount of therapeusis which would give a fatal turn to the scale of life, if applied later in its progress. This statement becomes in measure more strictly true, as the drugs applied are more strongly contraindicated. Perhaps those practitioners who attempt as it were, to pommel yellow fever into submission by violent medication, may take some comfort from the reflection that they do a less amount of harm, if they confine the use of their remedials to the formative stage of the disease. I suppose that a physician loyal to his profession and of course a believer in the optimism of the plan of creation, must of necessity hold that every poison has its antidote. But however true such a hypothesis may be, the antidote to yellow fever remains yet to be discovered. Neither do we understand the mode or channels of its elimination from the system. We therefore find those measures the wisest, which

simply seek to preserve the life of the patient until the storm has passed over. If we nourish the patient, preserving as nearly as possible a physiological state of his functions, and keeping him free from disturbing influences, either physical or moral, we discharge our principal duties. The treatment ought to be inaugurated with a laxative, if costive bowels so indicate, and they generally do. Castor oil is the most manageable and inoffensive in its action. Some good practitioners are very partial to a purgative dose of calomel: I never resort to it unless there is too much irritability of the stomach to expect the retention of other cathartics. Mustard baths to the feet and legs are comforting to patients and seem to be beneficial principally in promoting perspiration. The cooling and ameliorating effects of perspiration are well understood, indeed, one of the most common errors of practice is in concentrating all efforts of cure, in the one measure of stimulating the sweat glands. Hot drinks, hot baths, hot blankets and close rooms are occasionally made the means both of torture and of hastening a fatal result. It is much better, after reaction is well established to keep the patient comfortably cool, giving him cold drinks, in small quantities, but often repeated, and sponging the surface with warm or tepid water. Cephalagia, or lumbar pain may be somewhat alleviated by ammoniated lotions, or sometimes better by a heated flannel over the part. Apyretic treatment beyond cold and acidulated drinks, is seldom demanded. That quinine acts as an apyretic in yellow fever is a proposition verified by many observations. To insure its effects in this direction the doses should not be less than ten grains. In a majority of cases in which it is exhibited during the neuralgias special to the disease, it exerts some mitigating influence over the pain. During the forming stage of yellow fever it often happens that perspirations appear and disappear in fitful periods; quinine seems to steady the nerve supply governing this function, so that sweating is more equable and lasting under its influence. Why, then, shall we not prescribe it oftener than we do in treating yellow fever? The answer is rational and decided. It does not cure the disease, nor does it, according to my experience, even shorten its course, although some excellent physicians have attributed to it some merit as an abortive remedy. It does in a certain proportion of cases increase gastric irritation and irritability, and in another proportion, probably smaller however, its physiological effects are sources of nerve disturbance, especially insomnia. The

charge brought against it in the former clause of the last sentence is quite enough to decide the physician experienced in yellow fever practice, to refrain from its use by way of the stomach, at all events, unless some paramount considerations determine him to take the risk. Gastric irritability is so often a source of defeat and mortification to the physician that it is always a lion in his path. Even if vomiting or retching is absent, the disquietude of the stomach reveals itself by some manifestation or other, which seems to say to the medical attendant, "touch me it you dare." Not only does this fact worry the physician in regard to his medication, but it renders the question of nutrition a difficult problem to solve. I have often seen emesis followed by black vomit under circumstances which compelled me to believe that they stood in the relation of cause and effect. Several years ago, a patient well advanced in convalescence, obtained furtively an orange and an apple, and ate them both on the 13th day of his attack. He died on the ensuing day, with black vomit preceding death. If such an event is liable to occur late in the progress of a case running a previously favorable course, how necessary it must be to protect the stomach from all sources of irritation during the stadium of the disease. Alimentation for the first three or four days of a simple case, should be almost nil, and the little which is permitted should be in such a fluid and bland state of preparation that simple percolation through the gastro-intestinal walls would be the only function put upon these structures. As the case progresses a gradual change may be effected to solid food. The end of two weeks of satisfactory progress is considered by many observers, quite soon enough to permit a beefsteak or chop.

My thanks are due to Mr. L. Szabary, Student of Medicine at Charity Hospital, for the careful manner in which he has preserved the records of the cases mentioned.

Eruptive Fevers—Rubeola. One case was treated. Edward Moore, a newsboy, aged 16 years, was admitted February 11th. Stated that he had suffered with high fever and catarrhal symptoms for four days, or since the 6th. At the time of admission, the eruption was well marked upon his face and neck. No remedies were given except bitartrate potash in flaxseed lemonade, and an occasional dessertspoonful of "brown mixture." He was discharged from the hospital on the 17th of February. The fol-

lowing table affords a faithful exhibit of temperature, pulse and respiration, throughout the case.

Day of attack.	Temperature.		Pulse.		Respiration.	
	M.	E.	M.	E.	M.	E.
5.....	101.2°	104.2°	104	120	40	40
6.....	100.1	100.5	100	90	32	32
7.....	99.5	99.6	88	90	32	24
8.....	98.8	99.1	68	70	34	20
9.....	98.5	98.4	68	64	24	24
10.....	98	99	66	66	26	24
11.....	98.6	....	68	....	16	..

MEMORANDA OF CASES FROM THE WARDS OF DR. ALEXANDER HART.

REPORTED BY H. STEINAU, MEDICAL STUDENT.

CASE NO. I.

Previous History.—J. McCabe, age 20, laborer; admitted August 5th, 1876; is a native of New Orleans; of healthy parents; physically well developed and of temperate habits. Was in the hospital for upwards of a year, from '67–'68, under treatment for ophthalmia. With this exception, he had never been ill. Had been working "at the lake" of late, doing principally in-door work.

Present Illness.—The patient states that he was taken ill suddenly on the morning of the fourth of August, while at work, being attacked with high fever and vomiting freely. His condition growing worse rapidly, obliged him to come to town to enter the hospital.

The general symptoms at the time of admission were those of malarial fever, with a tendency to degenerate into a typhoid form; great irritability of the stomach, causing frequent vomiting and inclination to drowsiness and stupor. The pulse quick, yet compressible, 100; temperature, 105; respiration, 32. The existing subsultus tendinum strongly perceptible.

Diagnosis—All symptoms concurred, as above stated, to prove the case to be one of *remittent malarial fever.*

Etiology.—We have to look no farther for the exciting cause of the complaint than exposure to the well-known and fruitful generator of this baneful disease, "the malarial poison" infecting the locality in which the patient lived.

No remote or predisposing cause need here be anticipated; *malaria* being as direct and specific in its action as that of any *poison* introduced into the system.

Prognosis.—The prognosis in this case was not without uncertainty. The general prostration being great; the sensitiveness of the stomach, at first, such as to render the retention of the remedies administered, and even the lightest nourishment, impracticable.

Treatment.—Acknowledging the correctness of the view taken even by the older pathologists, that "febris est curamen naturæ vim mortis avertere," (fever is an attempt of nature to avert death) the treatment here indicated would be the methodus expectans: no attempt at energetic *curative* measures; but careful observation of the course of the disease and timely guarding against any devious steps the same may seem prone to take, at the same time assisting by light diuretics and diaphoretics the "vis medicatrix naturæ."

Pursuant to this view, cold applications were made to the head; a mustard plaster applied to the epigastrium and a mustard foot-bath ordered at night, together with the following:

6th. ℞.—Liq. ammon. acet., ℥iii.; spts. ether nit. ʒi.; aq. dest., ʒii. ♏. S. Tablespoonful hourly.

7th. On the morning of the 7th the pulse was reduced to 80; temperature, 100; respiration, 28; rise of temperature at night 1°.

8th. Treatment continued. Morning—Pulse, 82; temperature, 101; respiration, 28. Evening.—Pulse, 100; temperature 104; respiration, 36.

9th—morning.—Pulse 72; temperature 98.5°; respiration 28; and consequent change of treatment, viz.: ℞—quinia sulphat., ℈j.; acid. sulph dil., q. s.; aq. dest., ℥iv. M. S. Tablespoonful every three hours.

10th.—Treatment continued. Morning, pulse 68; temperature 99.5°; respiration 24. Evening, pulse 72; temperature 101°; respiration 28.

11th.—Treatment continued. Morning, pulse 60; temperature 100.5°; respiration 32. Evening, pulse 60; temperature 99°; respiration 24.

12th.—Treatment continued, and seidlitz powder. Morning, pulse 60; temperature 99°; respiration 24. Evening, pulse 60; temperature 100°; respiration 28.

13th, 14th, 15th.—Treatment continued.

16th.—℞—Magnes. sulph. ℥i., acid cit. cryst., ʒi.; syrup simpl., ℥i.; aq. dest., ℥iv. ♏. S. Wineglassful morning and evening.

17th.—Morning, pulse 88; temperature 100°; respiration 24. ℞—Ferri et quiniæ cit. ʒii., syrup cinnamon ℥i, aq. dest. ad ℥vi. ♍. S. Under this treatment the patient, now convalescent, continues improving in general health daily and rapidly gaining strength.

Discharged, August 19th, 1876, quite recuperated.

NOTICES OF NEW BOOKS.

An Elementary Treatise on Diseases of the Skin; for the Use of Students and Practitioners. By Henry G. Piffard, A.M., M.D., Professor of Dermatology, University of the City of New York; Surgeon to the Charity Hospital, to the New York Dispensary for Diseases of the Skin, etc. With illustrations. London and New York: Macmillan & Co. 1876.

This American book on skin diseases has been highly praised by critics who have found more time to investigate its merits than the writer of this notice. In the mean time, it is truth to be acknowledged that the capabilities of a writer upon cutaneous diseases may be readily measured by the mode of classification he adopts. If this is so natural as to become a matter of practical utility to the practitioner, it at once proclaims the value of the work. The classification originated and adopted by the author is founded upon nature, as the reader will readily perceive from the following extract:

Long impressed with the value of a natural or etiological system, I formerly proposed the following division of cutaneous affections:*

* * * * * * * * *

The first class embraces the affections which are the outward manifestations of a general morbid constitutional condition or diathesis, which diathesis may be hereditary or acquired, and lasts indefinitely or for life.

The second includes those which occur during or in consequence of a general morbid condition, not hereditary, and of temporary duration.

The third embraces those which depend directly upon nerve lesion, or else occur through the medium of reflex action, as secondary to pre-existing disease or derangement of other organs.

The fourth, those which have no direct connection with abnormal conditions of the blood, or nerves, or viscera.

The fifth embraces all the affections which our present knowledge will not permit of placing in other classes.

In assigning the various diseases to these different groups, I have been guided by what appeared to be their probable nature. In many cases the probabilities are so strong as to amount to absolute conviction, in other cases the weight of probability

* Medical Gazette, Oct. 31, 1868.

seemed to be decidedly in favor of the assigned position, while others have been frankly marked doubtful.

I.

DIATHETIC AFFECTIONS.

SYPHILIDES.

Varieties.

Erythematous.
Papular.
Tubercular.
Vesicular.
Bullous.
Pustular.
Squamous.

SCROFULIDES.

Varieties.

Erythematous.
Corneous.
Pustular.
Tubercular.
Phlegmonous.

REUMIDES.

Varieties.

Eczema.
Psoriasis.
Pityriasis.

LEPROSY.

Tubercular.
Anæsthetic.

ICHTHYOSIS.

II.

GENERAL NON-DIATHETIC AFFECTIONS.

Eruptive Fevers.
Erysipelas.
Scorbutus.
Glanders.
Malignant Pustule.

III.

REFLEX AFFECTIONS.

Acne.
Rosacæ.
Urticaria.
Zoster.

Herpes (labialis, preputialis, etc.)
Xanthoma(?).
Chloasmata (some).

IV.

LOCAL AFFECTIONS.

A. PARASITIC.
Scabies.
Phtheiriasis.
Favus.
Trichophytosis.
Phytosis Versicolor.
Alopecia Areata(?).
Impetigo contagiosa(?).

B. NON-PARASITIC.
Intertrigo.
Nævas.
Faruncles.
Verrucæ.

V.

AFFECTIONS OF UNCERTAIN NATURE.
Erythemata.
Elephantiasis (Arabum).
Keloid.
Lichen planus.
Lichen ruber.
Lichen scrofulosorum.
Molluscum fibrosum.
Molluscum contagiosum.
Pemphigus.
Prurigo (of HEBRA).
Purpura.
Scleroderma.
Scleriasis.
Strophulus.
Vitiligo.

The Student's Guide to Dental Anatomy and Surgery. By Henry Saville, Member of the Royal College of Surgeons and Licentiate in Dental Surgery, Honorary Secretary Odontological Society of Great Britain, Dentist to the West London Hospital, etc. Philadelphia: Lindsay & Blakiston. 1876.

This is an excellent little book, gotten up in the publisher's best style, upon good paper and with well-executed illustrations.

No physician will regret the small outlay which is sufficient to place it in his possession. Especially is this true in regard to country practitioners, who are so often expected to occupy the place of the inaccessible dentist.

Micro-Photographs in Histology, Normal and Pathological. By Carl Seiler, M.D., in conjunction with J. Gibbons Hunt, M.D., and Joseph G. Richardson, M.D. Philadelphia: J. H. Coates & Co., Publishers, 822 Chestnut street. Published monthly, price 60 cents per number; $6 per annum.

The present number comprises three plates with descriptive texts. The first is "Longitudinal Section of Femur" of human fœtus, five months old; the second is Enchondroma from Thigh; the third is transverse section of dry bone. We have in a previous number spoken of the plan and intentions of this publication. The plates are well executed, and no doubt faithfully represent the various subjects of study. We call attention of our readers to the following note prefixed to each number of this work. "It is purposed in this publication to devote most attention in the beginning to Normal Histology, so that some formation of normal standards may be laid, with which to compare the pathological specimens, to which more attention will be given as the work progresses. Since it is desirable to have as wide a range of choice as possible, so that the best specimens may be obtained, it is requested that all well-wishers of the enterprise, who may have in their cabinets specimens that they think can be used to advantage, will kindly correspond with Dr. Carl Seiler, care of the publishers.

"Rare pathological specimens are particularly desired."

Cyclopædia of the Practice of Medicine. Edited by Dr. H. Von Ziemssen, Professor of Clinical Medicine in Munich, Bavaria. New York: William Wood & Company, Great Jones street. 1876.

We acknowledge the receipt of Volume XI. of this fine work. This volume is by Prof. Erb, of Heidelberg, and treats of the diseases ot the "Peripheral Cerebro-Spinal Nerves." Dr. Erb, in his study of these diseases, classes them under two captions:

first, Functional Diseases (neuroses) of the Peripheral Nerves; second, Anatomical Diseases of the Peripheral Nerves. A moment's reflection will present to the physician's mind the great importance of this book, treating, as it does, of diseases seldom ever absent from the busy practitioner's clientelle.

Under the head of functional diseases "of the peripheral nerves," the author assigns the first place to—1. Neuralgia in general. 2. Neuralgia of the individual nerves. 3. Anæsthesia. Then follow chapters upon the Neuroses of the Nerves of Special Sense, and Neuroses of the Motor Nerves. Under the latter division, spasmodic and paralytic affections receive a share of attention commensurate with their great importance, 312 pages of the volume being given up to their consideration. We wish to lay before our readers an extract which will illustrate the manner in which the author deals with his subjects, and therefore make room for his chapter on "Headache." There are few subjects which more deeply concern our profession, and every effort to reduce this extract to a smaller compass has appeared to me to curtail its value out of proportion to that of the space given up to it.

Scarcely any symptom of disease of the nervous system is so frequently met with in practice as "headache," and there are few that are susceptible of so many and varied interpretations. Headache occurs more or less constantly, though often only as a deceptive symptom, not only in nervous diseases, but in almost every other form of disease, as in fever, in disturbances of the digestive organs, and in the most diverse inflammations of the head and adjoining parts. It is not intended here to give a complete treatise on headache, since, as Eisenmann has observed, it would be easy to fill an octavo volume of goodly size with matters pertaining to this subject; but only to make a few brief observations on those forms of headache which in common parlance are ordinarily designated as more or less purely "nervous," and which cannot be included in the ordinary category of neuralgia and the other well-known forms of disease.

And those forms of headache may first be briefly alluded to, which do not properly form the subject of these remarks. The most prominent of these is that caused by *external neuralgiæ* of the sensory nerves. We have already pointed out in our account of trigeminal and occipital neuralgia how this is to be recognized, as, for instance, by the localization of the pain, the painful points, and the concomitant phenomena.

An affection that is frequently included in the category of nervous headaches is *hemicrania* (migraine). Well-marked cases of this neuroses are easily recognized by the paroxysmal periodic

occurrence of pain on one side of the head, malaise and vomiting, by hyperæsthesia of the organs of special sense, and by their relation to the catamenia and to errors of diet, etc., for details respecting which the reader is referred to the chapter on hemicrania. Many cases obviously belong to this category, which, however, do not present all the features of a well-marked attack of migraine; as, for example, the pains felt by many women on one or both sides of the head, which set in with general feelings of illness, disappear when compression is made on the carotids, persist for variable periods, and not unfrequently alternate with attacks of true migraine. Careful observation, continued for some time, generally enables us to made a correct diagnosis of these cases.

Headache, again, is one of the most constant symptoms in fevers, whatever may be the etiology of the fever. In ordinary cases it is moderate in intensity, dull, and deep-seated, situated as it were at the bottom of the orbit or at the base of the skull. It is increased by movements of the head on stooping and the like, and is accompanied by a feeling of light-headedness which not unfrequently is associated with delirium. The diagnosis must be essentially based upon the rise of temperature that accompanies true febrile affections. The precise cause of the headache that accompanies fever has not been very satisfactorily ascertained. Cases no doubt occur in which besides the fever other circumstances concur in producing headache.

Headache is an almost constant symptom in *all inflammatory and ulcerative processes*, and in cases of *neoplastic formations* taking place in the skull and adjoining tissues, and in the *diseases of the higher organs of special sense:* and in these cases it would appear to be caused partly by mechanical and partly by inflammatory irritation of the nerves, and partly also to be due to radiation. To this category belong the headaches that occur in catarrh of the frontal and sphenoidal sinuses; in inflammatory affections of the skin, of the fascia of the occipito-frontalis, and of the periosteum of the cranial bones; in syphilitic diseases of the skull; in caries of the petrous portion of the temporal bone; in tumors of the base of the cranium; in lesions of the eye and ear, etc. Such headaches are often held to be of a purely nervous nature if the primary disease developes slowly and without betraying itself by any marked symptom.

Headache, lastly, is a very important symptom in every form of *disease of the brain and of its membranes.* It is a common though certainly not constant concomitant of all such affections. It often becomes very intense, deep-seated, boring, and throbbing. It may be either continuous or paroxysmal in character, and it is increased by movements, by blows on the skull, etc. Its true significance is often first recognized only after other symptoms of cerebral lesion have made their appearance: as delirium, fainting, vomiting, partial paralysis, anæsthesia or

cramps, general convulsions, etc., for details respecting which the reader must consult the other volumes on nervous diseases.

A large group of cases still remain in which no anatomical cause of the pain can be shown to exist, and in which we seem compelled to admit the presence of abnormal conditions of excitation of sensory nerves ramifying on or in the head; these are the cases which may with some propriety be included under the head of "nervous cephalalgia." In these cases the pain may vary considerably in character, and may be described as tensive, tearing, boring, pulsating, and the like. The patient feels as if a red-hot nail were being thrust into his head, as if the head were splitting open, or as if it were being violently squeezed. All shaking of the head, stooping, straining as at stool, unusual exertion, quick movements of the eyes, strong impressions of light or sound, reading, work, augment the intensity of the pain, whilst it is not brought on nor increased by palpitation or by tapping upon the head.

The patients often describe very exactly the seat of the pain. It is most commonly situated in the forehead, temporal region, or occiput; but it is frequently stated to be internal and deep-seated, as at the bottom of the orbit, in the internal ear, at the base or in the bones of the skull. It is sometimes unilateral, sometimes bilateral, sometimes fixed, sometimes wandering; in one case it will be diffused over the whole skull, whilst in another it will be limited to one small spot (Clavus).

A great variety of symptoms accompany this form of headache: a feeling of light-headedness and emptiness, of beating within the head, muscæ before the eyes, singing in the ears, fainting, occasionally delirium or slight unconsciousness, convulsions and cramps of certain muscles, slowness of pulse, general malaise and vomiting, and not unfrequently anæsthesia, formication, etc. In addition, symptoms of the primary disease are also discoverable.

The duration of the pain is also extremely variable. It may last for hours, days, and even years, or at least may recur again and again during that period with longer or shorter intermissions (habitual headache.) It may remain of moderate intensity, or rise to such intensity as to almost drive the patient to desperation.

Physiology affords little aid in determining the sensory nerves in which the irritation is seated. Experiments upon the sensibility of different structures in the interior of the skull have given contradictory results; for whilst Leyden, Hitzig, and Ferrier have found the dura mater to be highly sensitive, Pagenstecher ascribes a very low degree of sensibility to it, and Bartholow,* who experimented on the human subject, found it to be but slightly sensitive to mechanical stimuli. The greater number of experiments seem to show that the pia mater is also

* *Bartholow*, in Beard's Archives of Electrology and Neurology. New York, 1874, p. 68.

not very sensitive, and the same may be said in regard to the greater part of the substance of the hemispheres. When Bartholow pushed his needles deep into the substance of the cerebral tissue, pain was only experienced in the neck after they had been pushed in to about the depth of the great ganglia at the base of the brain.

We are unable, again, from physiological considerations, to explain why headache should be experienced when the intracranial disease is situated in so many different parts of the brain or of its membranes; we must either admit that the tissues, which under ordinary circumstances are insensible or are only endowed with a low degree of sensibility, become sensitive under pathological conditions, and give rise to pain; or we may imagine that in diseased states the influence of pressure and irritation spreads to considerable distances, involving tissues that are sensitive. The dura mater may undoubtedly be included amongst such sensitive structures, since it receives sensory branches from the trigeminus and vagus; perhaps also the nerves of the choroid plexus, which Benedict* has recently described, are of a sensory nature, and may be answerable for the "internal" headache sometimes complained of. To what special locality, however, we should refer these "nervous" headaches, is still undecided, and we can only offer guesses at the truth.

Various forms of nervous headache may be distinguished in accordance with their *pathogenesis;* these will here be briefly mentioned.

Anæmic Headache.—This usually affects equally the temples and brow, and frequently also the vertex, extending along the sagittal suture, and is dull and tensive in character, and not very violent. It is alleviated by the recumbent position, rest in bed, etc., and is rendered worse by long maintenance of the erect position. It is accompanied by dizziness, a disposition to faint, general pallor, palpitation of the heart, dyspnœa, cardialgic and dysmenorrhœic disturbances, and is frequently met with in chlorotic patients, and in all anæmic patients, especially in women.

Headache from Active Hyperæmia (congestion) usually affects the whole head, is often accompanied by throbbing, and by sensations of pressure and weight in the head, agitation, hyperæsthesia, and illusions of the organs of special sense; the eyes and face are suffused, and there is strong pulsation in the carotids. Eulenburg has described, under the term *cephalœa vaso-motoria*, violent pain in the brow and temple, which is accompanied by a sense of pressure and tightness in the head, and by heat and redness of the face and ears, and which may come on in regular paroxysms. I have myself seen a case of this kind in which violent pain at the crown of the head, and fainting, were coincident with intense redness and heat of the brow and vertex.

Under the name of *toxic headaches* we may include those

* *Benedict,* Virchow's Archiv, Band 59.

caused by the entrance of certain poisons into the system, or by infection with certain products and germs of disease. The best example of this is found in the headache following alcoholic intoxication, which causes, in the morning after free libations, a feeling of painful pressure and weight, which appears to be chiefly localized at the base of the brain and in the deeper parts of the eyes. From the well-known relations of chronic alcoholism to the diseases of the dura mater, there is some reason in referring this form of headache to the sensory nerve fibres of the dura mater. Chronic lead poisoning also often causes cephalæa; poisoning with narcotics, with carbon vapor, sulphuretted hydrogen, etc., frequently leaves behind a long-enduring headache. In many persons, exposure to bad air, and to the air of overcrowded rooms produces headache; violent headache, again, is a common symptom in uræmic intoxication. It is, perhaps, justifiable to apply the term infectious headache to that form which accompanies infection of the system with the poison of typhoid fever, malaria, etc. Fournier* describes a very severe form of headache, which occurs with special frequency in syphilitic women; it belongs to the secondary symptoms, and differs essentially from the headache caused by syphilitic affections of the bone, and syphilitic neuralgia. These several forms of headache may be distinguished by the concomitant symptoms of the particular kind of poisoning or infection to which they are due.

Headache is one of the most common complaints of *hysterical patients*, in whom it very frequently assumes the form of clavus, the pain being limited to one small spot of the skull; but frequently, also, it is more diffused and deeply seated, extending horizontally from the forehead to the neck, and accompanied always by other symptoms of this Protean disease. The pain is augmented during the menstrual period, by harass and worry of mind, whilst it is removed by amusement and mental excitement.

By *rheumatic headache* is meant the tearing, and often very violent, pain localized in the muscles of the head and in the fascia of the occipito-frontalis muscle; it is generally believed to be brought on by exposure to cold, is often associated with well-marked tenderness of the scalp; and is increased by changes in the temperature and weather. Mettauer† has reported a remarkable case of this kind under the title of "neuralgia of the occipito-frontalis muscle," in which he effected a cure by making a subcutaneous crucial incision over the whole cranium.

A very obscure form of headache is that denominated *sympathetic headache*, which may supervene upon diseases of all possible peripheral organs, and is not readily explained. It is most commonly attendant upon diseases of the digestive organs (browache in gastric catarrh, headache from the presence of worms in the intestinal canal, from hemorrhoids, etc.) and of the

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* *Fournier*, Leçons sur la Syphilis. Paris, 1873, p. 761.
† *Mettauer*, Boston Med. Journal, July, 1870.

sexual organs (headache from Onanism, sexual excesses, and from diseases of the uterus and ovaries).

Lastly, there is a form of headache, which I shall take the liberty of calling *neurasthenic headache*, in which the pain is of a heavy, dull, oppressive, and deep-seated character, seriously impairing mental activity and often increasing to the height of migraine. It occurs in those who are depressed by severe mental or bodily exertion, night watching, anxiety, great excitement and sorrow, sexual exeesses, etc., and whose nervous systems present manifold indications of diminished resistance to excitation. This is a tolerably frequent and very harassing form of the disease.

In addition, we not unfrequently meet with very puzzling cases, in which literally no cause can be discovered for the extremely violent and tormenting pain so often experieneed. In one case which fell under my care, in which the patient was a young waiter, I observed that there was a spot about the size of a shilling on the right side of the skull, in which pain recurred with frightful violence every evening. It was increased by pressure, by stooping, and by movement; but I was unable to discover any cause for it. The fascia of the occipito-frontalis was tender to the touch, but not swollen or red; the nerves distributed to it were not painful, and he had not suffered from any syphilitic affection. The pain in this case was relieved by the stable application of the anode of the galvanic current on three occasions. In two other cases I observed violent and persistent frontal headache, with reflex wrinkling of the brow, without being able to discover any cause of the affection, or to afford any relief by means of the various remedies which I prescribed. Every busy practitioner must frequently have such cases fall under his observation.

The *diagnosis* of the several forms of headache may be deduced from the foregoing account, and from a consideration of all the concomitant circumstances of the case. The examination should be carefully directed to the external tissues of the head, and to the behavior of the peripheral nerves, the sensory organs, and the functions of the brain. The skull should be percussed, the breath held, and an effort at straining made; the state of the circulatory and digestive organs should be investigated, and the existence or absence of any hereditary predisposition or toxic influences ascertained. Particular attention should be paid to the more obstinate forms of headache, which, when lasting for years together, are often the precursors of serious cerebral disease.

The *treatment* requires much intelligence and tact on the part of the physician, and often calls forth all his resources. In the first place it should be directed to the primary or constitutional disease, and hence the remedies in common use against

anæmia, hysteria, syphilis, nervous debility, local diseases, etc., must be employed.

In many cases, however, remedial measures must also be prescribed for the headache itself. The number of remedies that have been recommended for this purpose is of course very great; of these we shall here only mention the following: *cold* in the form of wet compresses, ice bottles, etc., which is most appropriate in the treatment of the congestive, and the majority of the toxic forms, but may also prove serviceable in hysterical and allied states. It may be applied also in the form of cold to the neck, cold foot-baths, cold bandages to the calves of the legs, and cold hip baths. *Narcotics* have been tried in all their forms, but they do not prove very effective, and it is not easy to lay down any definite indications for their use.

The reader may refer to what has already been stated in speaking of the neuralgiæ. A dose of morphia in a cup of strong coffee often proves very serviceable, and relief may be obtained by placing a little pad of cotton-wood moistened with chloroform upon, or by rubbing veratria ointment into, the affected spot.

Derivatives in various forms may be tried, such as flying or suppurating blisters on the neck or behind the ears, sinapisms, embrocations with ointments that will produce a crop of pustules over the painful spot, moxæ, and even the actual cautery; in some instances leeches may be applied to the temple, or neck, or to the anus.

Electricity is a very valuable remedy in these cases, and may be used in full accordance with the rules already laid down in speaking of the neuralgiæ. The transmission of the galvanic current through the head from before backwards, and from side to side, and along the sympathetic nerve, is of the highest value, and after this the stabile application of the anode to the skull or other painful part. I am able, from personal observation, fully to corroborate the statements of Benedict and others, as to the extremely favorable effects obtained from the application of the "electric hand," that is to say, from faradizing the head by means of the moistened hand of the physician, which constitutes one electrode. The current should be weak, and may be applied for a period of from two to five minutes. The "general faradization" of Messrs. Beard and Rockwell also frequently appears to act well, especially in hysteria, neurasthenia, and allied conditions.

When spasm of the vessels is believed to be present, *nitrite of amyl* may be tried. If, on the contrary, it is believed that there is paralysis, the *ergot of rye* may be prescribed. Eulenburg has obtained excellent results from ergot prescribed in doses of from nine to fourteen grains per diem in his cases of cephalæa vaso-motoria.

Iron, quinine, arsenic, iodide and bromide of potassium may all occasionally be employed, and I strongly recommend a combination of quinine, in doses of one and a half grains, with three-fourths of a grain of powdered digitalis, taken every morning for a considerable period. I only mention nitrate of silver, with or without sal ammoniac, because it has been highly approved of. Trousseau recommends the application of hot sand-bags, at a temperature of from 104° to 122° F., to the head, for half or three-quarters of an hour, though he has not laid down any definite indications for their employment. Chapman states that they may also be applied with advantage to the neck.

In many cases more good can be done by ordering change of air and scene, travelling to baths or for pleasure, and careful regulation of the diet, mode of life, and occupation, than by prescribing all the remedies in the pharmacopœia.

Zell's Popular Encyclopedia.

We have received Nos. 17 to 20, inclusive, of the new and revised edition of this comprehensive work. No. 17 is illustrated with a colored atlas, and each of the numbers contains numerous wood-cuts illustrative of the various subjects treated of.

A Sketch of the Life and Writings of Louyse Bourgeois, Midwife to Marie de Medici, the Queen of Henry IV. of France. The Annual Address of the retiring President before the Philadelphia County Medical Society. By William Goodell, A.M., M.D. Delivered June 5th, 1876. Published by order of the Society. Philadelphia: Collins, printer, 705 Jayne street. 1876.

This is one of the most charming brochures which recent medical literature has afforded. The learned author treats his auditors to a narrative piquant and sparkling with racy descriptions and happy bon mots, as are the best productions of Houssaye, of whom he reminds us, and whom, we think, he chose as his model, when for the nonce he laid his wig and gold cane aside that he might entertain his hearers in an unusual manner. The following passages will exhibit the style which the author adopts in his address.

"As soon as a woman has been delivered after a tedious labor,"

she writes (Lib. I., cap. xviii.), "a black sheep must be flayed alive, and the raw surface of its fleece put as warm as possible around the naked loins of the woman, which are thereby greatly strengthened. Next flay a hare alive, then cut its throat, and let all its blood flow into the skin, which must then be put reeking on the woman's person. This constringes the parts overstretched by labor, removes bad blood, and chases away the vapors. I have often proved the good effects of these remedies, which in winter should be kept on for two hours; in summer for one hour; afterwards a binder must be put on."

Now, lest my readers should jump to the unwise conclusion that the fleece of a white sheep will answer as well, let me at once undeceive them. The great Ambrose Paré—who, by the way, utilized the after-birth as our midwife did the hare's skin—most positively declares* that the fleece must be that of a black sheep. And for several centuries many were the uxorious Jasons in France, and many the Argonautic expeditions after the black fleece. For a remarkable case in point: at the birth of the Duc de Bourgogne, the grandson of Louis XIV., the dauphiness suffered greatly from the curse pronounced upon Eve—for it affects those clad in samite as well as those in camlet. M. Clement, the fashionable accoucheur of the day, thereupon gave orders to wrap the naked body of his noble patient in the reeking fleece of a black sheep. The butcher in attendance skinned the bleating animal in the antechamber, and, anxious to do his duty well, entered the lying-in chamber with the gory fleece. In his haste he forgot to close the door after him, and in rushed the poor flayed sheep; to the great dismay of the lords and ladies in waiting.† M. Dionis, a contemporary physician, in commenting on this practice,‡ adds the further information, that the ladies in waiting were so frightened by the bloody apparition, and the dauphiness so incommoded by the remedy, that in her two succeeding labors the butcher was dispensed with. And well he might be. Faugh! M. Clement.

Another feature of Madame Boursier's practice was to keep her patients over-heated, and withal rigidly on their backs for nine full days. The same M. Dionis, who flourished towards the close of the seventeenth century, narrates of his day, that "after their travail, ladies of quality do not leave their beds for nine days, and that it is the fashion during this time to close all the windows, to darken the room, and to burn candles.§ This custom is corroborated by a very interesting letter from Henry IV. to the faithful Rosny, Duke of Sully, which the industrious Mgr. Péréfixe has unearthed from the State archives. In it he writes the day after the queen's delivery: "Come, my friend, to

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* *De la Generation*, cap. xxxiv.

† *Cornhill Magazine*, October, 1875, from *Curiosites Historiques*, p. 48.

‡ *Accouchemens*, Paris, 1724, p. 327.

§ Ibid., Lib. IV., p. 330.

see me; but we must not speak of business during the first week after my wife's being brought to bed, for we shall be sufficiently employed in preventing her from catching cold." From these friendly lines, and from the collateral evidence furnished above, I am in hopes that for nine full days this wicked and much bundled-up queen lay sweltering on her back, and that, in apparel and figure at least, Marie de Medici bore no resemblance whatever to Venus de Medici.

The following passages will exhibit the manner in which royalty rewarded accoucheurs in those days.

"It was during this lying-in that I explained to Madame Concbini the pecuniary loss incurred by me, during the two months' time that I spent near her majesty. I told her that the best families never re-engaged my services, when once I had failed them; and that having now nothing but my perquisites, I found myself getting old, and with but little practice and very small means. She graciously repeated this to the queen, who begged the king to give me a salary of 600 ecus ($900). The king was willing to give but three hundred. 'I will give thee, said he, 'a pension of 300 ecus. In addition, every time my wife has a son thou shalt have 500 ecus. This will make 800 ecus, without counting the gifts thou wilt receive from the princesses and ladies of quality. When a daughter is born thou shalt have 300 ecus besides thy pension. For the birth of a boy doth demand a larger reward than that of a girl.' Counting back from the birth of our king (Louis XIII.), he ordered me to be paid at the rate of 500 ecus for the boys and 300 ecus for the girls. The queen in addition gave me sometimes 200 ecus. The king also said to me, 'My son will be a powerful monarch, and will, in addition to thy pension, promote thy welfare and that of thy family. Since thou hast so skilfully waited on my wife, thou shalt never want.' I was accordingly by royal warrant put on the roll of pensioners." But the dagger of Ravaillac annulled the king's promises, and disappointed her expectations. For as she very naively goes on to say: "This was in December, and in the following May the king perished. Thus at one and the same time I lost all; for since then I have drawn my pension only. I have no reason for complaint, for I have never ventured to petition for more. Madame the Marchioness d'Ancre [Lenore Galligay] graciously gave one of my sons the office, which he still holds, of cloak-bearer to Monsieur. She sent for me and bestowed it when I least expected it."

Yet Madame Boursier received far better wages than some other royal midwives. In 1470 Dame Margery Cobbe, midwife to that fair widow, Mistress Elizabeth Woodville, the queen of Edward IV., had a stipend of ten pounds sterling for delivering her of Edward V. in the "gloomy sanctuary of Westminster."

The same salary was bestowed in 1503 on Alice Massey, "mydwyfe" to Elizabeth of York, queen of Henry VII. At the birth of the Princess Mary in 1605, Dame Alice Dennis, a contemporary of Madame Boursier, and midwife of Anne, queen of James I. of England, was rewarded with a dole of one hundred pounds sterling. But on this occasion everything was conducted on an unusually magnificent scale. "The queen's childbed," complains a disaffected subject, "and other necessary provisions for that time cost £52,542." While Sir Dudley Carlton, of the royal household, writes to a friend: "There is much ado about the queen's lying down, and great suit made for offices of carrying the white staff, holding the back of the chair, door-keeping, cradle-rocking, and such like gossips' tricks."*

The †Pathology and Treatment of Childbed. A Treatise for Physicians and Students. By Dr. F. Winckel, formerly Professor and Director of the Gynæcological Clinic at the University of Rostock. From the Second German Edition, with many additional notes by the author. Translated by James R. Chadwick, M.D., Clinical Lecturer on Diseases of Women, Harvard University. Philadelphia: Henry C. Lea. 1876.

Dr. Winckel is the standard authority in Germany upon the subjects treated of in this volume. The independent and practical manner in which the author deals with his subjects is worthy of all commendation.

The work is an octavo volume of 484 pages, is gotten up in excellent style, and should be in the library of every practitioner.

Lectures on Fever: delivered in the theatre of the Meath Hospital and County of Dublin Infirmary. By William Stokes, M.D., D.C.L. Oxon., F.R.S., etc. Edited by John William Moore, M.D., F.R.Q.C.P., etc. Philadelphia: Henry C. Lea. 1876.

For originality, boldness of thought and expression, and bold-

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* *English Midwives*, by J. H. Aveling, M.D., London, 1872, p. 31.

† This book and those which are subsequently noticed, were received after the space set apart for book reviews had been filled, consequently, the brief notices which have been given them. Some of them will receive an extended criticism in the November issue,

ness in his assaults upon what he considered erroneous doctrine, or practice, Dr. Stokes is one of the most remarkable men of this century. The volume is full of valuable information, expressed in that terse, straightforward manner so natural to the author.

A Practical Treatise on Diseases of the Eye. By Robert Brudenell Carter, F.R.C.S., Ophthalmic Surgeon to St. George's Hospital, etc. With one hundred and twenty-four illustrations. Edited, with additions and test-types, by John Queen, M.D. Philadelphia: Henry C. Lea. 1876.

Upon the reputation of Dr. Brudenell Carter, we venture to assure our readers that this work is worthy of their study. The mechanical execution is exquisitely perfect. It is an octavo volume of 500 pages.

An Introduction to Pathology and Morbid Anatomy. By T. Henry Green, M.D., London; Fellow of the Royal College of Physicians, etc. Second American from the third revised and enlarged English Edition. Illustrated by one hundred and eleven engravings on wood. Philadelphia: Henry C. Lea. 1876.

This is one of the text-books of the Professor holding this chair in the University of Louisiana, consequently its high merit may be assured to our readers.

A Manual of Percussion and Auscultation; of the Physical Diagnosis of Diseases of the Lungs and Heart, and of Thoracic Aneurism. By Austin Flint, M.D., Professor of the Principles and Practice of Medicine and of Clinical Medicine in Bellevue Hospital Medical College, etc. Philadelphia: Henry C. Lea. 1876.

This is a small book, only 251 duodecimo pages, but our readers well understand that Dr. Flint is among the very highest authorities in the medical profession in respect to physical diagnosis. We recommend the book.

CURRENT MEDICAL LITERATURE.

SURGERY.

[Compiled by SAMUEL LOGAN, M.D., Professor of Anatomy and Clinical Surgery Medical Department, University of Louisiana.]

SUIT FOR MALPRACTICE.

Dr. M. W. FISH, vs. EMILE KOWER. } Alameda Co. Court, 21 April, 1876.

Colin Campbell, counsel for plaintiff, Hall McAllister for defendant.

This suit, which has attracted considerable attention, was tried in the County Court, and resulted in a verdict for plaintiff after a four days' trial.

It was brought by Dr. Fish to recover a bill, and was opposed on the ground of malpractice. This last was the real issue, and had defendant won, it would have been quickly followed by a suit for heavy damages. Originating in a Justice's Court, a verdict was given for Dr. Fish. The defendant appealed to the County Court, and it was tried with like result. The facts are briefly these:

On the eve of 20th December, 1874, the defendant while intoxicated was thrown from his buggy; when found he was apparently much injured about the left hip-joint, but was too much intoxicated to give any account of himself. Dr. Fish was called, failed to find any fracture, and regarding it as a case of contusion, ordered simple evaporating lotions and left him for the night. On the following day chloroform was administered, and a careful examination failed to detect any fracture. (Defendant's witnesses swore that the strength of four men was used to "pull the limb!") On the 22d, Dr. Babcock was called in consultation. He testified that there was considerable muscular soreness, but that the patient was able *unassisted* to raise the limb *from the hip*, at least six inches clear of the bed. Both surgeons testified that there was *no crepitus, no shortening, eversion or inversion.* The tenderness of the entire limb, and the complete examination, under chloroform, of the previous day, seemed to render further manipulation uncalled for, particularly if there was an impacted fracture, which was the only lesion, it was thought, could exist with the symptoms present. Subsequent visits gave no reason to change the diagnosis. Pressure on the trochanter gave no pain, and the four symptoms above mentioned at no time existed. The patient was directed to get up and move out on crutches, there being no displacement and no need for retaining apparatus. He was a heavy man, a free liver, accustomed to out-of-door life, and the confinement was irksome.

On the 1st of February, on attempting to bear his weight on the left leg, he was surprised to find sudden shortening. Dr. Fish was called, and on the following day Dr. Babcock. These witnesses testified that examination revealed the following: Lying on a hard bed, there was still no shortening, eversion or inversion of the foot; rotation, circumduction, abduction and adduction of the limb were perfectly performed, and gave no crepitus; pressure on the heel in the direction of the axis of the body produced *apparent* shortening *provided* no pressure was made on the trochanter on flexing the thigh; pressure on the knee did *not* produce shortening. When erect he could bear the entire weight of his body on the affected limb *if* strong pressure was made on trochanter, the holding the head of the bone in the acetabulum, but if such support was withheld, the shortening was again produced and slight crepitus discovered. The diagnosis now was that at the time of injury the superior rim of the acetabulum was chipped of, that the capsular ligament held the fragment in place, and that the action of the patient, bearing his weight on the limb, caused displacement of the fragment. As support to the trochanter prevented any displacement, and enabled the patient to bear his entire weight on the limb, a retaining pad or bandage was ordered to be applied around the hip, exercise on crutches in the open air directed, and the hope of a useful limb held out. This seemed satisfactory to the patient, but owing to the obscure nature of hip-joint injuries and the great rarity of the lesion in question, additional counsel was asked.

On 19th February, Dr. A. F. Sawyer was called. This distinguished surgeon made a most complete and exhaustive examination of Kower. When concluded he said, that but for his confidence in the ability of Drs. Fish and Babcock, and their assertion that they had discovered slight shortening and crepitus, he would be inclined to say that there had been *no* fracture; that he could discover *no signs of any*, but regarded it as a case of arthritic inflammation. He fully confirmed the treatment, and thought that time would give Kower a "useful leg."

On 27th February, Kower called Drs. Zeile and Loehr, who discovered "*intra capsular fracture of the neck of femur*," placed the patient in Gibson's modification of Hagedorn's splint and kept him here for about three months! It was then discovered that the patient is a cripple for life, had ligamentous union, and that the case was originally badly treated. On the dismissal of Drs. Fish and Babcock from the case, they presented a bill, payment of which was refused, with threat of suit. Therefore they were obliged to take the offensive, which forced Kower to claim malpractice, and this was the issue really tried. In Court, for the defence, Dr. Zeile testified that he found *no* shortening, but eversion and intra capsular fracture, and added that had he been called at first he could not have prevented permanent lameness and ligamentous union. Dr. Loehr testified *to* shorten-

ing, *in*version and intra capsular fracture. A Dr. Scott, graduate of Jefferson in 1870, (he who advertised to cure consumption by oxygen!) was very positive as to intra capsular fracture and malpractice; he had examined the limb sixteen months after the injury, without chloroform; could not be mistaken, his "*experience*" told him all about it. (Throughout the trial this witness sat by the defendant's counsel and prompted the examinations.) The only other medical witness for defense was Dr. Thomas Bennett, who had examined the defendant once, sixteen months after the injury, without an anæsthetic, had *heard* crepitus and was positive as to the intra capsular fracture. He also testified that he knew nothing of the fracture diagnosed by plaintiff. Defendant, his wife and a son aged fifteen years, swore positively as to very bad surgical treatment, no examinations by the plaintiff, persistent shortening from the first, and evinced a general knowledge of surgery and treatment that was refreshing. On the other side, the plaintiff, and Drs. Babcock and Sawyer, who were in charge at first, testified to the facts as given above. Drs. Toland, McNutt, Swan, Wilder, Green, W. P. Gibbons, Trenor, O'Neil and McRae, testified to the hypothetical case put, that it could *not* be intra capsular fracture; that with the symptoms as given by the attending surgeons it *must* be fracture of superior rim of the acetabulum, and that whether the rim of the acetabulum or the neck of the femur were injured, or it had been a contusion only, *with the symptoms presented* the treatment was proper and the result to be expected in any case. As stated, the jury were convinced that plaintiff had not been guilty of malpractice, that Kower was not as lame *outside* the Court room as *in*, to which one witness very pointedly testified, and that the four hours' closing speech of his counsel, which was no argument, but a model of choice abuse and vulgar invective, could not move them.—*Pacific Medical and Surgical Journal.*

NEW YORK MEDICAL JOURNAL ASSOCIATION.

Stated Meeting, May 26, 1876.

Dr. E. G. Loring, President, in the chair.

ON SOME POINTS IN THE ETIOLOGY OF HEREDITARY SYPHILIS.

Dr. F. R. Sturgis, in a concise and brief paper upon the above subject, presented a criticism upon the opinion still entertained by a large part of the medical profession, that the ovum in utero may become infected with syphilis through the semen, without the transmission of syphilis to the mother, either by the father or by the fœtus.

Dr. Sturgis was of the opinion that those who still adhered to

this doctrine entered the discussion in the face of three disadvantages.

1. They were obliged to prove positively the presence of syphilis in the father and child.

2. The non-existence of the disease in the mother, past, present, and future.

3. To explain certain anomalous cases and conditions which did not perplex those who held to contrary opinions, for they had only to prove that the mother and child were healthy.

In criticising the opinion stated, the doctor asked the question, "Why is it unlikely that syphilis should exempt the mother and attack only the ovum?"

Infection by the natural excretions of the body, viz., the sweat, saliva, tears, milk, etc., had been exploded as impossible, and yet the semen, according to theory advanced, was capable of transmitting syphilis to a fœtus that might remain in utero until full term, without danger to the mother; but as soon as born, became a centre of contagion for all non-syphilitic persons who might be so unfortunate as to have the blood or secretions from mucous patches of the child brought in contact with their absorbents; the mother, however escaping.

The doctor believed that such doctrine set aside endosmosis and exosmosis of the syphilitic virus, and, if true, gave rise to an important question, namely, How was the absorption of the virus in cases of acquired syphilis to be explained?

When the doctrine was studied from the hereditary point of view, it was found that syphilitic mothers gave birth to syphilitic babies in instances where the father was healthy; and if the virus had not transuded through the walls of the maternal blood-vessels, when and how did the child become infected? Dr. Sturgis criticised quite extensively the cases reported by M. Kassowitz, of Vienna, who is the latest writer in support of the theory enunciated. The records of the K. K. Fündlehaus covered 400 cases; and in 122 of those, the condition of the mother had been reported as unknown. The term "unknown" was objected to, and the record shown to be decidedly opposed to the experience of Oewre of Christiana, for instance, who had reported 100 cases, and had not been obliged to give the condition, relating to syphilis, of any mother as unknown. The question upon which Dr. Sturgis's criticism turned, was whether syphilis was conveyed to the ovum through the semen; and it was found, after examining some of Kassowitz's cases, that the conclusion that it had been, was founded partly upon the fact of the occurrence of several miscarriages, without the presence of syphilitic symptoms on the part of the mother. Interesting cases from Caspary and Langston Parker were also recited; and from them all, the doctor arrived at the conclusion that the mother's good health, in instances where she had given birth to syphilitic children, had been *only* apparent and *not real.*

Dr. Sturgis then turned to the other side of the question,

where syphilitic fathers begat healthy children, so long as the mothers remain healthy. The evidence upon that point was regarded as straightforward, and although not original with, was brought out prominently by, Cullerier in 1854. Allusion was then made to cases bearing upon that side of the question, and reported by Notta, Charrier, Diday, Mirenr and Oewre. In addition, Dr. Sturgis presented the records of three cases which had fallen under his own observation, and in which the evidence seemed conclusive that mother and children remained uninfected if only the father was syphilitic, *i. e.*, that they escaped infection through the semen. Dr. Sturgis, however, regarded the question as knotty and difficult of solution, although important.

The paper being open for discussion, Dr. F. N. Otis remarked that there were many elements of doubt in all those instances reported where syphilis had been transmitted from father to child without the intervention of the disease in the mother. Those elements were so numerous, that he could not but think that many mistakes had been made, and it was to be regretted that there was no more definite method of obtaining absolute information concerning the inoculability of the seminal secretion. Until absolute results from inoculation could be had, the seminal fluid being introduced into healthy persons, we should be justified in claiming the benefit of the doubt. Dr. Otis farther remarked that he was a believer in the cessation of the inoculability of the syphilitic poison. For example, a man who had passed through the active stage of syphilis, and was suffering from what are commonly called syphilitic sequelæ, perhaps at the end of four or five years, and following a thorough treatment, could not transmit the disease in any way. The mucous erosions which were sometimes seen, and which resembled very closely syphilitic processes, the doctor believed to be due to other causes than syphilis; for instance, indigestion, excessive use of tobacco, etc. With reference to the communication of syphilis from the sequelæ of the disease, Dr. Otis related a peculiar case, which illustrated the difficulty sometimes met with in obtaining reliable evidence. A man who had had the initial lesion of syphilis, followed by secondary eruptions, married a healthy woman, who gave birth to a child, which was healthy and remained so, as far as syphilis was concerned. The man had a morbid feeling that he should communicate syphilis to his wife. Time went on, and at the end of five or six years after the original chancre, the wife was brought to the doctor with what subsequently proved to be a syphilitic tubercle upon the thigh, and soon after mucous patches appeared in the mouth.

The social position of both husband and wife was, to all appearances, entirely beyond suspicion, and the case became exceedingly perplexing to the doctor. How was the presence of the syphilitic lesions in the woman to be explained? The doctor had an interview with the woman and told her his suspicions, and also that her husband felt convinced that he was the cause

of her troubles, whereupon she claimed that her husband was a model of purity, and at the same time acknowledged that she had had connection with an old lover while off upon a yachting excursion.

In closing, Dr. Otis remarked that he had never seen syphilis communicated four or five years subsequent to the active manifestation of the disease, and always doubted the reliability of the history of such reported cases.

Dr. Quackenboss regarded the transmission of syphilis as positive in one respect, viz., if a woman was syphilitic, her children would certainly be; and he was equally certain that a syphilitic father would beget healthy children in about ninety out of a hundred instances.

The doctor related a curious case, and one not easily explained.

A perfectly healthy woman married and gave birth to a healthy child; subsequently the husband gave her chancres, and the wife obtained a divorce. She was treated, and, apparently, became perfectly well; in due time she was married to a healthy man, became impregnated, and gave birth to a child unmistakably syphilitic.

Where had the poison been during the seven or eight years subsequent to the active manifestation of the disease, which finally showed itself in a distinctly syphilitic infant?

The paper was also discussed by Drs. McIlvaine, Bulkley, and Tauszky.—*Medical Record.*

RARE CASE OF GALL STONES DISCHARGED THROUGH THE SIDE.

By Daniel Perley, M.D.

The patient, Matthew Plumsted, Harness maker, was born in Norwich, England, A. D. 1800, went to Canada in 1812, came to the States in 1818, and to Lynn in 1835. He had been subject at times to severe pain in the region of the liver for some years, when, in the latter part of the year 1869, an abscess formed in the right hypochondrium, attended with great disturbance of the system.

The symptoms were so alarming that, in consultation with my friend the late Dr. B. B. Breed, we decided to make an opening without waiting for any thinning of the integuments. There was an immediate discharge of pus, yellow bile, and small black specks, which were easily rubbed up and became of a bright yellow color. He was somewhat relieved, and continued to improve with the discharge of similar matter, with now and then a clogging up of the aperture, till in about a month gall stones of various sizes up to that of a cranberry began to issue, and continued with volcanic irregularity of rest and activity till De-

cember 28, 1873 There has been no eruption since. He is now robust, and able to attend to his business in better health than for many years. In a hasty examination of the journals of the last forty years, I have been able to find but two cases of the kind.—*Boston Medical and Surgical Journal.*

ESMARCH'S METHOD SIMPLIFIED.

Dr. David Little, of Rochester, N. Y., advises the application of the common roller bandage to a limb, from the distal extremity upward, elastic tubing to be applied above; when the roller is removed, the operation is found to be *absolutely bloodless.* He says that if the ordinary bandage is tightly and evenly applied, it would seem to have the preference over the elastic bandage, as being more likely to force and keep out the blood from the compressed limb, simply because it is non-lastic and unyielding. It is also always at hand and easily applied.—*American Journal of the Medical Sciences.*

CASE OF SLOUGHING OF THE SCROTUM; RECOVERY WITHOUT CASTRATION,

By Drs. I. F. Galloupe and T. T. Graves, of Lynn.

On the 29th of December last, F. B., twenty-one years of age, and in good health, while at work near a revolving shaft moved by steam power had his apron and pantaloons caught and entirely torn off. On examination it was found that the scrotum had been included with the clothing, and torn off entire as far as the inguinal canals; on the right side the wound extended somewhat higher than that point, the skin covering the penis was torn, and that of the perinæum stripped off back to the anus. The testes and spermatic cords were left uninjured, but completely uncovered.

It was thought best to replace the scrotum, hoping that a portion of it at least would not slough, which hope was not entirely disappointed. The only alternative seemed to be to remove the testicles, to do which all that would have been necessary would have been to cut the cords and secure the vessels. During the examination, and at the dressings subsequently, the testes were separated and laid upon the groins. to bring the wound of the perinæum the better into view. On the third day the scrotum had sloughed, except a piece about an inch and a half square upon the left side of the penis. The entire wound was dressed with cotton-wool soaked in an aqueous solution of carbolic acid, and no other dressing was used throughout the treatment.

Healthy granulations soon covered the wound and testes; the spermatic cords began to shorten, and soon drew the testicles into contact with the external inguinal rings. The wound healed rapidly, the relic of the scrotum growing until the left testis was covered. The right one being still bare, it seemed as though it would be necessary to remove it. On examining the wound, however, on the 5th of February (the patient had not been seen for several days previously), it was found to have disappeared of its own accord, by escaping under the skin of the groin, and lay above the pubes. There it still remains, giving no discomfort or inconvenience whatever to the patient. The entire wound is now (February 27th) healed.—*Boston Medical and Surgical Journal.*

ON A CASE OF EXCISION OF CANCER OF THE ANUS AND RECTUM, AND ON THE ACCESSIBILITY OF THE FEMALE RECTUM FOR OPERATIVE PURPOSES.

By Furneaux Jordan, F.R.C.S.

There are certain distinctions which should always be drawn in cancerous diseases of the lower end of the gut. One of these is commonly made. There is another which is not commonly, or, at any rate, not specifically made. I will shortly put before you a few facts which will enable you to judge for yourselves whether it should be made or not.

The distinction which as a rule is *not* lost sight of is, that the rectum proper is the seat of various kinds of malignant disease, while it is rare for other than epithelial cancer to begin at the anal opening. Schirrus starting in the rectum may, it is true, quickly reach the anus, and epithelioma of the anus may as readily crawl up the rectum. Why it is well to draw a line between the tube and its outlet, is seen in many ways. The anus is very accessible; no canal, or cavity, or big vessel, or big nerve lies very near it. Above all, the cancer which seizes upon it is of all cancers the most local in its origin, the mildest in its course, the least likely to return after removal. Bear in mind that I am speaking now of epithelial cancers generally. I do not say that epithelioma of the anus is less grave than epithelioma elsewhere. On this point I have little to say, save that site goes a long way in determining the career of a cancer. I once saw an epithelioma seated over the sternum which had grown for thirty years, and seemed likely to grow for another thirty; on the other hand, I have seen an epithelioma of the tongue run as rapid a race as an encephaloid cancer. Position is but one of many influences which guide the clinical course of a malignant growth.

The other distinction which, I believe, is not commonly made

is, that the female rectum, from a surgical point of view, is a totally different organ from the male rectum. It is different in size, and, what is more significant to us, it is very different in its relations and accessibility. A woman's rectum, with its ailments and contents, can be reached at almost every aspect. I do not mean, merely, that a small hand can be introduced into it when it is healthy and in certain diseases, but that it can readily be got at from the outside in health and disease; in short, the female rectum having in front of it so capacious a canal as the vagina, is practically almost as superficial an organ as if it were actually under the skin, like the mammary gland.

The surgical bearing of the distinction I put before you is this, that objections to the excision of the rectum should not be of equal force in the two sexes. They should have much influence in males and scarcely any in females. On the continent, cases have been recorded of the bold excision of the rectum proper, and even of adjacent parts (suggesting, indeed, the idea of a general scooping out of the pelvis), regardless of sex. In this country, there is a strong disinclination to excision of the rectum; a disinclination with which I have much sympathy, and should have more, if it were not also an objection which pays no regard to sex. No records of alleged success would induce me to remove a cancerous male rectum, with portions of the urethra and prostate gland, allowing, if the patient survive for a time, fæces and urine to drop into one common chasm, only to drop out of it again. But are we quite right in refusing to remove an isolable cancer of the lower part of the female rectum (even though it began in the rectum) when it is distinctly below the peritoneal level, when the back wall of the vagina may be safely removed with it if it be needful, and when, above all, the urinary pathway may be left untouched? In a previous lecture on destruction of the rectum, you saw how a woman may live in moderate comfort without that organ.

The case before you, gentlemen, was one of epithelial cancer, beginning at the anus, it is true, but involving the rectum for some distance. Through the vagina there could be felt a globular hard mass at the lower end of the rectum; the vaginal wall itself was free. There was loss of blood, with severe pain, and very difficult defecation; some kind of operative relief was earnestly besought. I decided to remove the parts very freely, in obedience to the principles I have just placed before you. It was not necessary in this case to invade the vaginal canal, but I removed a mass which, with the healthy tissue around it, extended from the vulva to the coccyx, and from one ischial tuberosity to the other. Three inches of bowel were taken away; a full-sized cricket ball could have been put into the cavity. The shock which followed was not severe, and the subsequent recovery, as you see, has been good. A singular and unlooked for feature in her recovery was the facility with which she acquired sphincteric power in the cut extremity of the bowel. The ordi-

nary circular fibres of the gut proved themselves able to obey the will and hold back the fæces.—*British Medical Journal.*

OPERATION FOR HEMORRHOIDS.

(V. Starke: *Centralblatt fur Chirurgie*, 1876, No. 18.)

Care is taken before the operation to see that the patients have no cough, as it is likely to produce hemorrhage after the operation, and they are also instructed to accustom themselves to lie on the abdomen with the pelvis elevated, so as to favor the flow of blood out of the inferior part of the rectum. The operation is done with the patient in the lithotomy position, and is begun by cutting the sphincter ani muscle. If a fissure also exists, the division of the muscle is made through it; if none exists, the muscle is divided in the middle of the posterior wall of the rectum. The tumors are drawn down one by one, and the ligature applied, incisions having been made through the mucous membrane down to the vessels which enter the tumors. The parts of the tumors beyond the ligatures are then removed with scissors, and at the same time any hypertrophied fibres about the anus, which readily become œdematous and interfere with the healing of the incision through the sphincter. A thick drainage-tube, surrounded with wadding impregnated with salicylic acid, is introduced into the rectum and secured in position by bandages. The end of the tube is covered by a compress, which should also be rendered antiseptic, and which can be removed from time to time; while the tube itself should not be disturbed until the fourth day. Dr. Allingham (St. Mark's Hospital, London) has the statistics of 3213 cases of hemorrhoids treated by ligature, and among them but 5 cases died of tetanus. In the last 1450 no death occurred; and none have died from pyæmia.—W. A., *Medical Times.*

BIRMINGHAM GENERAL HOSPITAL.

(Under the care of Dr. Russell.)

A Case of Empyema; Double Opening in the Chest, with Lister's Antiseptic Treatment; Satisfactory Result.

The patient, a male, aged 26, was first seen nearly two months after he had been attacked with pain in his side. The chest was found to contain a large quantity of fluid. The evening temperature ranged from 101 to 102 deg, and emaciation progressed rapidly. A fortnight after the patient's admission, aspiration was performed, and forty ounces of healthy pus were drawn off. The temperature sank to normal the same evening, but, after

having remained at 99 deg. for two days, again steadily rose. In a second aspiration five days after the first, 29 ounces of healthy pus were withdrawn, the temperature falling immediately; but it rose again after two days. Some internal inflammation, however, had subsided. Ten days after the second aspiration, the temperature having regained its former pyrexial standard, Mr. Pemberton made a double opening in the chest, and introduced a drainage-tube, forty-two ounces of pus flowing away. The operation was performed in an antiseptic atmosphere, and the chest was afterwards dressed in the manner advised by Mr. Lister. It was enveloped in eight broad layers of carbolised cloth, a waterproof tissue being interposed between the outer two layers. The discharge was allowed to drain behind the cloth, dressing being repeated, under the carbolic spray, as often as required. The case was attended by Mr. Goodall after the operation, in the absence of Mr. Pemberton. The discharge became exceedingly scanty by the third day, though a small quantity made its appearance during the following month, and it was six weeks before the openings were healed.

The patient at once improved in health, and regained flesh with great rapidity. When he left the hospital, two months and a half from the period of the operation, his health was fully restored, and the affected side had regained nearly its normal dimensions; the posterior portion only, in the region of the angles of the ribs, having lost half an inch in diameter, as measured by the circometer. Vesicular respiration was heard universally, though more feebly than on the opposite side.

In presenting the case to the Pathological Section of the Birmingham and Midland Counties Branch, Dr. Russell remarked, in reference to the mode of dressing employed, that, without being qualified to give an opinion on the subject of the antiseptic treatment of wounds, he might say that, in this case at least, the object aimed at seemed to have been fully attained. Suppuration, after the free evacuation of the pus, was certainly kept within very narrow limits, and the discharge itself was maintained in a healthy condition. Dr. Russell alluded to the paramount importance in empyema, as in other forms of extensive suppuration, of keeping the fever in a condition of a purely reflex phenomenon produced by the contact of pus with the interior of the chest—a condition in which the fever will cease as soon as the "source of irritation" is removed; and to prevent such a change from taking place in the blood as will convert the pyrexia into a constitutional phenomenon—a condition in which it is incapable of removal by our art. How completely a state of considerable pyrexia may remain, as it were, outside of the constitution, is nowhere better shown than in cases of empyema. In the present instance, for example, on each occasion of the pus being withdrawn from the chest, the evening temperature, which had ranged between 101 and 102 deg., sank to 99 deg. on the same evening. But the most striking illustration of this impor-

tant fact was shown by the temperature-chart of another case of empyema presented to the Section by Dr. Russell, in which the patient has been carefully observed for fifteen weeks before coming under his care, with pus present in the chest throughout that time, and probably through a great part of sixteen weeks anteriorly, making thirty-one weeks from the attack of pleurisy. During the whole of the fifteen weeks with which the temperature-chart was concerned, the temperature had ranged in the evening from 101 to 102 deg. persistently to the last. Dr. Russell had a counter-opening made, and the temperature fell on the same day to normal, and remained so permanently, with the exception of a single evening rise to 100 deg. The emaciation, too, which had advanced considerably, was steadily and completely repaired. The same fact was further exemplified by another chart closely resembling the preceding one, taken from a patient who had died with a large collection of pus in the pelvis, in whom, so far as could be proved by *post-mortem* examination, no blood-infection had taken place.

The second case of empyema to which reference has been made illustrates the value of a second opening, at least under certain circumstances. The patient had an insufficient opening established by abscess in the wall of the chest, but no permanent benefit was derived until Mr. Bartlett made a counter-opening. In another case quoted, a second opening was needed to complete the cure some time after the first had been made.—*British Medical Journal.*

PRACTICAL MEDICINE.

S. M. BEMISS, M.D.

Professor of Theory and Practice of Medicine, and Clinical Medicine, University of Louisiana.

ON THE USE OF THE NITRITE OF AMYL, ESPECIALLY IN CHOREA.

By G. Winfield Zeigler, M.D.,

Resident Physician at the Episcopal Hospital.

In my experience with the nitrite of amyl I have never once seen it cause dangerous symptoms. Its effects differ very much in different individuals, in some instances being very slight, while in others apparently severe.

I have given it (by inhalation) in at least fifty different cases, comprising not less than half that number of different forms of diseases, and found it to be of service in angina pectoris, in dyspnœa often attending phthisis immediately preceding death, hysterical convulsions, asthma, neuralgia, intermittent fever, and chorea.

In angina pectoris it does not act very quickly, but it undoubtedly shortens the attack. In dyspnœa due to the above mentioned cause I have found it to be very efficacious; often, I feel confident, tiding a patient through the night when it seemed inevitable that he must succumb. To this statement my colleague, Dr. Roland, who has likewise, at my suggestion, given the amyl a fair trial in this difficulty, will bear his testimony.

In hysteria it acts quickly, almost instantly, causing a general relaxation of the system, which, after twenty-five or thirty minims of spt. ammon. aromat. have been given, will leave the patient quite comfortable.

I have employed it in but three cases of epilepsy. In two of them the results were good, and quickly produced; in the other one, which seemed to border somewhat on an apoplectic nature, the effect was not so satisfactory. However, the case was so peculiar in its nature that it could not fairly be called a test case.

I have given it in quite a number of cases of cephalalgia of a nervous or neuralgic type, and do not think it ever failed to afford instant relief.

In asthma it is peculiarly useful. During the month of December last I gave it in three cases, two of whom had been affected with the disease for several months, and the other for some years. All of them suffered just prior to admission with nightly paroxysms of asthma, which disturbed sleep and created general disturbance. Two of these patients left the hospital within four weeks after their admission, apparently cured.

Six months later I saw both of them again, and learned that the disease had not returned. The other case remains under treatment at the present time in the hospital. He is a man about sixty-five years of age, very muscular, and abounding with adipose tissue. His lungs are very emphysematous, and frequently during the first part of his stay in the hospital he would have slight attacks of hæmoptysis attributable to asthmatic coughing. His pulse ranges from 92 to 100 beats per minute, and his respirations number from twenty-four to twenty-eight, in the standing posture. A very remarkable feature of this case is the constant muscular tremor which pervades his body. Dr. Henry, the present visiting physician to the hospital, and to whom I am under much obligation, tells me that he has known the above patient for more than a year, and that he never knew him to enjoy as good health, comparatively speaking, as he did during the past winter; and, to use the patient's own words, he "never had a good night's rest since the disease got so bad, until he took this medicine."

At first he was given regularly at bed-time from ten to fifteen drops, but later he required it only once or twice a week, and scarcely requires it at all. Dr. Henry also mentioned the case of a prominent medical gentleman of this city to me, who used to have annual attacks of asthma that were finally, when every-

thing else seemed to fail, cured by a very short course of treatment with the nitrite.

In neuralgia its effects are as a general thing only palliative; sometimes it will arrest the attack.

I have used it in but one case of intermittent fever, just as the cold stage had fairly set in, on a man thirty-nine years of age, who was laboring under a marked quotidian type of the disease. The chill, which at other times would last about half an hour, was instantaneously arrested and followed by a very mild stage of fever and perspiration.

Before the amyl had been given in this case, the patient was for several weeks upon large doses of chinoidine and quinia in their turn, without any appreciable effect. He remained in the house for two weeks after the administration of the amyl, but did not have a single return of the fever.

In all the six cases of chorea in which I employed it, the results were most salutary except in one, in which the treatment was interrupted.

It acts, as a rule, when given, by alleviating, to a great extent, the convulsions, and very often causing the patient to fall into a calm sleep.

At first, when I began the amyl treatment, I administered it in rather small doses, from gtt. iii. to v., but gradually I gave it more and more freely, until now I use it almost indiscriminately, when the proper cases present themselves.

In one case of epilepsy, above referred to, a man sixty years of age inhaled nearly fʒiv. within ten minutes. Dr. Bennett informs me that he has upon different occasions given amyl very freely, and unites with me in saying that it is not a treacherous remedy.

In Cases I. and II., below described, I used the amyl in doses of from 3 to 6 drops three times daily; in Case III., 10 drops three times daily; in cases IV. and V., fʒss twice daily; and in Case VI., from 3 to 6 drops twice daily. In the first three of these cases I kept a strict record of the respirations, pulse, and temperature, securing the same immediately before administration and a second immediately succeeding the administration, the interval which elapsed between the first and second record being about five minutes, and with a result as follows:

There was an increase in the number of respirations of from four to eight, and in the number of pulse beats of from sixteen to twenty-four per minute, while the temperature almost invariably rose one-half of a degree, and sometimes a little higher.

A very interesting symptom, and I believe usually the first which makes its appearance, is a sharp, dry cough.

Prof. H. C. Wood, in his excellent work on "Therapeutics," states that shortly after the congestive symptoms (if I may use this term) have been on, there is a sudden change from a flushed to a pallid countenance, but entertains the opinion that this might only be a passive symptom, which could readily follow

from a total evaporation of the first supply of the drug, and could be displaced by the original flush were an additional dose administered. I have observed this same phenomenon, and frequently, upon the strength of Dr. Wood's statement, endeavored to verify the same, but I cannot say I have met with a corresponding result, but that frequently, when pushing the amyl, would, if anything, increase the severity of this symptom, at which time the breathing of the patient would become quite laborious, and the force of the heart's action be diminished.

The following will serve to indicate the class of cases in which the amyl was employed:

Case I.—Kate D., æt. 13; school girl; admitted to the hospital on the 28th of December, 1875. Two years previously she had an attack of variola, from which, after having suffered a relapse; she recovered, but was left very much debilitated, and with an impairment of speech that rendered her pronunciation of words very indistinct. A year following this she began to be fretful, and at times had fits of excessive laughter. Soon succeeding this period she exhibited irregular muscular movements of the mouth, which at first did not elicit much anxiety on the part of the mother. But before any length of time had passed the symptoms increased in severity, when she was placed upon treatment. She now did well until three months before admission, when she had a mild attack of bronchitis, following which choreic movements again manifested themselves, at first slight but soon marked, and involving the general muscular system, ensuing which event she became much worse than she had been at any time previously. The disease began in the fingers and hands, from thence extending to the arms, legs, and, finally, the neck and face.

Case II.—Mary A., æt. 7; school girl; admitted January 5th, 1876. Eleven days previously choreic movements came on suddenly, and within two days the disease had fairly attacked the whole of the right side of the body. Different domestic remedies were tried, but to no avail, the symptoms each day growing worse until she was received into the hospital, when she was suffering with well-marked hemi-chorea, rendering the right side of her body, superiorly, almost helpless; she had become very much emaciated, and was irritable; no cardiac lesion presented itself upon first examination.

Case III.—Annie McK., æt. 14; school girl. One month before admission she was one day feeding a small child from a cup of hot corn starch; accidentally she dropped the cup, spilling its contents on the child's arm and scalding it. From this mishap the patient at once took fright. Previously to this adventure she had always been in excellent health and pleasant spirits. After the accident she grew more nervous and fretful until a week later, when she was attacked by choreic convulsions of the right hand and arm, gradually extending to the right leg, and from thence to the face. Upon admission the patient was very

excitable and fearful. The muscular system was in a high state of commotion, giving rise to very awkward gesticulations and odd grimaces; she complained of anorexia, a tendency to constipation, and a troublesome headache. During sleep the choreic movements kept up in a greater or less degree. The heart's action was very irregular, and at times violent, but no signs of valvular lesion could be detected.

The amyl treatment was fairly tried in five cases. The patients were kept in bed for at least the first four or five days, giving a well-regulated diet with f℥iii. of sherry wine daily, together with the amyl, inhaled as before described. The result was as follows:

In Cases I. and II. the choreic convulsions were arrested by the end of the second week, no amyl being given from that time.

In Case III. they entirely disappeared at the end of the twelfth day; in Case IV., at the end of the seventh day the patient was perfectly calm, showing no symptoms from that time hence.

The results have been sufficiently satisfactory to elicit a further trial of the drug in this disease.—*Medical Times.*

NITRITE OF AMYL IN INTERMITTENT FEVER.

By Hamilton Osgood, M.D.,

Lecturer on General Symptomatology in the Summer Course of Jefferson Medical College.

Three or four weeks ago, a case of intermittent fever was brought into the Centennial Hospital during my hours of service. The patient was nearly through the stage of chill. Since I first saw the effects of the nitrite of amyl, I have made use of it in any case in which there were spasmodic conditions, whether muscular or vaso-motor, local or general. Thus, in my hands it has proved successful in several cases of angina pectoris, asthma, colic, spasm of the diaphragm, etc. When, then, I was casting about in my mind for a remedy which would quickly relieve the chilly condition of my Exposition patient, and idly wondering as to how much difference there might at this moment be between the diameters of his peripheral and organic capillaries, it suddenly occurred to me that, since his peripheral capillaries were in a state of contraction (as in all cases of chill), it would be perfectly logical to expect that the vaso-motor spasm would be overcome by the nitrite of amyl. I administered the remedy by inhalation, using about six drops. The remnant of the chill at once disappeared. I did not, however, consider this a fair case, because the chill-period was nearly over before I saw the patient.

A few days later, a poor German was brought to the hospital, in the very acme of the cold stage; face cyanotic, teeth chat-

tering, and he shaking himself to pieces generally. I at once administered the amyl. Within forty seconds the chill was gone, and the patient complained of too much warmth. Five minutes later, patient began to feel chilly. A few inhalations of the remedy again flushed the surface, and there was no subsequent return of the chill, but fever came on as usual.

In a third case the chill was more obstinate, or the remedy less effectual, for, although the chill momentarily and at once aborted, it returned several times, each recurring chill, however, being feebler than the preceding one, before I fairly conquered it, which I did by large doses (gtt. xx–xxx). It may be that a heavy dose of the amyl (say fʒj) given at the outset would abort a chill at once and finally. At any rate, the more I see of the effects of this remedy, the less I fear it in large doses. As yet, I have never administered so large a quantity as one drachm, excepting in a case of angina pectoris, which I mentioned, among others, in my paper in the number of the *American Journal of the Medical Sciences* for October, 1875. In this case the patient was a delicate lady; but she was not in the least disturbed by the large dose, and, I think, could have borne a larger.

It is premature for me to set the proper value on the nitrite of amyl as a remedy in malarial fever. I have merely seen that in three cases it aborted the chill, having no especial effect upon the later stages, except more or less to shorten them.

I give my experience to the profession, hoping that physicians in malarial districts will test this remedy and let us know whether it proves successful. There is, at any rate, something gained if we can abort the chill.—*Medical Times.*

ON FEBRIFUGES.

By C. Binz, M.D.,*

Professor at the University of Bonn.

(*Continued from page* 80.)

There is one point not directly connected with the consideration of alcohol as an antipyretic, but bearing upon the treatment of fever patients in general, which is of such importance that I cannot pass it over without notice. This is, *the value of alcohol as a food in fever cases.* I do not know that I shall be able to bring forward any evidence upon this point new to the English reader, but as the opinions I hold are based upon my own experimental researches, an expression of the same may contribute toward supporting a theory which many English medical men

* In the preceding number, Lond. has been erroneously placed after Professor Binz's name, on account of a misreading of the word Bonn.

agree with me in advocating, and which as many others tenaciously oppose.

We must regard as a food any substance which, when taken into the system, can serve (1) towards building up the tissues, or (2) towards supplying the warmth and vital force necessary for the proper performance of the various functions of the body.

As the list of positive examples is so extensive, these points can better be illustrated by reference to certain negative ones. Thein, for instance, is not a food, as it passes through the system without undergoing decomposition; nor is ether a food, since it cannot be taken in quantities sufficiently large to contribute by its oxidation any appreciable weight, warmth, or vital energy* to the body. Gum arabic is not a food, because it is not absorbed in the intestinal canal.

Alcohol fails, perhaps, to fulfil the first office of a food according to the foregoing definition, since it is incapable, as far as we know, of supplying material to build up the tissues, but when given in small doses, oft repeated, especially in the case of a sick person, it may be said to surpass all other substances as a species of easily burning fuel, from whose combustion the heat required to generate vital force may be derived. Indirectly, it also answers the first of the aforesaid purposes, for though it may furnish actually no new building material, it spares the reserve supply of fat in the body, which would otherwise have to be burned to give the necessary warmth. In sickness, where but little or no fatty material is supplied by the food, this is of course conservative, but in health no need is felt for a specially combustible form of fuel, and so we see how many persons in good health, under the combined influences of good living, alcohol and bodily inactivity, grow very fat, the alcohol supplying a good deal of the heat required by the system, and some unburned fat continuing to be stored away year after year.

I have convinced myself by a series of experiments that alcohol is completely destroyed in the animal organism.† If pure, it leaves no taint upon the breath, and where this is present it is attributable to some of the ethers or fusel oil. Thus, in the experiments referred to, I found only traces. I used three different methods: the chromic acid and the iodoform test, and Geissler's Vaporimeter. Their correctness was always controlled by known dilutions in water containing most minute fractions of alcohol. The urine may, under very favorable circumstances, contain as much as three per cent. of all the alcohol consumed. This is the highest figure I have been able to get. Aldehyde and acetic acid, the derivatives of alcohol, were absent. The facts observed all seem to lead to the conclusion that alcohol in

* Ether, it is true, acts as a cardiac stimulant, but as such it contributes no *new* force to the heart, all it does being to excite the heart, so as to make it put forth what force it already has more energetically. In other words, instead of contributing fresh power, it drains away more rapidly that which is left.

† Cf. *Centralbl. f d. Med. W.* 1875, p. 371. Berlin.

the body, just as in the flame of the spirit-lamp, is oxidised to carbonic acid and water.

Such being the case, it is evident that every molecule of alcohol burned within the system must yield, not only warmth, but that power to accomplish work with which the development of caloric is always accompanied. Let us see how much.

From direct experiments made by Favre and Silbermann, and by Frankland in England, with a view to ascertain the relative heating power possessed by various combustible substances, gases, etc., it was found that alcohol gave the figure 7; pure coal gave 8, and hydrogen 34.5; which is to be understood as meaning, that one cubic centimeter of alcohol generates heat enough during its combustion to raise the temperature of seven litres of water 1° Cent.; that one cubic centimeter of coal sufficed to raise eight litres 1° Cent., and so on. The unit of the scale thus arbitrarily set up is represented by the amount of heat required to raise the temperature of *one* litre of water 1° Cent., and to this unit the name *Caloric* has been applied. A healthy adult produces about 2300 such *calories* a day. Now, in the process of consuming 100 cubic centimeters of absolute alcohol, equal to one litre of good hock, we set free within our organism 700 *calories*, or nearly one-third of the whole amount of warmth which is produced by the system under mixed diet within twenty-four hours.

With this result given by alcohol, let us now compare the heat-producing power of certain other ingesta as determined by Frankland: for instance, cod-liver oil, a substance which may be taken here as a type of the fatty elements of food in general, being one of the most digestible. Its calorific power is represented by the figure 9.1. Four tablespoonfuls taken four times a day—about 50 cubic centimeters—develop 455 *calories*, supposing the whole quantity to be digested, and this, it will be seen, is only about 4-7ths of what 100 grammes of alcohol supply, or in other words, not more than would be furnished by 65 grammes of alcohol.

The advantage possessed by the latter over the oil is obvious. Besides being infinitely more pleasant to take, the alcohol, if largely diluted with water, in the form of good wine, is readily digested, even in the weakest stomach; and, as has been shown, it is easily and completely disintegrated in its passage through the system. On the other hand, all fatty substances require for their emulsion, absorption, and assimilation, a very considerable amount of work, which of course is only that much more drain upon the powers of a patient.

Thus we can understand how it is that a continual supply of wine enables the patient to resist for a certain length of time the ravages of a severe disease, where no other form of nourishment is accepted by his stomach. Every practising physician who recognizes the value of wine in therapeutics will be able to

call to mind cases of typhoid fever, where for several days nothing was taken but wine and water, the patient retaining his strength pretty well all the while. Bricheteau, a French surgeon, relates the case of a boy affected with diphtheria, upon whom the operation of tracheotomy was performed, and who for a month afterwards would take nothing but sweet wine, of which he consumed one and a half bottles daily, besides two ounces of rum, and who during the whole time did extremely well. In this case the sugar of the wine of course contributed something as a food to the whole effect, but being present in the sweetest wine only in small proportion, it could have accomplished only very little.

In such cases it would be unreasonable to suppose that the vital powers of the patient are kept up solely by the stimulating properties of the alcohol, for the nervous system and heart require nourishment as well as any of our other organs, and they cannot be kept going so long by stimulants alone. On the contrary, by so urging them on to activity day after day, without supplying any food to compensate for the wear and tear resulting from such augmented action, it is certain that we would exhaust their forces more quickly than by any other plan of proceeding. Alcohol certainly acts as a stimulant in conditions of extreme weakness, but given for days together when no other combustible material is being supplied to the system, it burns in the tissues, and by means of the heat thus generated, furnishes the body with warmth and the strength necessary to carry on its vegetative functions.

I would especially call attention to the success with which dilute alcohol in frequent doses, in the form of Kumyss,* and in a similar manner of other light alcoholic beverages, has been applied for several years past in the treatment of the earlier stages of pulmonary tuberculosis; first in Görbersdorf (Silesia) and subsequently in Davos (Switzerland). If a form of nourishment that fattens—this and nothing further can be claimed for cod-liver oil—is a dietetic desideratum of primary importance in combating the commencement of tuberculosis, then the free use of light wines belongs to the treatment, for experience at the two places above mentioned shows that, as a rule, patients fatten upon the plan of treatment there pursued, without suffering from any febrile effervescence or injurious excitement attributable to the abundant use of wine.

And even in the more advanced stages of consumption, a relatively favorable influence from the alcohol treatment can be expected, as was strikingly shown by experiments made on my request in the Bonn military hospital two years ago.†

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* A sparkling wine of about 2 per cent. of alcohol, prepared from milk sugar; the solids it contains are so trifling in quantity as to be insignificant.

† Virchow's *Archiv.*, lx. 471.

To my surprise, a meritorious author has lately expressed quite a contrary opinion.*

"Through every stage, except the first, the special action of alcohol is to reduce the animal temperature. In fact, cold and alcohol act in the same manner on the vital processes * * * the amount of carbonic acid is decreased. From all these facts the inference is that alcohol is not burned after the manner of a food which supports animal combustion, but that it is decomposed into secondary products, by oxidation, at the expense of the oxygen which ought to be applied to the natural heating of the body."

It seems to me that the inference so drawn, however plausible in theory, is overborne by the following facts elicited from experiments. First, that after *small* doses of alcohol, neither the temperature of the blood nor the quantity of urea in process of being thrown off is found to be measurably diminished; secondly, that even such quantities as lowered the temperature of the blood at first, cease to produce this effect after having been repeated a few times; thirdly, that when there is no impediment to the respiration, the organism obtains much more oxygen than it can consume; and fourthly, that no "secondary" product of alcohol has been found as yet in the organism.

A litre or a half-litre of good hock, taken all in a short time, will produce in a decided manner the results already described as belonging to the action of powerful doses of alcohol; but if given to an adult—even to a "teetotaller"—in broken doses distributed equally along through the whole twenty-four hours, it will not affect the temperature of the body during that time to any measurable extent. In the latter instance it will simply burn, as would any other innocent and digestible hydro-carbon, giving off its proper quantum of heat to the tissues, and resolving itself into carbonic acid and water. A similar proceeding, if repeated the next day, will simply give the same results.

Where we have to deal with a patient whose stomach will accept nothing else, and whose absorbent glands will assimilate no other form of nourishment, the nervous system and the heart derive from the alcohol of that bottle of hock or claret a good part of the energy which they exhibit in the continued performance of their functions, for as this alcohol burns, the heat evolved by its combustion *must be* converted into working force.

Alcohol is not the only medicinal agent which produces entirely different effects according to the manner of its administration. In support of this assertion I need only refer to calomel, and to the enormous difference of action it exerts according as it is given in small doses oft repeated, or in single large ones.

One of the most difficult points for the practitioner is to procure a form of alcoholic beverage that is quite free from fusel

* Dr. B. Richardson, report in the *Lancet*, 1875, p. 241. A former paper of the same author (1866), mentioned in this report, was previously unknown to me.

oil. If, for instance, we take two similar animals and intoxicate one of them with an alcohol which has been previously purified by treatment with wood charcoal just recently made glowing—(such charcoal takes up all the fusel oil)—while the other is made drunk with alcohol to which a few drops of amyl-alcohol have been added, a decided difference of effect will be observed. The latter animal lies completely stupefied, while the former still runs about; the one recovers from its condition of narcosis but slowly and with difficulty—the other rapidly. If the doses administered have been large, a paralysis of the respiratory centre may readily supervene in the case of the animal to which the impure alcohol was given, while the other, with a like quantity of pure ethyl-alcohol, continues in the enjoyment of life.

There can be no question that the human organism is affected by the fusel oils in quite the same manner. This is clearly observable in districts where potato-spirit is drunk. Such potato-spirit contains a relatively large proportion of fusel oil, and in the districts referred to drunkenness commonly assumes the most desperate character. One sees the same thing in a less degree in connection with the consumption of wines which have been "*doctored*" with alcohol obtained from potatoes. These wines very quickly produce a heavy intoxication, the disagreeable after-effects of which are remarkably protracted, whereas pure wines, such as only the grape furnishes, even in intoxicating quantities leave behind, as a rule, neither headache nor any undue fulness of the cerebral vessels.

Now, if we introduce into the system of a sick man any alcoholic mixture in which fusel oil is contained, the evil effects produced by the latter upon the brain, in this case already weakened by disease, will manifest themselves yet more strongly than they would upon a healthy one; and just here lies the great practical difficulty, the "hidden reef," so to speak, for the therapeutic use of alcohol. After all the different calamities that have befallen the vine upon the Continent, the quantity of impure alcoholic drinks at present in circulation is necessarily very large, thus making it particularly difficult nowadays to find a pure article. How then is the physician to meet this difficulty?

There are two ways open. First, he may employ in his practice only the pure spirit of wine, from which, largely diluted with water, he causes to be prepared a palatable drink, containing in addition sugar and some innocent aromatic substance. To test, however, whether the spirit of wine itself is quite free from fusel oil, it is only necessary to rub a few drops of it between the palms of the hands, thus causing rapid evaporation, after which, by means of the sense of smell, one can decide the question. Pure alcohol evaporates very quickly, leaving behind no smell whatever, while that which is impure leaves upon the hand a distinct odor of fusel oil, which consists principally of amyl-alcohol.

A second plan is as follows. Let the physician make exclusive use of some *one* form of alcoholic preparation which he has found from repeated experience to be reliable; this the patients are to procure always from the same source, best of course from some large and respectable establishment. Then it is further very desirable that specimens of this special preparation should be examined from time to time in order to determine that its percentage of alcohol remains the same. This can be done in a few minutes by means of the Vaporimeter* of Geissler, even by those who are inexperienced in chemical manipulations. In the following table I give the percentage of absolute alcohol contained in some of the different well-known spirituous drinks.

Volume per cent. of absolute alcohol contained in Bavarian beer is - - - - -	4—5
In the different kinds of hock and claret -	8—11
In the sweet Spanish and Italian wines -	13—17
In brandy, gin, whiskey, etc. - - -	30—50

To produce an antipyretic effect an adult will require a dose of not less than 50 cubic centimeters, or about two fluid ounces of absolute alcohol.

By reference to this standard, the dose suitable for each individual case can be easily reckoned out, according to the age and strength of the patient.

Finally, to sum up my views, as far as the same concern the practice of medicine, I may say (1), that alcohol is very frequently a stimulant of transitory power; (2), that in relatively large doses it can serve as a vigorous antipyretic; (3), alcohol, given in small and oft-repeated doses, is a food particularly adapted to cases where the stomach can take in no other "combustible material," to supply warmth and working energy to the organism.

While I thus share in the views which the late Dr. Anstie so ably upheld in England, I do not hesitate, on the other hand, to declare, with respect to the requirements of the healthy organism, that I consider the use of alcohol in health as entirely superfluous.

Where the digestion is healthy, and where a sufficient transfer of nutritive material takes place from the food to the blood, the human body is capable of accomplishing all the functions for which it is designed, and that without the use of spirituous drinks. But the case assumes a different aspect as soon as these two conditions fail. A physician may therefore recommend total abstinence to healthy persons in every instance, but he throws away one of the most valuable of medicines if he carries this principle of *teetotalism* into the sick-room.

Quinine.

We have seen that to alcohol belongs, not only the indisput-

* To be had of Dr. Geissler, 14 Bergstrasse, Bonn. Price 1*l.* 10*s.*

able property of dilating the vessels of the skin, and thus promoting the irradiation of warmth in fever, but, in all probability, that of checking the activity of the cells as well, and in this way directly diminishing the production of heat in the tissues. In quinine and salicylic acid we have antipyretics, which probably exhibit only the latter action.

Nowhere was the neurotic theory of fever more clearly reflected than in the manner in which the action of quinine was formerly understood. Quinine was a tonic, nothing more nor less; that is to say, it gave the nervous system strength to resist the fever, and for that reason the latter disappeared, sometimes rapidly, sometimes slowly.

Facts, however, all speak against this one sided conception of the matter. Ague, for instance, is to be regarded as the fever in which quinine gives the most brilliant results. It arises from the absorption into the system of a specific poison which develops itself from decaying vegetation. If this poison circulates too long within the body, decomposition of the blood is the result. Among the phenomena presented by the disease, the "neurotic" febrile symptoms may be entirely wanting, while the appearances depending upon degenerative changes in the blood and in the tissues, never fail to show themselves, though at the beginning they are often only slight.

Now, the notion that the nerves should be able to resist or to destroy any putrid matter by the help of quinine, is quite unintelligible according to our present knowledge of such things. First of all, we see that ague is cured by quinine most efficaciously in the time of apyrexia, when the infectious poison is latent, when every part of the nervous system is free, when neither heart nor respiration shows the slightest disturbance. Besides that, experimental researches have failed to demonstrate the presence of any such influence of quinine upon the nervous system as it has been supposed to possess. The influence of quinine over the febrile process in general may take place without the brain being at all acted upon. Thus, section of the spinal cord at the level of the first cervical vertebra does not prevent this antipyretic influence from being manifested, although, in that condition, not only is the brain separated from the cord, but the chief vaso-motor nerves are paralyzed as well.

The diminution of reflex excitability in the nervous system, so much spoken of as having been observed in animals treated with quinine, has been proved by recent and strict investigations made in my laboratory to be purely imaginary.*

In former times, before it was known how fever can be produced artificially, one used to remark the improved condition of the fever patient after a good dose of quinine, and to attribute it to the "neurotonic" action of the drug. To-day, we know that

* Heubach, *Archives of Experimental Pathology and Pharmacology*, vol. v. pp. 1–38. (Leipzig.)

this improvement depends upon a decrease in the oxidation and disintegration of the elements of the body, as especially shown in the much lower percentage of urea contained in the urine discharged after a dose of quinine. And as the absorption of certain ferments is evidently the cause of many fevers, it was worth while to investigate whether this agent has any specific power over them.

After the isolation of the various alkaloids from their respective drugs (dating from the year 1816), when it was found by experiments upon animals that these substances, even in very small quantities, all exerted an influence either upon nerve-centres or upon nerve-trunks, this property came to be regarded as one belonging to alkaloids in general, and thus quinine, discovered in 1822, easily got the same reputation. No doubt it possesses a striking family resemblance to these nervine alkaloids. It differs from them, however, in one important point and in a very remarkable degree.

All the other alkaloids in common use act in very small doses; caffein, which possesses this characteristic least of all, produces its characteristic effects even when given in a dose of a few grains. Quinine, on the contrary, given in minute quantities, like morphia, strychnia, atropia, is absolutely indifferent as regards any effect produced. The hundredfold of such doses is the quantity in which it must be taken in order to bring about the result it is desired to obtain.

This striking difference ought to have given a hint as to where to direct the researches in connection with quinine. Pringle, in 1750, made a beginning with cinchona bark only, which, if followed up, would have given results of great importance, but the nerve theories appeared, and soon stifled these valuable experiments.

Quinine is a powerful antiseptic and antizymotic, possessing decided advantages over all other agents of this class. It can be given in large doses,—it remains in the circulation for many hours,—it does not enter into combinations or undergo decomposition within the organism so as to become a thing chemically indifferent with respect to the ferments upon which it is desired to have it act. When given once a day in a dose that is not of itself too small, it circulates through the tissues, keeping them constantly under its influence.

An agent which acts antiseptically outside of the body cannot fail, under such circumstances, to exhibit the same action within it. Ague derives its origin from septic processes occurring in the blood and tissues, and if the disease progress unhindered, it will in many cases finally destroy life with all the symptoms denoting decomposition of both. If brought into contact, without the system, with the exciting cause of ague—which, as we know, is a ferment arising from decaying vegetation—quinine will paralyze the further chemical development of the ferment itself, just as it paralyzes the activity of processes set up within

the body by this subtile agent, unknown as to its precise nature, but well understood in its effects.

Quinine has no permanent influence upon the temperature of the body in health, although it often produces a distinct change, as well as causing a decrease in the amount of urea excreted. We need not recur to any nerve theory to explain this. Quinine has a very strong affinity for many septic ferments, but a very slight one for the ferments of the healthy organism, as can easily be proved by experiment. Therefore, whenever it encounters one of the former in the course of its circulation, it manifests this affinity, paralyzing the activity of the pyrogenic substance, so that, as a result, a change of temperature is clearly shown by the thermometer; but wherever these septic ferments are absent, the result will, of course, be much less perceptible.

If one severs in a living dog all the nerves leading to the spleen, quinine nevertheless acts on that organ, causing it to shrink. The spleen is the chief source of the formation of uric acid. Quinine lessens the quantity of this acid produced by a healthy man very strikingly. As the afferent nerves of the spleen are not necessary in order that this action may take place, we are induced to accept as an explanation of the same, the probable occurrence of a chemical process in this instance also. This conclusion is especially justifiable, as the spleen contains an immense number of white cells, for which quinine is a highly efficacious poison. They are the seat of energetic oxidation, and this oxidation is lowered by quinine.

In febrile processes the spleen becomes swollen in consequence of the irritation it receives from the pyretic substances that circulate in the blood. Now if the activity of these substances be diminished by any means, it follows that the effect they have contributed to produce will also experience a diminution, and nature once more exerting her supremacy, the spleen will shrink to its normal size.

The decline of temperature in fever, so generally induced by quinine, takes place independently of any connection with the performance of the heart's functions. It very often happens, in fact, that a change in the action of the heart only *follows* such a decline. The same is true with regard to the function of respiration.

Of all that has hitherto been said, especially in France, about the antipyretic action of quinine through the medium of the vessels, nothing has as yet been proved, and the evidence against such a theory is abundant.*

In the March number of this periodical I read a very interesting article on the treatment of sunstroke by the hypodermic administration of quinine. Dr. Hall thinks that quinine acts

* It would exceed the space at my disposal were I to enter into experimental details. I have summed them up, with references to the different literary sources in my pamphlet: *Das Chinin, nach den neuren pharmakologischen Arbeiten.* Berlin, 1875.

here as a stimulant to the vaso-motor and the inhibitory nerves. Dilated capillaries in sunstroke may be produced by stimulation of the inhibitory centres and depressor nerve of the heart, or by exhaustion of the vaso-motor centres. Quinine may reduce the temperature of the skin by exalting the action of the inhibitory apparatus, and allowing the vaso-motor centres to produce contraction of the blood-vessels; or may act as a direct stimulant on the vaso-motor centres themselves.

The author of that paper mentioned my name in connection with this view. He must have misunderstood me, as after all my experiments,* I am more than ever convinced that we have no right as yet to such opinions.

The essential cause of sunstroke is overheating of blood and tissues, and therefore decomposition of the nutritive material. The blood acts as poison on the heart and the nervous system. Should the treatment recommended by Dr. Hall prove applicable to all cases, we must assume that here also quinine acts as a direct antizymotic, as it does in malaria fever.

Numerous are the instances in which it has been shown that quinine acts directly on protoplasm, and without any agency of the nerves being involved. Take, for instance, two similar specimens of any protoplasm which is known to undergo rapid oxidation when exposed to the air, and add a very small quantity of quinine in a soluble form to one of them. The difference of effect produced upon the two by the oxygen of the air will soon be observed, the quinine checking the combination completely where it has been applied. One of the most striking examples of this anti-oxidizing power is shown in the following experiment.

Place a piece of a fresh sea fish in sea water, and after a certain time, depending upon the warmth of the season, before any putrefaction takes place, the whole becomes brilliantly phosphorescent. There can be no doubt of the fact that this phosphorescence is derived from the energetic oxidation of the numerous infusoria contained in the fluid.† This luminous water is next put into different test-tubes and acted upon successively by various antiseptic agents, beginning with a very small quantity of neutral quinine (1 to 5000 or more), then by a very weak solution of carbolic acid, and by the different neutral salts belonging to the class of antiseptics, all, of course, dissolved in distilled water, and experimented with in a perfectly dark room. Quinine is then found to surpass them all in the energy with which it causes the phosphorescence to disappear.

If it were claimed that quinine is incapable of acting chemically upon living cells in such a state of dilution as it circulates in the body, the above experiment, among others, would prove

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* *Archiv. f. exper. Pathol. u. Pharmakologie.* December, 1875.

† For evidence bearing upon this point, see Pflüger's *Archive fur Physiologie*, 1875, xi. 222.

the contrary. Only one must not expect to obtain a quite sudden effect, using such minute proportions, nor do we expect anything of the sort in the case of a fever patient to whom we administer such doses. If it be desired to destroy the oxidability of the sea water infusoria within half an hour, one may take quinine in the proportion of 1 to 12,000; if in a few minutes, 1 to 2000; if in an instant, 1 to 200. Agitation of the previously luminous liquid with air, a proceeding which would otherwise revive the phosphorescence of the protoplasma, then fails to produce this effect.

I should not like to be misunderstood, however, with respect to the purpose for which I have introduced this illustration, for I do not in the least pretend that such animalculæ are in any way involved as the exciting cause of fevers, but have merely taken their protoplasm as *one* type in which quinine exhibits, in a striking manner, its anti-oxidizing power, just as in other experiments it shows an antizymotic one.

All these questions, of course, as to the precise manner in which quinine produces its antipyretic action, can only be settled when we shall have become better acquainted with the nature of pyrogenic poisons. Here I can do no more than point out the path which, if followed, promises to lead to the desired knowledge on this subject, and at the same time to show how the theory formerly offered in explanation of the same only led us into a "blind alley," so to speak, from which there was no exit but to retrace one's own footsteps.

Knowing at some future time the different agents concerned in the production of each separate form of fever, it will be easy to understand how it is that quinine is so extremely efficacious in ague, while it fails completely in relapsing fever; why it acts with such decided antipyretic power in *Typhus abdominalis*, while it seems to be useless in *Typhus exanthematicus*, and so on.

The well-marked action exerted by quinine in solution, upon many septic ferments on the one hand, and its indifference toward the protoplasm of *Penicillium glaucum** on the other, may serve for the present as an instance illustrating by tangible examples the puzzling inequality of effects produced by this drug upon fever-producing ferments within the human body.

As to the nervous system, I do not pretend to claim that quinine is entirely without influence upon so important a part of the animal mechanism, for sleep is often produced by a dose of quinine in a non-febrile illness, and certain neuralgic affections are known to be completely under its power. Like alcohol and calomel, therefore, quinine may be said to possess a manifold sphere of action. As regards its efficacy in fever, we must once more confess our inability to explain all the facts taught us by therapeutic experience. But, as yet, the only theory which reconciles the results of such observations with the results elicited by experiment in the laboratory, is the humoral one.

* Cf. Virchow's *Archiv*, xlvi. 73.

I will conclude with some practical remarks as to the application of quinine in fever. It is to be given (1) in large doses from 0.5 to 3.0 grammes (8–48 grains); (2) in a digestible form, that is to say, together with some acid; and (3) during the time when fever tends to decrease.

The first has been proved by numerous observations in the sick-room. Such strong doses are not poisonous, but agree on the whole better with young than with old people. My second rule refers to the fact that in fever the stomach does not contain sufficient acid to dissolve the sparingly soluble sulphate. As to the hour of administration, we have to deal here, as a matter of course, with similar conditions as in ague fever. The cause of fever is overcome by quinine most easily when its activity is lowest.

The complaint has often been raised that quinine so easily causes sickness, and it is generally supposed that the vomiting is produced by direct irritation of the stomach. This is not proved to be the case. On the contrary, if the doses of quinine are continued, at the most only a small part of the second or third are ejected. All later ones remain. The stomach absorbs it as hitherto, the nervous system by degrees tolerates the alkaloid, and now only it begins to act upon the chemical processes of the feverish organism. It is very important not to make use of impure quinine. Quinine containing the less efficacious cinchonine is the most deceptive, for this adulteration is somewhat difficult to detect, at least for many practitioners. Much the same must be said of salicine, the bitter principle of willow.

By adding to a solution of *pure* sulphate or hydrochlorate of quinine a little ammonia, one gets a thick precipitate of hydrate of quinine. This is easily soluble in a little ether, whilst the hydrate of cinchonine remains.

The following test is applicable for *all* secondary alkaloids of Peruvian bark.

Put 1.0 gramme of the quinine salt into a test-tube together with 10.0 grammes of water of about 15° C., shake and let it stand for half an hour. Then 5.0 cubic centimetres of the filtrate are gently mixed with 7 cubic centimetres of ammonia of about 0.96 specific gravity. If the quinine salt be pure, no precipitate whatever will appear.

The sulphate and the hydrochlorate of quinine must not be colored by addition of concentrated sulphuric acid in any way. A red tinge indicates salicine, a black one sugar, etc. Both salts must of course be thoroughly soluble in a little water with very diluted sulphuric acid, as well as in common spirit of wine. On a platinum spatula they must burn away without leaving any residue.

Salicylic Acid.

Salicylic acid is not only the newest of the febrifuges, but of

all therapeutic agents up to this date. It is an agent, too, that is destined to occupy no transitory place in the long list of medicines. Known long ago as one of the component parts of the essential oil of the American *Gualtheria procumbens* of our *Spiræa ulmaria* and *Monotropa hypopitys*, which oils contain it in the form of salicylic methyl-ether, it was formerly prepared from salicine, the bitter principle of the willow, from whence its name is derived. Salicine is decomposed by saliva or by boiling with diluted acids into saligenin and sugar, and saligenin wants only one atom of oxygen more to become salicine. Subsequently it was successfully produced from carbolic acid. This well-known product of coal tar has a very close relationship to salicylic acid, as the addition of one equivalent of carbonic acid to the formula of carbolic acid gives that of salicylic as shown in the following diagram—

$$\underset{\text{(Carbol.)}}{C_6H_6O} + CO_2 = \underset{\text{(Salicyl.)}}{C_7H_6O_3}$$

The process, however, by which this transformation was effected continued to be rather expensive until a few years ago, when Professor Kolbe, of Leipzig, instituted a new and inexpensive process for the purpose, which is essentially as follows. He heats carbolic acid and hydrate of sodium together in a receptacle so contrived that a stream of carbonic acid is made to pass through the mixture, thus inducing the desired union of elements. The product so formed is the salicylate of soda, from which salicylic acid can be easily set free by any stronger mineral acid.

The salicylic acid of commerce is a yellowish white powder, having somewhat the odor of carbolic acid. In order to obtain it quite pure, it is necessary to heat the crude acid in a porcelain vessel covered over with filter-paper. The pure acid sublimes and attaches itself in the form of fine colorless needles upon the paper. One needs to apply the heat very cautiously, however, since salicylic acid is decomposed at a higher temperature back into carbolic and carbonic acids.

The pure acid thus prepared has no odor, is of a sweetish taste, dissolves in about 300 parts of water, very readily in alcohol, ether, and chloroform, but most readily in water containing an alkali in solution; with the alkalies presented in this manner, it forms neutral salts.

Three properties possessed by salicylic acid seemed to Prof. Kolbe to give a guarantee that this newly-developed agent could be made to subserve a useful purpose in medical practice, viz.: first, that of its being a powerful antiseptic and antizymotic; secondly, because it can be taken in very large doses without producing symptoms of poisoning; and thirdly, because it remains a long time in the organism, and in its passage through is only partially destroyed.

The addition of a little perchloride of iron (Fe_2Cl_6) to the urine of a man who has an hour or two previously taken a few grains

of salicylic acid, causes the appearance of a fine pink color, the same as that given by mixing solutions of these two substances in pure water.

The first experiments with the new agent under consideration were made in Prof. Thiersch's surgical wards in Leipzig. He began by employing it instead of carbolic acid for the dressing of wounds after Lister's method, and found it to answer all his expectations. Over carbolic acid it possesses for this purpose the undeniable advantages of being less irritating to wounds and of having no disagreeable odor. Very soon afterwards, a number of experiments were made with the internal use of salicylic acid in connection with febrile diseases, principally in the clinic of Basel (Bâle) by Professor Junnermann and Dr. Buss.

I shall not enter here upon any more minute discussion of the practical applications of salicylic acid, this branch of the subject having been fully treated of by Dr. Ewald, of Berlin, in the March number of this journal. We have now to do rather with the question as to how this agent performs its indisputable antizymotic action.

At first it seemed there could be no doubt but that the influence of salicylic acid in disease was one due entirely to a certain clinical affinity possessed by this agent for the tissues of the body and for the disease-producing ferments invading the same. But then Salkowski* suggested that if salicylic acid becomes converted into the neutral salicylate of soda when mixed with a solution of the alkaline carbonate, this change must take place in the blood, and this neutral salt possessing little or no antizymotic power, how would it be possible to explain the antizymotic action of the drug by attributing the same to an energetic affinity of salicylic acid towards cells and ferments? To increase the perplexity, it was very soon found that the neutral salicylate of soda given instead of the acid itself possessed an antipyretic action in every respect as great as the acid, and was without its disadvantages, viz., that of being almost insoluble in water, of impairing digestion, and irritating the bowels. A sharp discussion arose in consequence, the result of which has been to clear up the difficulties in a certain measure.

As far as my own observations extend, I am convinced that in the discussion upon the application of salicylic acid and the salicylate of soda to therapeutics, the participation of one important factor in affecting the mode of action peculiar to these agents has been allowed altogether to escape attention. Our tissues, as is known, continually produce carbonic acid, of which the blood, notwithstanding its alkalescence, holds a good part in solution, either in a free state or in combinations, from which the CO_2 is constantly ready to separate. *Now this gas, developed absolutely pure, possesses the power of setting free the salicylic acid*

* *Berliner Klin. Wochenschrift*, 1875, No. 22.

contained in the salicylate of soda, a fact the importance of which cannot fail to be apparent as offering an explanation of the paradox above mentioned.

Ether shaken up with a one per cent. solution of the salt leaves behind upon evaporation no appreciable deposit. Another portion of the same solution first treated with CO_2 at the ordinary pressure of the air and in a room of moderate temperature, and then agitated with ether, gives over to the latter the seventh or tenth part of the salicylic acid contained in its salicylate of soda. The same proceeding, if repeated, continues to result in a further liberation of the acid.

The *rationale* of this action is one easily seen into. The salt dissolves very freely in water, in ether but sparingly, and so remains by the former. The behavior of the acid is itself just the reverse—it goes over to the ether, and when this evaporates remains behind, partly in the form of elegant crystals, thus showing clearly that the CO_2 has set it free from its previous combination with the soda.

Also if one first adds to the solution of the salt a little of the phosphate and carbonate of soda, so as to represent the conditions present in the blood, and then leads in the stream of CO_2, the liberation of the salicylic acid succeeds in a manner equally well marked, only that the quantity set free is somewhat less than otherwise it would have been.

Putrefiable mixtures sufficiently diluted with water, as for instance urine with an equal volume of water, undergo putrefaction when exposed to the air much less readily if previously treated with salicylate of soda and carbonic acid together than after the addition of either of these alone. The difference of action may extend over a period of several weeks. The best plan is to arrange the experiment so that one will have four preparations under observation at a time: of these, No. 1 is to have nothing whatever added to it; No. 2 to be merely impregnated with CO_2; No. 3 with salicylate of soda; and No. 4 to have both this salt and CO_2. Here also we must suppose a liberation of the strong antiseptic to take place which is only overbalanced by the gradual development of ammonia in the liquid.

We see therefore that it is not admissible to designate the salicylate of soda as a substance chemically inactive within the organism. Of a salt which is known to be decomposed by CO_2, no one can *a priori* assert that it passes unchanged through the organism of man, where every tissue with which it is brought in contact by the blood is constantly eliminating carbonic acid in a nascent condition, and in such quantity as to reach an aggregate of 700 grammes in twenty-four hours for an adult.*

* This may also hold good for Palli's sulphite and hyposulphite. These salts are immediately decomposed under the influence of CO_2, sulphurous acid being set free. The opposition made by Braun and Bernatzic (*Wiener Med. W.* 1869, No. 100) upon this theoretical point is, therefore, certainly unjustifiable. They assert, namely, that neither in the circulation nor in the secretion of external

For this bearing of the question, it is of no consequence *how* the acid appears in the urine. In two cases of quite fresh acid urine, I was enabled to isolate crystals of free salicylic acid from the liquid. In the one case Dr. Heuback, my assistant, had taken 1.0 gramme (14.4 grains) of the salicylate of soda, and in the other a patient of the medical clinic had received five grammes of the same preparation. The urine used for these experiments was obtained two hours after the administration of the drug in each case, and the quantities taken were respectively 35 and 50 cubic centimetres (1 and 1½ fluid ounce).

According to Feser and Friedberger it is not practicable to extract salicylic acid from simple blood by means of ether; the blood must first be rendered acid.* This also is no proof against the correctness of the above deductions relative to the intrasystemic decomposition of the salicylate of soda, for we do not know in how firm a combination with the albuminoid substances of the blood the salicylic acid may have stood, combinations which ether alone would be powerless to dissolve.

Our animal organism is by no means a simple alkaline combination, such as a solution of soda and basic phosphate of soda in water. Zuntz, who has studied the alkaline action of the blood upon litmus most thoroughly, takes the presence of *free* carbonic acid in the blood of all living animals to be an unequivocal fact. The oxyhæmoglobin performs certain functions of a free acid; and that all tissues actively engaged in destructive assimilation at least do not exhibit an *alkaline* reaction, and that they are in any case charged with carbonic acid, are facts which are partly proven and partly deduced as a necessary consequence from several other established facts.†

The behavior of pyrogallic acid toward the organism also teaches that it is an error to regard this latter as a simple alkaline mixture of elements. Cl. Bernard long ago called attention to the unchanged condition in which pyrogallic acid, a substance that oxydizes with extreme rapidity in alkaline solutions, circulates in the fluids of the body. Under the guidance of Hoppe-Seyler,‡ Jüdell has further shown that pyrogallic acid taken by the human subject in a quantity of 0.5 gramme (8 grains) appears after two hours abundantly in the urine.

This behavior would seem quite unaccountable according to the unconditional alkalescence theory, but it is easy to show by experiment what is at least one of the causes of it. Thus, if one makes a solution of pyrogallic acid alkaline, divides the whole

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wounds is it possible for free SO_2 to be developed from these salts, a claim which can only be correct in so far as it may be true, that the acid just developed is at once seized upon by the albumen present. The latter, however, then becomes a different body from what it previously was.

* *Archiv. fur wissensch. und pract. Thierheilkunde*, 1875, *Heft* 6.

† Compare, among other authorities upon this point, Dubois-Raymond, *Berliner Monatsberichte*, 1859, 288; Pflüger, *Archives of Physiology*, x. 312; Buchheim, *ibid.* xii. 326.

‡ *Untersuchungen*, 1868, 422.

into two parts, and leads a stream of CO_2 through one of them, the well-known rapid browning will then be held energetically in check, even though free access of the air be secured by keeping up constant ventilation over both preparations. For the rest, and to avoid the objection that the carbonic acid which escapes hangs upon the surface of the liquid, preventing the O_2 of the air from reaching it, and hence the retarded oxidation, let the one-half of the pyrogallic acid solution be augmented by the addition of carbonate of soda one part, the other with bicarbonate of soda two parts, at a low temperature. The effect is similar to that obtained in the first experiment; for while the brown color appears in the one preparation as soon as the Na_2CO_3 is added, it is only slightly indicated in the other, where an excess of CO_2 is present. The same difference of effects manifests itself if into one portion of a solution of pyrogallic acid that has been made alkaline one immediately leads a stream of air, while through another portion of the same solution a second current, consisting of oxygen 21 volumes per cent. and carbonic acid 79 volumes per cent. is made to pass. Here the quantity of O_2 presented is similar on both sides, while the effects are quite dissimilar.

Nothing necessitates us to regard the decomposition of the salicylate of soda as taking place in the blood: it is rather to be looked for in the acid-producing tissues. Nor is it by any means urgent upon us to locate the seat of the infective processes in the blood; on the contrary, the ferments which excite disease invade our system from without through the medium of the lymphatic vessels, as is shown by the manifold processes of inoculation with which we are acquainted. The very circumstance of the persistent swelling of the adenoid organs in infectious fevers points to these as the constant centres of the disease. But immediately after death the reaction of the lymphatic glands is *not* alkaline. Further, it is known what a quantity of acid substances the living spleen produces.

In attempting to analyze the antipyretic action of salicylic acid one need not confine oneself to the circumscribed idea of antisepsis. We know that free salicylic acid exerts an action upon an infinite variety of ferments. It also cures such diseases as are characterized by an increased production of heat without being of a putrefactive nature. In the one case as in the other, it will affect albuminoid substances, towards which it may have a special affinity, either altering their nature or checking their activity as ferments. That an influence upon protoplasm belongs even to the neutral salicylate of soda was demonstrated on certain bacteria under the experienced guidance of Dragendorff.* The power of this salt to paralyze the development of bacteria shows itself to be greater than that of either phenol, quinine, boracic acid, or alcohol, and almost one-third as great as that of

* L. Bucholtz, *Arch. fur exper. Path. u. Pharmak.* iv. 32 and 80. (1875.)

free salicylic acid. Therefore, even setting aside the possibility of salicylic acid being set free from it in the tissues, a compensation for the inferior activity of the sodium salt would be offered in the much more rapid absorption of the latter into the system.

The view that the salicylate of soda exerts its antipyretic power through the medium of the heart or the respiration, seems to me to be quite unsupported. It is an easy matter to show that dozens of poisons which are absolutely powerless against fever possess the property of causing a depression in both the circulating and respiratory systems. The temperature of the body *can be* influenced by these poisons, particularly if the action of any one of them is driven so far as to bring about collapse. In fact, I scarcely know how one would proceed in order to get actually no diminution of temperature with such powerful agents as these. With salicylic acid, however, or its salt exhibited in such doses as those commonly given with good effect, there can be no talk of collapse, except in cases where a spontaneous and sudden decline of temperature coincides with the reduction effected by the drug.

Ewald expressly asserts that an action of salicylic acid upon the pulse and respiration in both forms, as tried in Frerich's clinic for antipyretic purposes, was almost entirely absent. Riess, Buss, and other observers give reports agreeing essentially with this. If the reports of these observers are not sufficient to completely negative the claim in question, it may still be said that nothing more than an *inconstant* primary influence upon both systems is unanimously spoken of. The same holds good with respect to an influence upon the perspiration. In a case in Wunderlich's clinic at Leipzig, the temperature went down after salicylic acid from 105° to 94° F., without any visible alteration in the skin.*

Salicylic acid possesses in all outward respects a resemblance to quinine. It combats the malarial poisoning (Senator, Buss)—although less surely and effectually than quinine—during the period of apyrexia, where, as is well known, neither the pulse nor respiration necessarily need present the slightest abnormity. It is, like quinine, a powerful antizymotic, which can be introduced into the organism in large quantities, circulates there a considerable length of time, and is given off again—at least partially—in an unchanged condition. Even the ringing in the ears and the slight deafness characteristic of cinchonism are not wanting in connection with the medication with salicylic acid. A complete agreement between its behavior and that of quinine toward certain disease-producing agencies, known, as must be confessed, only by their effects, does not exist. This we have already seen in speaking of intermittent fever. Acute articular rheumatism, a disease in which quinine avails so little and

* *Archiv fur Heilkunde*, 1876, *p.* 378.

salicylic acid so much, furnishes a second and converse example. Considering the chemical dissimilarity of the two substances, it is not to be expected that there should exist a similarity between their modes of action on more than the general points involved. This general resemblance, however, is unquestionably present, and so we shall have to seek an explanation of the manner in which their therapeutic action is exerted in the same channels.

I cannot dismiss the subject of antipyretics without referring to the class of emetics and purgatives which often yield decided antipyretic results. But as their mode of action on the whole is so indirect, and their effects as a rule so transitory, they are scarcely entitled to be reckoned as true febrifuges. And as far as I know, there has been as yet but little done experimentally in the way of explaining the exact method of their antipyretic power. Perhaps the most striking instance of a purgative acting as a febrifuge is that of calomel, as given with such marked success in incipient typhoid fever. Here it is almost certain that the calomel is changed into perchloride of mercury within the system, and this latter being one of the most powerful antizymotics that exists, would probably act directly upon the disease-producing ferments at work in the intestines.—*The Practitioner.*

GOURAUD ON THE ACTION OF CLIMATES ON THE TREATMENT OF PULMONARY PHTHISIS.

In a second note on the action of different climates on the treatment of pulmonary phthisis (*L'Union Médicale*) Dr. H. Gouraud says:

If we merely desired to discover the places on the face of the earth where phthisis is absent or rare, the task would be comparatively simple. They are to be found from the stations of Southern France and of Italy, even to Norway, the Faroe Islands, and Iceland; from mild humid insular stations to the steppes of the Kirgoi with their eminently dry climate.

Norway, Iceland, and the Faroe Islands have cold humid climates, and yet appear to enjoy an immunity from phthisis. On the other hand, the cold and dry steppes are now much employed in combination with the use of koumiss. Patients are sent in forty hours by rail from St. Petersburg to Nijni-Novgorod, and from that place to Samara in the steppes, in twenty hours by steamer. There they stay from May 1 to October 1.

What greater contrast can there be than that between the steppes of Russia, the south of France, and the climate of Madeira? Yet all are sought for the same object. Granting that many of these places enjoy a considerable degree of immunity from phthisis, why does this immunity not extend to visitors? The answer is, because phthisis is not a product simply of cli-

mate. It is also a social disease. If there be any fact certain, it is this, that the more people become crowded together, the more industries are developed, the more does phthisis show itself. Crowding in small rooms at home, too early labor, the inhaling of foul or of deleterious particles in manufactories, a too sedentery life, are frequent causes of phthisis. The great centres of industry are the places which yield the highest mortality from it, as London, Manchester, Liverpool, Paris, Glasgow, New York, Philadelphia, New Orleans, Berlin, Munich, and Vienna. England has been called the home of industry and of phthisis.

We need not inquire here into the accidental and constitutional cause of phthisis; but we may say that, as climate is not the sole cause of phthisis, so climate alone will not produce immunity from it. Phthisis is produced in a great variety of climates, and consequently it is not to be always avoided by the mere selection of a climate.

In medicine climate is an adjuvant, not a specific. The absence of a particular malady from a place does not prove that the place is a prophylactic against that malady. A climate may have tonic and exciting properties which favor the nutrition and the good health of persons born in that climate, and employing a diet and mode of life suitable to it. Yet these same tonic and exciting qualities may not suit subjects already attacked by such and such maladies, and having irritable or vulnerable organs. These qualities favorable to the one class may be unfavorable to the other. The immunity of the natives of a place from any particular disease therefore only furnishes a reason for studying it in its climatic relations.

Immunity of itself affords no guarantee for patients; but if it is proved that there are fewer sick of a given malady, say at a certain elevation, this fact is so far favorable to altitude. If, further, it is verified by direct observation that patients in such or such stages of their complaints derive benefit from residing in the mountains, this is enough to recommend mountains, especially if they have already tried other climates without advantage.

It seems now to be generally admitted that the number of cases of phthisis diminishes as the elevation increases. How is this to be explained? We must in the first place allow that many of the factors of phthisis are absent at a certain elevation, that is, all of them that are connected with social life and aggregation; but besides this, what further explanation have we?

1. Hirsch says that it is because the alternations of temperature are less marked in the mountains than in the plains.

2. Brehmer says that the air is more tonic and favorable to nutrition.

3. Jourdanet says that the cause is the deficient supply of oxygen.

It is true that the relative proportions of oxygen (21), and of

nitrogen (79), are the same in the mountains and in the plains, but as the higher layers of the air have less density, the quantity of oxygen in them for each inspiration is less. Experiments have shown that the quantity of oxygen in a litre of air at the height of 15,000 feet is about one-half what it is in the plains. The result of this is that, in order to get the necessary supply of oxygen, the inspirations become deeper and more complete, and that the thoracic cavity increases in capacity. The pulmonary cells, dilated and enlarged, become to a certain degree emphysematous, and in the end produce the dyspnœa called *asthma montanum.*

Two pathological facts appear in the mountains, which stand in relation to each other, the rarity of pulmonary phthisis and the frequency of emphysema. It seems also probable that the increased expansion of the pulmonary cells leads to a certain degree of anæmia of the lungs, and this anæmia, like emphysema, is considered to be antagonistic to tuberculosis.

The diminution of atmospheric pressure causes a derivation from the centre to the circumference, and produces a real revulsion towards the cutaneous surface. Add to this the tonic action of the air and its influence in promoting appetite and digestion, and we see some explanation of the rarity of phthisis in mountain climates.

To these causes Lombard adds a certain excess of carbon in the system, consequent on the diminished supply of oxygen, and he thinks that this has something in common with the state induced in islanders (who enjoy immunity from phthisis) by the free use of oils and animal fats or butter.

To these influences Lombard adds the effects of hydro-therapeutic treatment and of muscular exercise at the mountain sanatoria, along with the use of wine and fruit and nutritious diet.

Besides other objections that may be raised to Lombard's views, it is difficult to suppose that this real or supposed anæmia is a prophylactic of phthisis in the mountains, when we so often in the plains see anæmia to be a prelude of tuberculosis.

In the place of Dr. Lombard's anæmia, Dr. Gouraud would prefer to assign more satisfactory reasons for the beneficial effects of mountain climates in phthisis.

The purity of the air of mountains consists practically in the absence of all organic particles; and when we consider the effect of vitiated air in crowded workships in producing phthisis, we can understand the prophylactic effect of mountain air. The transparency of the air which is dependent on its greater dryness, and the more powerful action of light, depending upon the same cause, aid materially the operation of the purity of the air. The effect of residence in the mountains on the dimensions of the chest is also worthy of careful consideration, and has been studied by M. Armieux, at Barèges, at a height of more than 3000 feet. He ascertained that in the case of ninety-six soldiers who were sent up to Barèges there was, after four months resi-

dence there, a distinct increase in the measurement of the chest. If this result be fully established, it is evident that it will have a very important bearing on cases of threatened phthisis in the young, and that a mountain climate is to be considered as favorable to the development of the thoracic cavity, and consequently as improving the respiration.

We thus understand how mountain air may be useful in certain cases and in certain periods of phthisis. It acts by its purity, by its dryness and transparency, as well as by the diminution of atmospheric pressure. Dr. Gouraud observes that these principles have only, or nearly only, been applied in Switzerland, and thinks that mountain stations for such cases might very well be selected in some parts of France.

He concludes by observing that after all neither barometer nor thermometer, neither hygrometer nor anemometer, can determine what is the suitable climate for such and such phthisical patient. All depends on the nature of his constitution, and on the way in which the various meteorological conditions affect him.—J. Macpherson, M.D., in the *London Medical Record.*

SOME POINTS IN THE PATHOLOGY AND TREATMENT OF CHOLERA INFANTUM.*

By Edward Waldo Emerson, M.D., Concord.

If during the last year out of every twelve deaths in Boston one had been from yellow fever, Asiatic cholera, or plague, every one would be alarmed; the legislature, city government, and medical societies, would bestir themselves. But that was the actual proportion of the deaths reported from cholera infantum to the whole number of deaths of persons of all ages, and but little comment was excited. Yet the mortality from either of the dreaded diseases first mentioned, should they get a foothold in Boston, probably would never approach that from this common affection. We have got so accustomed to it that it is regarded as a necessary evil. But the advance of sanitary science and physiology may make it worth while to consider carefully from time to time our every-day diseases, and see if we are not better prepared to prevent or to fight them with the new tactics and weapons drawn from these sources, instead of using the consolations of philosophy for the annual loss under the old traditional methods.

With regard to this disease there is an opinion fast gaining ground that much if not all of it is due to causes largely within our power to prevent. As I do not propose to go into this branch of the subject, which is happily beginning to excite much

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attention here and abroad, I will quote but one passage from the excellent little book of Dr. John Simon, the chief medical officer of the Privy Council of Great Britain, on Filth Diseases, which was republished by the State Board of Health. He says: "In all filthy districts one particular class of diseases seems specially apt to stand in relief—the diseases, namely, which in respect of their leading symptom may be generalized as diarrhœal. * * The mucous membrane of the intestinal canal seems peculiarly to bear the stress of all accidental putridities which enter the blood. Whether they have been breathed, or drunk, or eaten, or sucked up into the blood-vessels from the surface of foul sores, or directly injected into the blood-vessels by the physiological experimenter, *there* peculiarly the effect may be looked for; just as wine, however administered, would 'get into the head,' so the septic ferment, whencesoever it may have entered the blood, is apt to find its way thence to the bowels, and there, as universal result, to produce diarrhœa."

In view of the great prevalence and fatality of this disease which the next month brings with it, under our present sanitary conditions, as surely as it does the white azalea or the water lilies, I have thought it might not be uninteresting to consider briefly in this paper its *pathology* and *treatment*, to see if these fields may afford anything new and profitable. Many of the standard books are somewhat disappointing in their chapters on cholera infantum. The pathology is not often very definitely stated. Were this done, perhaps modes of treatment more in accordance with the physiological indications thence deducible, and offering better prospect of success, would supersede the more or less blind and unsatisfactory methods often recommended.

Pathology.—The name cholera infantum is often loosely applied to various summer diarrhœas, but should be confined to that violent choleriform, gastro-intestinal catarrh of young children of which Leube says, in his article on the subject in Ziemssen's Cyclopædia, that "its symptoms so closely resemble those of Indian cholera that if one were confined to the observation of the individual case he could not say which it was." However the irritants or occasioning causes may differ, the weight of testimony of the best modern authors is so great for the entire identity of the symptoms and of the post-mortem appearances in a severe case of this disease and of cholera morbus with those in Asiatic cholera, that I may safely treat of the pathology of the choleraic state in general, drawing my instances from cases of epidemic cholera also.

This condition becomes all too familiar to the physician during the weeks when the thermometer reaches 90° Fahr., when he may see a rosy, well-nourished, active child, with perhaps no warning beyond a very short stage of indigestion, suddenly seized with violent and profuse watery discharges, and soon after with vomiting of quantities of clear or slightly tinged

liquid. There is coldness, pallor, pinched appearance, and even cyanosis of the surface, beginning at the extremities, but rapidly spreading to the trunk and head, which was at first remarkably warm, and the abdomen is a little distended. Notwithstanding the great apparent cooling, the deep rectal temperature rises to normal or above, according to the best authorities. The pulse is rapid, and becomes momentarily more difficult to feel. The thirst is great, the drink vomited. At the end of two days, or in extreme cases even of twelve hours, the child may be hardly recognizable as it lies faintly fretful or drowsy, the fontanelles sunken, the lids half shut over rolled-up eyes, pulseless, pale, and cyanotic, with sharp features and cold, clammy, and apparently wasted limbs, the abdomen relaxed, the skin wrinkled and inelastic, the urine suppressed, the upward and downward discharges less frequent or stopped, the respiration shallow, the breath cold, and perhaps alarming little premonitory twitchings of the limbs. In old times, when they used to bleed, it was found that only a drop or two of thick, dark-red blood would flow.

When matters have reached this state, the child will almost surely die, either by increasing sopor or by convulsions. Or, under favorable circumstances, before extreme algidity and coma are reached, reaction may set in. In fact, one striking point about the state is that it seems to be self-limited if the patient can survive until the turning-point comes, which is usually not more than two and a half days at farthest from the onset. Then the patient usually begins to recover with great rapidity, unless a relapse occur or entero-colitis or other complication arises. The vomiting ceases, the pulse returns, the stools are less frequent and contain more fæcal matter, the pinched and wasted appearance of face, body, and limbs disappears, with the return of warmth, color, and natural perspiration. Urine reappears, the rectal temperature falls to normal, or a little below, as the surface temperature rises. After death in the extreme algid state the surface temperature may slowly rise to normal or above, the body cools off very slowly, and rigor mortis comes on late and persists long.

The post-mortem appearances show no structural changes except a swollen condition of the solitary follicles, and Peyer's patches. Sometimes thickening of the blood and occasional slight ecchymoses under the serous membranes are found. The intestinal walls are injected. The large abdominal veins, the right side of the heart, and the pulmonary arteries are found distended with dark blood. The kidneys are congested, and sometimes the tubules are full of epithelium. The left side of the heart and the arteries are very empty, the membranes of the brain a little injected, the brain itself bloodless and sometimes œdematous. The lungs seem empty and dry, and collapse greatly. The intestine is full of clear or slightly turbid fluid like the discharges, consisting mainly of water and chlorides, with a little

albuminous flocculent matter, showing under the microscope swollen epithelium and granular matter.

What, then, is the pathological condition that occurs? The collective symptoms of paleness, coldness, cyanosis of all the surface, and probably too of the lungs, together with the internal objective and subjective heat and the immense activity of movement and transudation in the bowel, the suddenness of the collapse and apparent emaciation, and the equal suddenness of the recovery and the reappearance of heat and *turgor vitalis* would alone demonstrate, as plainly as any clinical phenomena could, that the main pathological condition was an entire change of the equilibrium of the circulation, namely, the engorgement of the abdominal at the expense of the peripheral and respiratory organs. The post mortem appearances put the matter beyond all doubt. In fact, it is a condition in many respects analogous to two other circulatory disturbances, syncope and shock, the pathology of which states are set forth at length in an interesting article in the *Practitioner* for October, 1873, by T. Lauder Brunton. Just how this disturbance of circulation is wrought is not certain, but a physiological explanation may be hazarded. To do this more clearly I will venture very briefly to state the received theories as to the innervation of the intestines.

A. Local ganglia have been demonstrated in the intestinal walls.

B. The vagi and the splanchnic nerves jointly preside over the stomach and intestines.

C. The vagi (sensory in their function) are the accelerating nerves of the intestinal tract. Their irritation produces increased movement of the intestines and also heightened secretion, and after their section, as demonstrated by Brodie and lately more completely by H. F. Wood, of Philadelphia, even the most irritant cathartics fail to act.

D. The splanchnic nerves are the restraining nerves of the stomach and intestines. They are so, probably, through their being also the vaso-motor nerves of the intestinal tract. Their section, as the experiments of Moreau proved, causes increased secretion and movement; in other words, corresponds nearly in effects to the irritation of the vagi.

Would not the following theory, then, meet the exigencies of the case, namely:—

That the cholera poison or irritant acts with special force on the places where it is most concentrated, namely, the gastric and intestinal mucous membrane; that there its first action would probably be on the local ganglia, producing, we may suppose (since the existence of vaso-dilators is not yet proved) a local vascular spasm, which soon exhausts itself, and is succeeded by relaxation of the walls of the vessels, through temporary paralysis of the splanchnic nerve, resulting in strong congestion. This would cause greatly increased transudation into the alimentary canal and heightened peristaltic action. Moreover, the vagus,

which, as above said, represents the sensory nerve of the stomach and bowels, would undoubtedly be irritated, hence causing increased movement of the bowels. The possibility of the phenomena of irritation of the vagi and splanchnic paralysis occurring at once from the same cause can be imagined when one considers how much sooner the contractility of small muscles of the vessels innervated by the splanchnic would probably be exhausted than that of the larger constrictor muscles of the bowels. The poison, if absorbed to some degree into the circulation, could cause directly (or, if not absorbed, by reflex action) spasm of vessels remote from the seat of its extreme and paralyzing action, namely, the peripheral and pulmonary vessels. The blood, then, almost stagnating in the large central vessels and driven from the systemic arteries and left heart by their continued contraction, would accumulate in the right heart and pulmonary arteries. Hence the carbonic acid would increase and the oxygen diminish in the blood, and both of these circumstances have been found by experiment to increase peristaltic action. Finally, from prolonged irritation the vagus becomes paralyzed, and the stomach and bowels cease to act, and the left heart, not having blood enough to contract upon, and suffering also in its nutrition from the condition of the coronary arteries, becomes paralyzed, or else the brain becomes œdematous, and convulsions occur. In cases that recover we may suppose that much of the poison having been eliminated, or having worn out its effects or lost its activity, relaxation succeeds the spasm in the exhausted muscular walls of the peripheral and pulmonary vessels, while those of the abdomen, after long dilatation, relieved of their load by the equalization of the circulation, gradually recover their tone. So much for hypothesis as to the method of production of this pathological disturbance of equilibrium occasioning the alarming symptoms; of the fact we may feel reasonably sure.

Treatment.—The most ardent advocate of expectancy would admit that were it possible to remove the condition upon which all these phenomena depend, instead of trying to repress them individually, the former course would be as much more wise and desirable than the latter as the mending a leak in a roof would be than the constant renewal of the rain-spoiled wall-paper, plaster, and carpets.

I think it is not too much to say that we know enough of the main pathological condition to justify us in attempting to treat it directly, and that the newer treatments that have aimed at this object seem to have had success enough to justify a continuance of them. Certainly no patient looks a more unpromising subject for treatment than a child in advanced collapse from cholera infantum, and yet the change from all but death to life that may occur in a few hours, should reaction be brought about, is a fact as encouraging as it is surprising.

Steiner, in his excellent little hand-book of children's diseases,

says of this disease, "Let the physician treat early and actively; inactive expectancy is nowhere more punished than here."

Prevailing Treatments.—Before speaking of the modes of treatment that seem most indicated by the known and suspected pathological conditions and to have stood the test of experience, I will briefly allude to those more in vogue, purposely omitting prophylactic treatment as a branch which opens too wide a field for the limits of this paper. In what follows, for reasons before mentioned, I shall speak of the choleraic condition, whether from sporadic or epidemic causes, as essentially the same state, and remedies effective in the worse form would probably, *a fortiori*, promise even more in the milder form.

Too many of the treatments proposed are symptomatic in the narrowest sense of the word. This is not true, however, with regard to the old *eliminative* treatment, which was at one time popular on theoretical grounds in the evacuant stage. Dewees is dissentingly quoted by Churchill as recommending "warm water to encourage the puking and enemata of warm water to clear the bowels." and even at present Goldbaum, a German writer, goes so far as to maintain that transudation is a favorable occurrence, and not to be interfered with. It is difficult to see, with the now commonly accepted theories of the emetocatharsis being due to an irritant, organic or inorganic, working specially on the intestinal tract, why this is not a conservative process by which the body endeavors to rid itself of the offending presence. It is not improbable that it is so to a certain extent, but clinical experience shows that this process may continue until it becomes the main source of danger.

Energetic diaphoresis is frequently recommended at the very beginning of the attack.

Either at the outset or after one artificially produced catharsis, almost all writers recommend opiates to check the discharges, some combining them with astringents, and some with chalk or lime-water, on a theory that an injurious acidity prevails in the alimentary canal. These are continued, even in large quantities, into the stage of collapse.

Calomel was until very lately almost universally given in the first stage, with a view that it either was, or ought to be, beneficial in some way. The medical adviser, like Holme's Rip Van Winkle, finished his directions thus :—

> "Last, with a dose of cleansing calomel
> Unload the portal system,—that sounds well!"

Niemeyer, who considers it a sheet-anchor in cholera infantum, thinks that its good effect is only to be explained by its power to arrest decomposition and hasten the removal of irritating ingesta. Leube, in Ziemssen's Cyclopædia, recommends it as an efficient cathartic. Meigs and Pepper hold that it acts in the large doses commonly given as a powerful sedative, too powerful, they urge, for a depressing disease.

Subnitrate of bismuth in large doses is much recommended to

allay irritation by its mildly astringent and sedative action. Small doses of nitrate of silver are tried with similar object.

Hydrochloric and sulphuric acids, the latter combined with ether as the elixir Halleri, carbolic acid, and benzoin are all recommended on antiseptic grounds.

Chloral hydrate has been given by subcutaneous injection for its sedative effect. Of its good results more will be said later.

Now all writers recognize the importance of water, but many fear to give it in any other form than ice pills.

Spice poultices or sinapisms to the abdomen are recommended to check vomiting, and Niemeyer urges the application of frozen compresses to the belly.

In the stage of collapse most authors advise alcoholic stimulants, usually the most rapidly diffusible ones, to be given frequently, in small doses, together with opiates, if the discharges persist.

Warm or hot baths have been recommended in this stage, sometimes with the addition of mustard. Intra-venous injection of water, or salt and water, or of milk, have been resorted to in the worst cases, and even transfusion of blood.

Finally, the bad percentage of recovery when marked collapse has been reached, either in the sporadic or in the epidemic form, under almost all treatments, has led some writers to believe that the patient has the best chance of recovery who is let alone to wait for the natural turn of the disease, should his strength hold out, and only given a little ice, with perhaps mild opiates and very thin, bland nourishment.

In the third, or reactionary stage, great care is advised in the administration of nourishment and stimulants, for fear of occasioning relapse or favoring secondary inflammations of the bowels or other organs.

No writer of any merit on cholera infantum fails to notice the main importance of dietetic treatment, but ideas on this subject differ widely. Niemeyer urges, as of primary importance, the necessity of absolute withdrawal of nourishment for a time, urging that whatever is given before the irritant has left the stomach will surely undergo abnormal decomposition and increase the mischief. Few others dwell on this point, but, if the child is being brought up by hand, recommend either barley-water or some similar mild farinaceous nourishment, or else beef-juice, chicken-water, or finally raw beef, scraped and perhaps moistened with red wine. Others recommend artificial foods made with reference to the deficient power of a child's digestive fluids to convert starch into dextrine, in which that transformation has been outside the body.

Treatment Recommended.—Now if the views set forth in the earlier part of this paper fairly represent the pathological facts, what would be a rational treatment of the choleraic state?

Waiving the question of prophylaxis and its corollary, the question how to directly destroy or neutralize the organic irri-

tant (if such exist) after its introduction into the body, the first indication is to correct the dangerous and unfair distribution of the blood in the body, to which the purging, vomiting, cramps, and coldness, seem to be directly due, and later the greater danger of coma, convulsions, or paralysis of the heart.

Second. If we fail in the first attempt, or do not succeed until late, we should supply the water and perhaps also the salts drained from the blood, as the thickening of the blood would prevent the good effects of the natural turn of the disease, should we have to wait for that, and perhaps dispose to various organic lesions.

Third. We should attend to the general hygiene, diet, etc., of the patients.

As to the first indication, the problem is how to cause dilatation of the peripheral vessels and contraction of the overloaded abdominal ones. If we had any means of getting directly at the splanchnic nerves, we could probably by galvanization of them directly cause the contraction of the mesenteric vessels. Ludwig and Thiry found that after section of the spinal cord in the neck, whereby dilatation of the mesenteric vessels was caused, galvanization of the lower segment would cause extreme contraction of them. Possibly galvanization applied over the middle dorsal region of a patient might produce the same effect. Chapman maintains that he can occasion it by ice-bags applied to the spine, which he uses to check diarrhœas and reflex vomiting.

Brückner, a German writer, claims that cold sand-bags of moderate weight, laid on the abdomen of cholera patients, mechanically check the access of blood to the abdominal vessels and favor its escape. Transudation is thus hindered, and perhaps absorption is favored; moreover, the peristaltic movements of the bowels are not so free. These sand-bags might be used carefully, with hot applications to the extremities.

We have a much better chance of success, however, if we try to unload the abdominal vessels by relaxing the peripheral ones by means of strong derivatives applied to the surface. Steiner strongly urges baths of from 99° to 104° Fahr. in the algid stage, combined with stimulants internally, and Leube, in Ziemssen's Cyclopædia, recommends the same. The distinction, too often neglected, between a warm bath and a hot bath is of vital importance here. No bath of less than 99° would be desirable. A writer in an English journal within a year or two, whose name I have lost, mentions his very gratifying success in treating the algid stage of Asiatic cholera by prolonged hot mustard packs. In accordance with this plan I treated three cholera infantum patients last summer, who were rapidly cooling off and assuming the characteristic pinched appearances of collapse, by suddenly wrapping them to the chin in cloths wrung out in hot water and mustard, with a blanket outside, and while thus mummied feeding them with plenty of ice-water and a little brandy. The pack

was kept up half an hour or more, and during that time the change in the child's appearance was remarkable; the color and warmth returned to the surface, the tissues filled out, the features lost their pinched and old look, a natural perspiration broke out, the vomiting ceased, and the discharges grew less frequent. The mustard sheet was then withdrawn, but the child left enveloped closely in the warm, moist blanket. The pack in one instance had to be renewed at intervals, as a tendency to relapse manifested itself after some hours, but the condition of all mended in marked manner after the first application, and all made a good recovery.

With regard to medication, if the choleraic state last any length of time, the blood must necessarily be altered by its drain of water and salts. Water, then, is the first medicine indicated, and should be constantly given in the form of ice-pills or spoonfuls of ice-water. Small enemata of slightly salt water immediately after a dejection might help to supply the lost fluid. Should vomiting and purging go far enough to cause a fear that the blood was becoming too much thickened, intra-venous injections of water should be tried, and if it were thrown in at a temperature of 100° the heat might help relax the surface vessels. Milk and blood have also been used, but water seems more indicated, as in this disease the blood loses little albumen and no corpuscles.

As to the administration of drugs by the mouth, the fact of the probable very slight power of absorption at that time is usually overlooked. It is found that belladonna introduced into the stomach in large doses will not dilate the pupils. The medicines, stimulants, and food, then, can have little power in the present condition, nor yet help to bring on reaction, and if often repeated they may, when reaction sets in, be all greedily absorbed at once, and so do great harm, a fact to which Meigs and Pepper very properly call attention with regard to pouring in opium and alcohol in the algid stage. Internal administration of antiseptics has not so far seemed to fulfill the expectations of its advocates. As for calomel, it seems hardly indicated in the pure choleraic stage, unless there is the best reason to believe that some crude ingesta still present in the intestine demand a cathartic.

In the *Practitioner* of July, 1875, was a very striking article on the use of subcutaneous injections of chloral in the evacuant or algid stage of cholera, by Surgeon A. R. Hall, with accounts of cases treated by him and Mr. Higginson, another English army surgeon. The number of cases treated by these two gentlemen was large, and the onset severe and alarming, but they lost hardly a case. They injected, two-grain doses of chloral, diluted with ten times as much water, into the arms and legs of patients, some in extreme collapse, and in almost every case good and speedy recovery ensued. Few patients had more than eight to ten grains in all. Mr. Hall's theory was that the vascular con-

dition was due to extreme vaso-motor irritation, and that the usual stimulant treatment only heightened the difficulty, as was shown by its small percentage of recoveries, sometimes only eighteen per cent. So he looked about for a sedative to relax the general spasm, and tried chloral with the brillant results above mentioned. It is interesting to know that the government in India have taken pains to publish and circulate Mr. Hall's happy experience in the treatment of cholera collapse. His method seems to be well vouched for, and I see no reason why it should not be applicable to the choleraic state in children, if the injections were given progressively and carefully watched.

One word, in conclusion, as to babies' food, though that subject has been so well treated at recent meetings of the society that it is almost superfluous to say a word more. There is a point which I wish to allude to, namely, the great popularity among the rich and poor of *the nursing bottle with the flexible tube.* It is an invention of which Herod might have been proud. It is always in the baby wagon or the crib, in hot sun or close air. The child falls asleep with its nipple in his mouth. The mouth is usually never washed; the bottle and tube are, "with scalding water and with soda," so the mother says if you ask. Smell it, and see what you think. Take a parallel case. What prospect could a man have of immediate and satisfactory recovery from cholera morbus, or even dyspepsia, who should eat soup, freshly made perhaps, but out of a tureen which had been standing half a day with the remains of yesterday's soup in it, in a close room with a temperature of 90°; who, moreover, should never rinse out his mouth nor allow time for digestion, but should go to sleep with a piece of bread soaked in soup in his mouth, and, if colic or oppression caused him to complain on waking, should at once take more soup out of the unscalded tureen? This is not an agreeable picture, but it is a fair analogy. Is a teething baby's stomach stronger than a man's, that the doctor should tolerate the form of nursing bottle which encourages and contemplates a management of his diet exactly parallel to that in the unattractive picture I have just drawn?—*Boston Medical and Surgical Journal.*

THE TREATMENT OF SUNSTROKE.

The intense heat with which the country has been pretty generally visited this season has not been without its effect upon the health of the community. According to recent accounts the rate of infant mortality has been higher in the city of New York than has been known for a long period of time. The number of cases of sunstroke in this part of the country will also doubtless at the end of the season be found to be greatly in excess of that of former years. The daily papers already contain numerous

accounts of individuals who have succumbed to this malady. The dangerous character of this disease, the varied opinions regarding its true nature, and the fact that most practitioners have but vague and unsettled views as to the true method of treatment, render the subject in question of more than usual interest at the present time. Without attempting to give even a hasty glance at the literature of this disease, or to discuss its pathology, we call the attention of those of our readers who are not already familiar with it to the interesting little monograph by Dr. H. C. Wood, Jr., a Boylston prize essay, published a few years since. There can be no doubt, as Dr. Wood states, that many cases of sudden severe illness have been grouped under the name of sunstroke. Prominent among these is simple exhaustion due to excessive labor in a heated atmosphere, a very different affection from true sunstroke, and characterized by symptoms sufficiently pronounced to enable a careful practitioner to recognize it without difficulty. True sunstroke, according to Dr. Wood, resembles in its nature a fever, a fever not dependent upon blood-poisoning but upon heat, an ephemeral or irritative fever. Thermic fever is the name which he accordingly applies to this disease. Taking this view of the case, and rejecting the term apoplexy, which is frequently employed by writers, a more rational method of treatment at once suggests itself. The prominent symptoms—a very hot and dry skin, with excessively high temperature as shown by the thermometer—would seem to give a clue to the remedies which are to be employed with some hope of success. The antipyretic treatment which has so many able and energetic advocates for its efficacy in controlling fever, has here a fair field for the test of its virtues. The cold bath, for instance, might be substituted for the ruder methods of applications of ice to the head or cold douches. The subcutaneous injection of quinine, as recommended by Surgeon Hall in *The Practitioner* for March, appears to have produced marvelous results in a case described by him. The cold douche had been employed and ice applied to the nape of the neck without effect; the heart's action was rapidly failing. Stimulants could be administered only with great difficulty, and the case was becoming desperate when quinine was administered subcutaneously. An improvement of the symptoms encouraged a further trial, and the patient made a rapid recovery. About five grains only were administered in this case. For those of our readers who have not employed quinine in this way, we would state that one drop of dilute sulphuric acid and ten minims of water are necessary for the solution of one grain of quinine. The ordinary subcutaneous syringe could thus hold three grains of quinine.

Probably other remedies having a similar action, as salicylic acid, may be found to be useful, although this latter drug could not be administered with the same facility.

We point to this line of treatment as one which has not yet been thoroughly tested, and hope that those who come in contact

with the disease this season will see fit to publish their experience.—*Boston Medical and Surgical Journal.*

DISEASES OF WOMEN AND CHILDREN.

BY THE EDITOR.*

THREE CASES OF PLACENTA PREVIA.

By Thomas J. Gallaher, M.D., Pittsburg.

Mrs. G., residing four miles in the country, had a severe uterine hæmorrhage on the 8th of January, 1866. She was then pregnant a little over six months. The hæmorrhage soon ceased spontaneously, but a slight show of blood appeared from time to time on her taking exercise.

On the evening of February 7th she sent for me in consequence of a return of the bleeding. This time it was quite severe, but unaccompanied by labor pains. When I arrived, the flooding had ceased and the patient felt comfortable. The os was now sufficiently dilated to permit the passage of the finger into the cavity of the uterus, when the placenta, partially separated, was felt opposite the uterine orifice. It was now plain that I had to do with a case of placental presentation in which the placenta was centrally implanted over the internal os.

After waiting some hours, during which there was neither hæmorrhage nor pain, I left for home, with directions to send for me as soon as flooding or labor pains appeared.

The next afternoon, February 8th, I was notified of a return of flooding. I saw her at 4 p. m. This time the hæmorrhage was more copious than at any of the preceding attacks. The blood had run through the bed and spread over the floor, while a large clot was found on the sheet. At the time of my arrival she was not losing blood, but was in active labor, with good pains. The os uteri was well dilated, the vertex engaged in the superior strait, and the placenta, perfectly detached, occupying the vagina in advance of and in contact with the head.

The patient was then quiet, pale, and exhausted, but the pulse retained considerable strength and fullness; stimulants in small quantities were given her. The placenta was soon removed, when the head began to descend. In less than ten minutes the child was born; of course, dead.

The child was thin and flabby, and had the appearance of having been badly nourished, and dead a few days. The patient, however, thought she had felt feeble motions of the child the day before. There was no succeeding hæmorrhage; the womb was

* The gentleman who has usually superintended this department being absent, the Editor has undertaken to fill his place.

now contracted firmly, the pulse had reasonable strength, and the patient felt comfortable. She was now bandaged. I felt rejoiced that the case had proceeded so well for the mother, but my hopes for her recovery were soon blasted. In less than half an hour after delivery, the patient began to sink. She became pale, and the pulse feeble, contracted, and irregular. There was no hæmorrhage, external or internal, no difficulty of breathing, no pain; nor had any injury happened the womb. Her condition now seemed alarming. I immediately lowered her head, elevated the feet and hips, tightened the bandage, and gave freely of stimulants, etc., but all in vain; the patient died within three quarters of an hour after the birth of the child, her mind remaining clear to the last. There were no convulsions. From the gradual manner in which she sank, and from the absence of all depressing discharges after the birth of the child, it seemed certain that the patient died more from shock than from actual loss of blood.

Case II.—Mrs. K., the mother of five children, was taken in labor, May 30, 1872. She had had a severe hæmorrhage about four weeks previous, which had stopped without treatment on keeping the bed; and, just four days before confinement, there was a renewal of the flooding, which also ceased spontaneously. In both instances it was unaccompanied by pain. At the time of labor the discharge of blood was not very profuse. On my arrival, the pains were good and regular, and the os partly dilated. The margin of the placenta could be distinctly felt opposite the os. It was a case of partial placenta previa with breech presentation—the sacrum of child to pubes of mother. The breech was soon engaged in the superior strait, and slowly began to descend. In two hours the child was born. It was still-born. The placenta came away without trouble, and the uterus contracted; not much blood lost after delivery; none during the descent of the child. Mother had a good recovery. The placenta was irregular in shape, thin, and large.

Case III.—I was called on the 31st of December, 1875, at 11 o'clock at night, to see Mrs. C., who was said to be flooding profusely. The lady was 23 years old, pregnant with her second child, and had completed the seventh month of gestation. She is a healthy and tolerably well-developed woman. The hæmorrhage could not be attributed to fright, severe mental exercise, physical exertion, or injury of any kind. It came on during the night, while she was lying quietly in bed, and was unaccompanied by pain. The patient had lost considerable blood before I arrived, and was still flooding copiously. The finger readily passed the os externum into the cavity of the cervix as far as the internal os, but the latter orifice was not sufficiently dilated to admit of its further advance without using more force than it

was deemed at the time prudent to employ. From the painless and causeless character of the hæmorrhage, taken in connection with the period of gestation at which it occurred, I felt satisfied that there was before me a case of unavoidable hæmorrhage from placenta previa.

The patient was placed upon her back, and the vagina thoroughly plugged with cotton-balls, six in number, each one double the size of a hulled walnut. These were secured by a T-bandage. Quietness was enjoined, and one-sixth of a grain of morphia injected hypodermically. January 1st, next day, the tampon was removed, no hæmorrhage following. The patient was advised to keep quiet several days, and avoid hot drinks, etc. Several balls of cotton-wool, tied up as above described, were then placed within her reach, and she was instructed to introduce as many of them into the vagina as she could, as soon as an alarming hæmorrhage returned.

January 6th.—Bleeding returned with great violence, and I was sent for in haste. The patient herself had securely plugged the vagina with the balls before I arrived, and had thus effectually checked the discharge. As many as nine balls had been pushed into the vagina; these were removed in 12 hours.

13*th.*—Another gush of blood occurred this morning, which was also arrested by the patient with the cotton tampon.

On the morning of the 18th another sudden flow of blood from the vagina announced a return of her troubles. This time it was soon followed by labor pains. The cotton pledgets had been inserted as usual, but in consequence of the uterine contractions they failed to arrest completely the flow. More or less blood, apparently deprived of its fibrin, would ooze out from between the labia and stain the compress.

As the labor pains were now quite severe and frequent, occurring about every five minutes, and expulsive in character, I thought it best to remove the tampon and learn the condition of the parts.

A careful digital examination showed the entire disappearance of the cervix and partial dilatation of the os, probably to the size of a silver half-dollar.

My two fingers were now able to reach the cavity of the uterus, when the external surface of the placenta could be felt occupying a position directly opposite the expanding uterine opening. It was found separated from its attachments immediately around the os, and when a pain occurred the placenta filled the entire opening. Blood was expelled at each uterine pain. As the first stage of labor was now rapidly advancing and the flow of blood considerable, I was compelled to reinsert a cotton tampon and await the further progress of the case. Meanwhile I injected one-half grain of morphia into the arm.

There was no abatement in the frequency and severity of the pains, while some thin blood continued to escape from the

vagina. At the end of two hours I presumed the uterus was fully dilated, and therefore proceeded to remove the vaginal plug. The dilatation was nearly sufficient to admit the entrance of the whole hand into the cavity of the uterus. It was probably three and a half inches in diameter. By gentle continuous pressure my hand soon entered the cavity of the uterus. At this time the placenta was found entirely detached from the left side of the uterus, but still adherent to a portion of the right. The implantation had been central.

I now passed my hand between the placenta and walls of the uterus on the left side until the thin membranes were reached, and on rupturing these I found a foot presentation.

The feet were soon seized and brought down, and, as the breech of the child was brought through the cervix, a portion of the loose placenta descended with it and occupied the opening on the right side. The placenta was now partly within and partly without the uterus, and from this position it could not be dislodged till the child was born. Its presence greatly retarded the delivery of the child.

At this time Dr. J. H. Snodgrass came to assist me.

The labor pains continued pretty good, while the descent of the child through the pelvic cavity was gradual. Some time before the birth of the child, half an ounce of vin. ergotæ was given to secure subsequent uterine contractions.

At one o'clock, p. m., just one hour after the membranes were ruptured, the lady was delivered of a still-born male child of nearly eight months. The placenta was found loose and in the vagina, and the uterus contracted.

During the passage of the child and after its delivery there was no hæmorrhage.

As the patient had lost considerable blood from time to time, and had therefore become greatly exhausted and anæmic, good whiskey-and-water, in small and frequent doses, was given her during the progress of the labor. The mother had a pretty good recovery, though the effects of the great loss of blood are still perceptible by her pallidity of countenance and general weakness.

It will be observed that in two of these cases the insertion of the placenta was central, in the other partial. In the two former the births were premature, in the latter the child had arrived at or nearly at maturity. The hæmorrhages were more severe in the central than in the partial form of this presentation. In Case I. there were three hæmorrhages; in Case II. there were two before labor commenced, all of which ceased spontaneously on keeping the bed; in Case III. the bleedings were so copious and sudden as to endanger life at each attack. Here the tampon proved a most effective measure. Placing the cotton-balls within reach of the patient or a good nurse proved an admirable proceeding, for by it the patient was enabled to introduce the tampon herself on the first appearance of the eruption, thereby

saving much blood, if not her life, and thus enabling her to pass with safety through the critical and dangerous process of labor.

The mortality among mothers in the above cases was the usual average, namely, one-third.

The one that proved fatal was no doubt beyond the reach of hope before I arrived, for no loss of blood happened after my arrival. I was unable to determine positively whether this patient died directly from the loss of blood or from nervous shock.

As to the mortality among the children, this, it must be admitted, was great. In Case I. the child was certainly dead before I arrived; while in the other two they perished in consequence of detention of the shoulders and head in the superior strait after the body had passed through. In each case, while the mother was healthy and otherwise well developed, the cavity of the pelvis was small and permitted of a slow descent of the fœtus.

When this condition is associated with a foot or breech presentation it is always dangerous to the life of the child, even if no placental complication exists. In these cases we can safely assert that the mortality is indirectly to be ascribed more to the faulty position of the child and the small maternal pelvis than to the placental abnormity.

The number of malpositions occurring in these three cases exceeds what has been observed by Simpson, Churchill, and others, for here we have two preternatural to one natural presentation of child; of the former, one was a foot and the other a breech.

The average number of placental presentations occurring in my practice is one in every nine hundred and fifty cases. This statement as to the relative frequency of placenta prævia does not agree with those made by Collins, Madame Boivin, and Clark, for these writers, whose statistics are taken from the records of lying-in hospitals, make the average much less. It may be remarked here that the experience of private practitioners as regards this matter is more reliable than that derived from hospital practice, for the greater number of such cases are seen in private practice, since hæmorrhage and delivery occur at such an early period of pregnancy that their admission to hospital wards is uncommon.

The early evacuation of the waters, the use of Barnes's dilators, and the other numerous procedures which have been recommended from time to time to check unavoidable hæmorrhage, I did not think proper to employ. Case III. was the only one in which any of them could have been used; but, hoping to save the life of the child by lengthening the period of its retention within the womb, I preferred the tampon, which answered admirably every purpose. The mere stoppage of the hæmorrhage, however, was not sufficient to save the infant's life.—*New York Medical Journal.*

PUERPERAL SEPTICÆMIA.

By Hugh Miller, M.D.,

Fell. Obtet. Soc. Lond.; Physician-Accoucheur to the Glasgow Maternity Hospital.

The following notes of an epidemic which attacked the patients in the hospital during the month of January last, are submitted as a contribution to the recent interesting inquiry into the existence of puerperal fever as a zymotic disease. The confinements followed so closely one upon the other that six patients were brought under the influence of the infection before rigid measures could be adopted for stamping it out. I am indebted to Mr. Thompson, the House Surgeon, for the reports of the cases of which I present the following brief details:

I.—M. C., aged twenty-four, was near her full time when admitted to the hospital on 19th January last. Eight years ago she was attacked by scarlatina, and since then she has been weakly and delicate. Her first confinement took place on 19th October, 1874. She was in labor, she says, for five days. The child was still-born. Her recovery was favorable until the fifth day, when her left leg became swollen. Under treatment it improved, but it has felt weak, and has remained swollen since. During this pregnancy she has been almost free from any sympathetic derangement, and her general health continued good until two days ago, when she sustained a shock from a severe fall in the street. When admitted she was in labor, and on examination it was found that the head was presenting along with the funis. The cord was pulseless. Eighteen hours after admission she was delivered of a male child still-born, and evidently of a syphilitic taint. After waiting two hours the placenta was found to be adherent. The usual means were employed for its removal, and it is believed that it was entirely taken away. During the next few hours the patient did well, and appeared as if making a good recovery. Without being preceded by a rigor, a sudden rise of temperature was observed fifteen hours after childbirth, and on examination it was found that the temperature was 103°, and that her pulse had risen from 90 to 160, and was dicrotous. She complained of severe pains in her legs and arms. The uterus had not enlarged and the lochial discharge continued. In my absence Dr. Sloan kindly saw her, and ordered her to have half a drop of the tincture of aconite (B. P.) every hour, and with the first dose to have also a mixture of sweet spirits of nitre with liquor acetatis ammoniæ. Next morning the temperature was 101° and the pulse 120. An erythematous rash was now observed over the lower limbs. She had no sore throat, but she complained of a harassing laryngeal cough. Her tongue was furred, and dry, but it did not present

any specific febrile character. She was not aware of being near any case of scarlatina recently. Directions were given to have the diaphoretic mixture repeated with a dose of Batley's sedative liquid added to it. In the evening the temperature and the pulse were unaltered, but she felt more exhausted and was allowed small quantities of whisky at intervals. A solution of the chlorate of potass was given to allay thirst. Next morning at 8 a. m. the temperature was 99° and the pulse 96. By the same evening her general condition had greatly improved; with the exception of the cough, which was frequent and very harassing, she had nothing to complain of. The cough gradually improved under the use of tartar emetic and tincture of hyoscyamus. That night she slept well, and next morning the temperature was normal. The pulse was 90 and weak, and the patient expressed herself as feeling much improved. Next day she was free from any unusual condition, and two days afterwards she was dismissed quite convalescent.

II.—On the 20th, the next day, M. H. was admitted; she was confined that evening of a still-born child, which appeared to have been dead for some time. On the 22d I found her suffering from acute peritonitis, which did well under the treatment with turpentine stupes, and Dover's powder. She left the hospital eight days after admission, quite recovered.

III.—On the same day A. B. had in every way an easy labor; next day she had a rigor followed by febrile excitement with pains over fundus uteri, and with a scanty and purulent discharge. This patient received similar treatment to that given in Case II., and in addition, after a consultation with Dr. J. G. Wilson, the consulting physician of the hospital, we ordered the intra-uterine injection of a solution of chlorozone. On the 9th February she had quite recovered and left the hospital.

I directed that all the patients should now have the bisulphite of magnesia regularly. These three patients were in one ward, and new cases were to be placed in another room. The next case was admitted on the 24th of January.

IV.—A. McD., a primipara, was the next case admitted. She was delivered of a still-born child. The placenta being retained was removed by introducing the hand forty-five minutes after the birth of the child. She was then removed to a freshly disinfected recovery ward. In due time she exhibited similar symptoms to Case III; she received identical treatment and recovered sufficiently to leave on the 9th of February.

V.—G. H. was delivered about the same time as Case IV. She was put in the same recovery ward, suffered from similar symptoms, and recovered under the same treatment.

VI.—J. McD., a primipara, having a weak intellect, was seized

after her labor with a similar train of symptoms, which, however, were more intense. She received the same treatment as the others, and was able to leave with them on the 9th of February.

So many cases occurring within a few days and presenting similar symptoms led me to seek for the exciting cause in the state of the hospital itself. I was satisfied that the wards had been kept scrupulously clean, that strict attention had been paid to the ventilation, and that every opportunity had been seized for fumigating the wards with burnt sulphur or with carbolic acid. The beds are made up of chopped straw, and are frequently renewed. On admission the patients themselves have always to submit to a hot bath, including a good wash, and they have a comfortable change of clothing provided for them. The nurses could not have been the means of transmitting the virus, for new nurses were appointed to wait upon the fresh cases admitted, without the patients (IV., V., and VI.) being freed from the influence of the infection. It appeared to me that if any infecting influence was present it must have its origin in the confinement ward. I ordered therefore the bedding to be destroyed. The room was thoroughly disinfected, and after being well cleansed, new beds were put in, and patients again admitted. The hospital record says that "since then the patients are making excellent recoveries."

Many questions arise in one's mind while endeavoring to account for this rapid spread of disease. Could miasmatic influences produce it? The patients were kept only an hour or two at most in the confinement ward before their removal into the recovery one. Thorough ventilation meanwhile had been maintained, and every sanitary means employed to protect the mother and her offspring. Supposing even that the earliest taint had been produced there, was it possible in such circumstances to become so virulent as to affect each succeeding case? In labors similar to No. I. we find the poisoned condition of the blood a result of the absorption, and not a precursor of the disease. Indeed, as an example of auto-infection (Schroeder) due to a portion of the placenta becoming poisonous, and of afterwards becoming absorbed, Case I. should have been very slow in developing any infecting material. Previous to the admission of Case I. the wards of the hospital were healthy.

These records will at least demonstrate how easily and how rapidly a puerperal epidemic can spread. Whatever influences may be at work to originate the poison, it evidently only requires a nidus that it may spread rapidly. Especially do we find this to be true in hospital experience. I am of opinion that in all cases where manual interference may be necessary it is our duty to exercise extra precautions against septic poisoning; and that where interference is necessary we should employ a disinfecting solution soon after delivery to the vaginal and intra-uterine

regions. Thus the parts will be kept clean, and the discharges prevented from taking on unhealthy action, or of acting by absorption through the lacerations frequently produced by childbirth.—*The Obstetrical Journal.*

THE GENESIS OF PUERPERAL FEVER.

By James Clapperton, L.R.C.P.

During the discussion on puerperal fever at the Obstetrical Society in the early part of last year, it was suggested by some of the Fellows of the Society, that country practitioners who had opportunities of attending isolated cases of puerperal fever should put them on record. The following are the only instances that have occurred in my practice out of 1200 cases of midwifery:

Case I.—Mrs. G., aged thirty-five years, who was having her family very quickly, summoned me to attend her in her sixth confinement on the 6th of December, 1870. The pains on my arrival were very active. After rupturing the membranes the delivery of a fine healthy child was soon effected, the placenta and membranes coming away soon afterwards, the uterus being well contracted.

Dec. 7th.—Mother and child going on well. Before leaving I was requested to see one of the other children, who was not very well. I found the little patient, a boy, suffering from an attack of scarlet fever, the rash being well out and the throat slightly affected. Isolation was impossible, as the house consisted of a kitchen and two bedrooms over the kitchen; so I ordered him to be kept in the kitchen, and disinfectants to be used in the room.

8th.—Found both patients doing very well.

9th.—I found the mother had passed a restless night, with sore throat, and was very feverish. The usual dose of castor-oil had been given and had taken effect.

10th.—Had passed a better night. Throat and temperature the same as on the previous day; rash appearing on face, neck, and chest. To continue with the saline mixture. The uterine discharges quite healthy.

11th.—Rash well out over the whole body.

12th.—Going on nicely; discharges quite natural; no tenderness over the lower part of the abdomen, and as much secretion of milk as hitherto. From this date up to the time of my ceasing attendance she had not one unfavorable symptom.

Remarks.—This was a mild case of scarlet fever in one not protected by a previous attack, and the peculiar physiological condition of the lying-in woman so ably described by several authors, did not seem to alter the type of fever in this case. The

next case I have to record shows how differently scarlet fever affected another patient. She had suffered from it when a child.

Case II.—Mrs. H., aged thirty-four years, a fine, healthy-looking woman, the mother of six children, all living, sent for me to attend her in her confinement on the 17th March, 1874. On my arrival I found her in a small room in bed, and in an adjoining bed three of her children, suffering from scarlet fever, which was prevalent in the village in a malignant form; two children having died from it in the adjoining house. Others in the village were succumbing to the same poison. This caused her to be very uneasy for her own safety as well as that of her children. Her labor was a quick one, and the patient went on well until the fourth day, when she complained of rigors, sickness, and pain in the left leg. Her temperature was 104°; the calf and inside of the thigh were tender to the touch, inflamed and swollen; the lochia still healthy. No secretion of milk. The infant was ordered to be kept downstairs and fed with milk and water.

March 21st.—Passed a restless night; temp. 104°.2; inflammation more extended; no tenderness over the abdomen; uterine discharges remained healthy.

22d.—Temp. 106°; other symptoms much about the same, with the exception of the erysipelas, which was creeping over the hip.

24th and *25th.*—Symptoms more favorable.

26th.—The erysipelas travelling from left hip to the right, and down the right leg.

27th.—Swelling and tenderness less in the left leg; right same as before.

28th and *29th.*—No change.

30th.—Erysipelas returning in left leg; not so severe as before, and changing from left to right for the following week, when it disappeared. She was up and about the house on the 18th April.

Having only the one room the children remained in the lying-in room until convalescent.

Case III.—Mrs. T., aged twenty-five years, primipara, suffered a great deal from œdema of both legs during the last two months of pregnancy. She summoned me to attend her on the 18th January, 1874. The pains were strong and the os dilating quickly; after a few hours she was delivered of a stillborn baby. The placenta and membranes came away entire, and the uterus contracted firmly. Everything went on well until the fourth day, when she complained of having passed a restless night, of rigors, great prostration, thirst, and pain across the lower part of the abdomen, with considerable tenderness on pressure. The lochia being scanty and very offensive, I gave the nurse instructions how to wash out the vagina and uterus with a weak

solution of carbolic acid in warm water; hot fomentations with turpentine to be applied over the abdomen, and an effervescing mixture to be taken internally, with an opiate at bedtime.

Jan. 25th.—Had slept a little during the night. There was increased swelling, with tenderness and tympanitic resonance over the lower part of the abdomen. To continue the treatment. On visiting her in the evening I found all her symptoms aggravated, and she continued to get worse in spite of all that my partner and self could suggest until she died.

Remarks.—This case appears to me to be, as Dr. Barnes would call it, "autogenetic," as I had no cases of erysipelas, or any of the eruptive fevers, on my list at the time; neither could any cause from without be traced; and I may add that I attended several other women in their confinement about the same time without infecting them in any way. The only precaution I took was change of clothing, and washing my hands in a strong solution of carbolic acid.

Case IV.—Mrs. L., aged thirty-nine years, was confined with her ninth child on 22d of last April. Her labor was abnormal, being a case of placenta prævia. She lived about five miles from the surgery, so a good deal of time was lost before my partner could get to her assistance; consequently the hæmorrhage was considerable. He quickly turned the child and delivered the woman, the entire placenta coming away shortly afterwards. In the course of an hour the woman had rallied, and he left.

April 23d.—Mother and infant doing very well. Two of her children, and several in the adjoining houses, were suffering from measles, so I ordered them to be kept away from the lying-in room.

24th and *25th.*—Going on well; the bowels were relieved by castor-oil.

27th.—The patient had passed a restless night, bathed in perspiration; complained of rigors, sickness, and pain over lower part of the abdomen: uterine discharges nearly stopped and very fœtid. I showed the nurse how to wash the vagina and uterus out with an injection of carbolic acid in warm water; hot fomentations with turpentine were applied over the abdomen, and an effervescing mixture given every four hours, with a calomel and opium pill.

28th.—Had a better night; sickness stopped, tenderness over abdomen less, uterine discharges less offensive, diarrhœa troublesome.

29th.—Felt very low and as if sinking through the bed; more tenderness and swelling, and tympanitis over the abdomen. From this date she gradually became weaker, until she sank exhausted. The baby died a few days afterwards with the lymphatic system undergoing suppuration. It had been nursed by

the mother until the secretion of milk stopped; then it was fed with milk and water

The husband had the house, bed, and bedding disinfected, or at least said he had. He then slept in the bed, and soon was attacked with phlegmonous erysipelas of the head and face, and was delirious. His daughter, who had only been confined a fortnight, came home to nurse him. I pointed out the great risk she was running in nursing her father, being so recently confined herself. She rejected the advice, and she and her infant fell victims to the disease in the course of a few days, as the following notes of the case will show. For these notes I am indebted to Mr. Morgan, of Stamford, who attended her and the infant. "She came out of Yorkshire a fortnight after her confinement to nurse her father; after a few days, I believe the third week, she had puerperal peritonitis, and died after three or four days' illness; also a lodger in the house was taken very ill, but ultimately recovered." The week following, Thomas L., who assisted in nursing his brother Benjamin, who was now nearly convalescent, next sent for me. I found him suffering from an attack of erysipelas similar to his brother, which lasted six weeks with ultimate recovery.

Remarks.—In the first of these five cases measles in this and the adjoining houses appears to have been the source of the poison, though there was no rash of measles to be seen on the woman through her illness. The daughter's infection was obviously due to nursing her father, who, with Thomas, his brother, assigns the cause of their having erysipelas to the former sleeping in the bed in which his wife died without having the bedding and room thoroughly disinfected, and the latter to nursing his brother and assisting to put his niece in the coffin. This is in perfect accord with the well-known fact that puerperal fever will produce erysipelas in man.

CORRESPONDENCE.

New Orleans, Aug. 15, 1876.

Editor New Orleans Medical and Surgical Journal:

Dear Sir:—Some thoughts have lately been running in my mind, which are strikingly paradoxical, but admit of so much justification, that they may be worth the attention of your readers. They contribute nothing to the stock of medical knowledge, but I have gradually been inclining to the belief that this is really not the most important acquisition for success, either in curing patients or in gaining reputation and money.

It is no late discovery that good people are apt to make mis-

takes in the methods chosen for carrying out their benevolent wishes, for it is hard, in any plan of charity, to discriminate between the deserving and impostors. This well-recognized general principle has failed of due recognition, as regards medical relief, in all communities, and probably no plan could be devised which would obviate imposition on the one hand and undue hardship on the other. But it is certain that the fear of the latter, or some other consideration of less importance, leads to grave abuses, of which the medical profession are the chief sufferers, and very few are actual gainers.

Indiscriminate relief is open encouragement to pauperism, and the best system cannot guard against imposition. The abuse of hospital relief is too well known to require comment here, nor is it my present purpose to dwell upon benevolent associations, though a very large share of their charity is *exploited* from the medical profession. The futile movement of the physicians of New Orleans last year disclosed the fact that large numbers of people who indulge themselves in needless expenditures, do not scruple to ask medical relief from the associations to which they belong. When people ask gratuitously what they are able to pay for, they voluntarily enter the list of paupers and signify that the world owes them a living, whether they work for it or not. It is probable that general pauperism most commonly begins with the acceptance of gratuitous medical relief, from which the habit easily grows.

But one of the worst features of medical pauperism is the fact that large numbers of people, who might obtain relief from hospitals or charitable associations, levy their exactions on private practitioners. If this were done in the name of charity, there might be some excuse, but these people profess to be able and willing to pay, and, like Micawber, act as if their promises cancelled the debt. So indeed they would, if promises had any intrinsic or convertible value. A value they have, indeed—to the maker—for they purchase relief from a troublesome visitor. This is something positively worse than pauperism, though a natural outgrowth of it. In plain language, it is dishonesty, and with the same candor I declare that physicians encourage it, by weakly tolerating the imposition. Some of these people are too genteel to acknowledge pauperism by seeking the public relief, to which they may or may not be entitled, and therefore resort to private practitioners, changing doctors as often as their credit is exhausted.

Two numerous classes in this community might be named, who are provided with such medical attendance as they need; but they seem to presume that they have a right to make a requisition for services on any practitioner, and are known and dreaded as the most troublesome kind of dead-beats.

It is a correct general principle, that our enjoyments are valued according to their cost, and it is eminently true of advice. Gratuitous advice, when unsolicited, is positively offensive, and, when asked for, is taken or rejected according to the judgment or caprice of the recipient. It is common practice, among a certain nationality, to go around from one practitioner to another, to obtain "the opinion" of each one; but the advice, of course, is never paid for. Can any reasonable person doubt that the advice of one physician, suitably paid for, would be worth vastly more to the patient than the several prescriptions fraudulently obtained? For it is to be noted that respectable physicians refuse to supplement each other's advice in this way, whereby all are deceived as well as cheated.

The *resumé* of the above conclusions in brief is this: that the facilities for obtaining medical relief have been stretched to an extent which brings serious loss and needless trouble to physicians; which induces first special and then general pauperism among large numbers, who would otherwise preserve their self-respect and independence; which renders medical services dirt-cheap, and consequently contemptible and worthless. Here, then, is a paradox, whose truth may now be claimed: that the interests of the public and of the profession alike require the creation of *obstacles*, in the place of *facilities*, for obtaining medical relief. People who indulge in whisky, tobacco and lottery tickets have no right to ask relief from public institutions, and when they extend their exactions to private practitioners, they are simply dishonest. Such conduct in mercantile affairs is called "obtaining goods under false pretenses," and is treated as a criminal offense. If the law treated the latter practice with the same leniency (that is to say, total non-recognition) as the former, can it be doubted that, in time, people would be despoiled of their property with as little scruple as physicians are now despoiled of their services?

If some inquisitive individual should now ask how this complaint may be cured, I should be constrained to acknowledge my inability to answer the question, as far as relates to this com-

munity. There is a wide-spread, though tacit, sentiment, that a doctor's services belong to any one who demands them, and that what would be called deception and fraud in other relations of life is quite legitimate as regards our profession. It is therefore necessary to reform the public mind on this subject, and that implies concerted action somewhere. Of course it is quite chimerical to look for such a thing among medical men in New Orleans, and rather improbable that the general public should organize a scheme for the purpose of curtailing medical charities. It only remains, consequently, for each physician to help himself the best way he can, or take whatever people think good enough for him.

Another paradox relates to small-pox. Those who admit the modern doctrine of evolution and the improvement of species by a process of selection and the survival of the fittest, are bound to recognize small-pox, throughout the civilized world, as one of the most effective agents in the elevation of our race. This proposition, however, obtained since the introduction of preventive measures, and particularly since the discovery of vaccination.

The improvement of the race is effected by measures of forethought, which contribute in countless variety to its well-being. Among these one of the most important is vaccination. Those who are most provident in securing these advantages are fittest to survive, while the improvident perish in the struggle for existence. But simple observation, anterior to and quite independent of the evolution philosophy, showed that those who perished by small-pox, after the general practice of vaccination, were less valuable members of society than those who escaped by the safeguard just mentioned. Therefore small-pox, by destroying the least valuable lives, tends to elevate the average standard of intelligence and worth.

In a narrow humanitarian sense, this loathsome disease seems an unmixed evil, and undoubtedly is a fruitful source of misery; but it is probable that a rapid process of extermination is attended with less suffering than an apparently easier and more prolonged one. It is certain that the weakest and most worthless individuals and families are doomed to extinction, and their temporary preservation is a serious tax upon the energies of their more vigorous neighbors; consequently their rapid disappearance is doubly advantageous. Small-pox therefore must be

regarded as one of the most beneficent agents for the improvement of the race, and, according to the scale of its operation, more effective than such human contrivances as religion and education, for it is unerring in its aim.

It must be understood that the above reasoning applies only to strictly preventable diseases and to those attended with a very high rate of mortality. By the same reasoning no efforts ought to be used, on utilitarian grounds, to save the lives of those affected with small-pox, though humanitarian sentiments would certainly necessitate the use of all available efforts to this end. But the malady in question stands almost if not quite alone, in fulfilling the conditions required for such a selection in its operations. No hereditary disease, no disease not easily prevented by intelligent action, no one not highly and rapidly destructive to human life, would answer the requirements, and in this we find them all. Therefore small-pox, the dread of the humanitarian, the scourge in particular of the inferior dark-skinned races, deserves the highest consideration of the utilitarian and evolutionist, as a beneficent agent in the elevation of humanity to a higher plane.

Respectfully, PRO BONO PUBLICO.

DANVILLE, KY., August, 1876.

To the Editor of the New Orleans Medical and Surgical Journal:

Dear Sir—Since the last number of the Journal indicates a disposition on the part of the profession of Louisiana to establish a State Medical Society, it may probably be of interest to your readers to learn the results of organization upon the profession in this State. While the transactions of State medical societies, as annually published, do not in every instance give evidence of effective and valuable scientific work, yet there is no hazard in affirming that the condition of the profession is the better for the existence of such organizations.

The Kentucky State Medical Society is of *ante bellum* origin, and was revived after the war by a harmonious and representative meeting, held in this city on April 7th, 1868. Since that time the annual meetings have been held regularly, despite all hindrances, and much of benefit and pleasure has been rendered

the profession in consequence. The meetings are held in various portions of the State; the proceedings occupy two days, and consist of the discussion of papers, reports of committees on particular branches of professional study, measures for the advancement of medical practice and education throughout the State, and the interchange of courtesies and hospitality.

Probably in no other respect has the State Society benefitted the profession of the commonwealth more, than in the formation of district and county societies throughout the State. When the annual meetings are held at the various towns throughout the State, the profession in that locality is developed and receives a stimulus, which, in most instances, results in the formation of a district or county medical society. The benefit derived from these organizations, directly by the profession and indirectly by the community, is inestimable.

There is certainly no other profession, the inherent nature of the practice of which, so inevitably and repeatedly demands co-operation and mutual kindly services, as the medical; but how familiar to all is the fact that in many places the medical corps, instead of being a band of brethren are engaged in a petty warfare of intense bitterness, which is as disgusting as injurious. This condition of affairs obtains in cities as well as in less densely populated regions, and we believe that it is now quite a demonstrated truth, that where organization and coöperation are least cultivated on the part of the regular profession, quackery most openly and abundantly flourishes, and unbecoming conduct is most common among members of the regular profession.

Though in certain places the large number of medical men may act in the true spirit of the profession in the absence of a society and a written code governing conduct, just as the true gentleman would be found acting in accordance with the spirit of the civil-law even if there were no laws or government, yet just as the necessities of society at large demand organic laws, so, on precisely the same principle, are organization and a written code demanded by every profession. And we may add, that as certainly as the organization of individuals into communities promotes individual effort, both for material interests and the practice of moral virtues, so is our profession advanced by the formation of societies. In proof of all this, we can refer to the fact that *pari passu* with the advance of medical science has the establishment of medical societies become more frequent, and

every alleged discovery undergoes the ordeal of discussion before published and given to the profession at large. The great medical societies of the world are the winnowing machines of the profession, sifting the good from the bad, the true from the false, promoting and directing investigation, and discouraging evil.

In proof of the advantageous influence exerted by society organizations to which we are alluding, there is probably no instance more striking than that of the Central Kentucky Medical Association, which enrolls upon its list of members the profession of this portion of the State. Its membership extends over four large counties, and the roll numbers over fifty names. At a late meeting of this Association, the retiring president made the following remarks illustrating the great benefits of the organization, and every one acquainted with the facts can testify that the picture is by no means overdrawn, but, on the contrary, that his statements are literally true: "Nowhere in all the land, I venture to assert, is the tone of medical ethics healthier than within the limits of this Association. Quackery is almost unknown among us. With one exception, I do not know of an irregular practitioner within our borders."

This Association, which meets quarterly, held its last regular meeting in Harrodsburg, Ky., on the 19th day of last month.

In addition to the regular order of exercises, the Association was, in accordance with its request made some time previously, favored with an address upon the *Etiology and Pathology of Epidemic Cholera*, from Dr. Ely McClellan, U.S.A., who for several years has been a regular member of this Association. As is well known, Dr. McClellan has had superior advantages of late years as a student of cholera, to investigate the nature and history of the great scourge. His address was very thorough and exhaustive, and was illustrated with maps and charts, which greatly assisted his lucid descriptions of the methods and routes by which the disease is diffused throughout the world from its Indian home. After a very thorough examination of the subject, he announced the following propositions, which may be considered as embodying the most advanced thought in the study of this disease.

Proposition 1. That epidemic cholera is an infectious disease, which originates alone in India; that the disease has never yet appeared in the western hemisphere until its route of pestilential march has been commenced in the eastern world.

Proposition 2. That the active agents in the distribution of the cholera poison are the dejections of persons suffering from the disease in any of its stages; that in these dejections there exists an organic matter, which at a certain stage of decomposition is capable of reproducing the disease in the human organism to which it has gained access.

Proposition 3. That cholera dejecta coming in contact with and drying upon any objects, such as articles of clothing, bedding, and furniture, will retain indefinitely their power of infection; that in this manner a sure transmissibility of the affection is effected, and that a distinct outbreak of the disease may occur by such means at great distances from the seat of original infection.

Proposition 4. That by virtue of its transmissibility in the persons of infected individuals, or in the meshes of infected fabrics, the disease is carried into all quarters of the world.

Proposition 5. That the appearance of the disease upon the North American continent has invariably been preceded by the arrival of vessels infected with cholera sick, or laden with emigrants and their property from infected districts.

Proposition 6. That epidemic cholera is an infectious disease resulting from an organic poison, which gaining entrance into the alimentary canal, acts finally upon and destroys the intestinal epithelium.

An opportunity will soon be afforded the profession of this country to participate in the meeting of the great medical society of the world. We of course allude to the approaching meeting of the International Medical Congress in Philadelphia. The indications are that there will be a very large attendance on the part of the medical men of this country; and among the distinguished foreigners who have signified their intention of being present, we notice the familiar names of Virchow, Lister, Lauder Brunton, Ernest Hart, Leishman, Burdon Sanderson, Jaccond, etc. Among those who have been selected to deliver addresses upon special subjects, the profession of New Orleans has a worthy representative in the accomplished Professor of Physiology and Pathological Anatomy of the University.

I am, Sir,

Very Respectfully,

ALUMNUS OF THE UNIVERSITY OF LA.

EDITORIAL.

International Medical Congress.

The most important event affecting the medical profession of this country in our centennial year, is the meeting of the International Medical Congress at Philadelphia, September 4th to 9th. Quite a number of the most distinguished European physicians have given notice of their intentions to be present. In addition to the reports of committees announced in previous issues of this JOURNAL, a number of papers have been presented by the "reporters on questions assigned for discussion in the Sections." We regret that we can not afford the space for a recapitulation of the subjects of the papers and names of the various reporters. The Executive Committee have issued a circular, giving outlines of such papers as have been received. We suppose many of readers have had opportunities to see them. We have received the following circular with a request to publish it. We hope that many of our readers will be so fortunate as to be present.

The International medical Congress will be formally opened at noon, on Monday, the 4th day of September.

The sessions of the Congress and of its Sections will be held in the University of Pennsylvania, Locust and Thirty-fourth streets.

The general meetings will be held daily, from 10 to 1 o'clock. The Sections will meet at 1 o'clock.

Luncheon for members of the Congress will be served daily in the University building from 1 to 2 o'clock.

On Wednesday Evening, September 6th, Dr. J. J. Woodward, U. S. A., will address the Congress on the scientific work of the Surgeon-General's Bureau.

The public dinner of the Congress will be given on Thursday evening, September 7th, at 7 o'clock.

The registration book will be open daily from Thursday, August 31st, to Saturday, September 2d, inclusive, from 12 to 3 p. m., in the hall of the College of Physicians, N. E. corner of Thirteenth and Locust Streets, and at the University of Pennsylvania on Monday, September 4th, from 9 to 12 m., and daily thereafter from 9 to 10 a. m. Credentials must in every case be presented.

Letters addressed to the members of the Congress, to the care of the College of Physicians, N. E. corner Locust and Thirteenth

Streets, Phitadelphia, during the week of meeting, will be delivered at the University of Pennsylvania.

The Secretaries of State and Territorial Medical Societies are requested to forward without delay to the Chairman of Committee on Credentials, I. Minis Hays, M.D., 1607 Locust Street, Philadelphia, list of their duly accredited delegates to the Congress.

Delegates and visitors intending to attend the Congress are earnestly requested individually to notify immediately the same committee.

This information is desired to facilitate registration, and to insure proper accommodation for the Congress.

Members intending to participate in the public (subscription) dinner of the Congress will please notify the Secretary of the Committee on Entertainment, J. Ewing Mears, M.D., 1429 Walnut Street, Philadelphia.

Gentlemen intending to make communications upon scientific subjects, or to participate in any of the debates, will please notify the Commission before the 15th of August.

Philadelphia, July 20th, 1876.

Statistics of Injuries or Deaths by Lightning.

A short, but it is hoped, interesting report will appear upon this subject in our next issue. I deeply regretthat my circular calling for information, both upon this subject and that of malarial affections, has brought precious few responses. I am willing to confess that the fault is with myself, in framing the circulars in such a manner that they awakened no interest in the profession. But the failure is complete and humiliating. I hereby solemnly promise my professional brethren that in the future I will invest neither sentiment, nor time, nor money, in any similar experiment.

An American Dermatological Association.

The following circular will explain itself.

New York, July, 1876.

Dear Sir—At an informal meeting of the undersigned, held in Philadelphia, at the rooms of the Section of Practical Medicine, of the American Medical Association, Wednesday, June 7th, 1876, after the election of a chairman and secretary *pro tem.*, it was

Resolved, To call upon such American physicians as had evinced a special interest in *Dermatology* to unite in forming an AMERICAN DERMATOLOGICAL ASSOCIATION.

Resolved, That the meeting for organization be held in the University of Pennsylvania, *Philadelphia*, on Wednesday, September 6th, 1876, at 6 p. m., immediately after the close of the meeting of the Section of Dermatology and Syphilology, of the International Medical Congress, on that day.

It is sincerely desired that you will be present and aid in the organization.

Please signify your pleasure to the Secretary at the earliest opportunity, and oblige,

Very Truly Yours,

L. D. BULKLEY, *Secretary, pro tem.*,
1 East 33d Street, New York.
EDWARD WIGGLESWORTH, Jr., *Chair'n*,
Boston, Mass.
LOUIS A. DUHRING, Philadelphia, Pa.
LUNSFORD P. YANDELL, Jr., Louisville, Ky.
GEORGE HENRY FOX, New York.
J. E. ATKINSON, Baltimore, Md.

New Books.

As our last sheets are going through the press we have received from Lindsay & Blakiston, through R. G. Eyrich, of this city, the following books:

"The Theory and Practice of Medicine," by Frederick T. Roberts, M D., B. Sc., M.R.C.P., etc. The Second American from the last London Edition, revised and enlarged. Price, in cloth, $5; in sheep, $6. An octavo volume of 918 pages, which has been favorably criticised in a former number of the JOURNAL.

"A Manual of Midwifery," by Alfred Meadows, M.D., etc. Second American from the Third London Edition, revised and enlarged, with one hundred and forty-five illustrations. Octavo, 490 pages. Price, in cloth, $3 25. Studies, chiefly clinical, in the non-emetic use of ipecacuanha, with a contribution to the therapeusis of cholera, by Alfred A. Woodhull, M.D., Assistant Surgeon and brevet Lt. Col., U. S. Army. Price $2 00.

Also from Henry C. Lea, Philadelphia, "Playfair's Treatise on the Science and Practice of Midwifery," with two plates, and one hundred and sixty-six illustrations on wood.

These works are productions from the highest authorities of

the profession, and the outlay necessary to secure possession of them reduced to suit the times.

Uncharitable Doctors.

In one or more of the daily newspapers of this city, paragraphs have appeared, charging uncharitable conduct on the part of certain members of our profession. The publications do not designate the physicians thus accused, nor do they present their allegations in a very specific form. One of these charges is a a refusal on the part of our profession to visit a patient—of course a female patient and *in extremis*, otherwise a sensational item would be spoiled. While I know nothing whatever of the circumstances, or facts, connected with this case, it is fair to presume that the physicians simply exercised an undeniable right when they declined to assume charge of the patient. The physician and patient are merely parties to a contract, and either party may decline to enter into the contract for reasons satisfactory to himself. Another charge is more specific as to the nature of the misdemeanor, although still leaving us in the dark as to the identification of the perpetrator. A poor widow, with as indefinite a number of children as the wife of the martyred Rogers, became indebted to Dr. — (Shylock, perhaps). Her only means of earning a subsistence was by running a sewing machine. But this hard-hearted doctor took her "Singer" away, whereupon she could no longer sing the "Song of the Shirt," to a measure of time, Hood's seamstress never dreamt of. Either the doctor was an inexperienced idiot, for wanting possession of such an elephant as a patient's sewing machine, or the story is pure fiction; and we presume the latter to be the case. Hysterical, or otherwise prurient ladies, have sometimes a strange penchant for speaking ill of medical men who have violated no duty or obligation towards them. I believe it is for the most part customary with doctors to bear these acts of injustice in submissive silence. Their professional experience teaches them that moral obliquities sometimes depend upon physical disorders, and rather than resent the wrongs done them by patients, they are disposed, when smitten upon one cheek, to turn the other. Is it always best to demean ourselves in a manner so spiritless as to lead to imputation of guilt? Why should we not

romance, too, as well as others? Let us try our hand at it. There once lived in the city of New Orleans an excellent widow lady. This lady had two full-grown, well-educated and competent sons, and probably two grown daughters. This family received for three years, the professional services of a physician who does not claim to be either more or less benevolent than the great majority of his brethren. The most faithful and efficient services this physician was able to bestow, were given, by night or by day, without fee or reward. Not content with this, whenever opportunity was afforded to do a kindly office for any member of this family, the doctor hastened to its performance. The family testified their gratitude to the aforesaid doctor, by borrowing fifty dollars under assurance that it would be repaid in ten days. They afterwards removed to Texas, without either repaying the money or informing the poor Esculapian when, or where they were going. Some readers may not think this a pretty romance, since the moral points in an unusual direction, but to us it is personally rather *touching*. If any physician living in Houston, Texas, should imagine this to be either wholly or in part a *fiction*, he can be better informed by addressing the Editor of the NEW ORLEANS MEDICAL AND SURGICAL JOURNAL.

P.S.—He need not enclose a postage stamp.

OBITUARY.

Died suddenly, on Tuesday, August 15th, 1876, at 11:30 a. m., of pneumothorax, FRANCOIS RUIZ ALPUENTE, D.M.P, a native of New Orleans, aged 62 years.

A true lover of his profession, close observer, excellent diagnostician, and skilful accoucheur—such were the merits of this member of the medical corps of Louisiana, whose loss we are called upon to mourn.

His untimely death will be deeply felt by the profession, who not only lose a kind and unostentatious confrère, but also a most interesting and *original* treatise on obstetrics, based upon facts and observations of a large practice of nearly forty years. Dr. ALPUENTE had been engaged upon this book for the last three years. Let us hope that this work may yet be saved to the profession.

Y. R. L.

METEOROLOGICAL REPORT FOR NEW ORLEANS.

Table I---July.

Day of Month.	Temperature.			Mean Barometer Daily.	Relative Humidity—Daily.	Rain fall—inches
	Maximum,	Minimum.	Range.			
1	86	82	4	29.979	62	.50
2	86	81	5	30.001	58	.00
3	87	82	5	30.074	68	.00
4	86	81	5	30.093	63	.00
5	88	83	5	30.034	69	.00
6	88	83	5	30.015	68	.16
7	86	83	3	30.045	80	.70
8	85	82	3	30.065	81	.80
9	86	81	5	30.031	70	.00
10	88	82	6	29.545	69	.00
11	91	83	8	30.010	68	.00
12	88	84	4	29.845	72	.00
13	88	83	5	30.094	68	.00
14	88	83	5	30.022	63	.00
15	88	84	4	29.751	70	.00
16	87	81	6	30.027	65	.00
17	86	79	7	30.090	68	.00
18	87	83	4	30.090	65	.10
19	88	83	5	30.770	72	.00
20	88	83	5	29.786	68	.00
21	88	84	4	30 000	63	.00
22	88	84	4	29.769	76	.00
23	88	83	5	29.245	61	.00
24	89	84	5	29 865	72	.00
25	88	84	4	29 840	76	.75
26	87	80	7	29.905	81	.50
27	86	82	4	29 966	83	.33
28	86	82	4	29.923	86	.50
29	86	82	4	29.915	83	.60
30	87	82	5	29.827	74	.00
31	88	82	6	29.842	61	.00
Mean..						Total.

Table II---August.

Day of Month.	Temperature.			Mean Barometer Daily.	Relative Humidity—Daily.	Rain fall—inches
	Maximum.	Minimum.	Range.			
1	87	80	7	29.868	55	.00
2	85	81	4	29.877	60	.00
3	86	82	4	29.895	71	.00
4	86	82	4	29.867	81	.80
5	84	81	3	29.890	80	.25
6	85	81	4	30.057	78	.00
7	85	81	4	30.073	69	.00
8	84	80	4	29.990	79	.17
9	82	80	2	29.907	87	3.00
10	81	78	3	29.940	75	.25
11	83	79	4	30.000	70	.20
12	83	80	3	30.020	69	.00
13	84	80	4	30.000	70	.00
14	84	80	4	29 757	71	.00
15	85	81	4	29.980	76	.00
16	85	81	4	30.025	74	.00
17	86	82	4	30.055	60	.00
18	86	83	3	30.018	67	.20
19	87	82	5	29.980	76	.00
20	87	83	4	29.940	69	.00
21	88	83	5	29.935	68	.00
22	89	81	8	29.917	78	.00
23	86	82	4	29.946	73	.00
24	86	82	4	30.005	73	.00
25	87	82	5	29.990	68	.00
26	87	82	5	29.965	69	.00
27	88	82	6	29.957	67	.00
28	87	82	5	29.983	70	.00
29	87	83	4	29.980	68	.00
30	88	84	4	29 985	73	.00
31	88	84	4	29.980	70	.00
Mean..						Total.

Mortality in New Orleans from July 3d, 1876, to September 3d, 1876, inclusive.

Week Ending	Scarlet Fever.	Malarial Fevers.	Consumption.	Small-Pox.	Pneumonia.	Total Mortality.
July 9.....	1	0	15	3	3	125
July 16.....	1	4	18	3	2	141
July 23.....	0	4	13	3	1	109
July 30.....	0	4	17	5	6	119
August 6.....	0	3	12	2	1	100
August 13.....	0	5	15	4	5	92
August 20.....	1	6	17	0	2	105
August 27.....	2	3	19	0	2	106
September 3...	2	6	17	1	5	109
Totals.....	7	35	143	21	27	1006

THE

NEW ORLEANS

MEDICAL AND SURGICAL JOURNAL.

NOV., 1876.

ORIGINAL COMMUNICATIONS.

OCCLUSION AND DILATATION OF LYMPH CHANNELS.

BY SAMUEL C. BUSEY, M.D., WASHINGTON, D. C.,

Professor of the Theory and Practice of Medicine, Medical Department of the University of Georgetown; one of the Physicians to the Children's Hospital; Member of the Board of Advisory and Consulting Physicians and Surgeons, Columbia Hospital for Women and Lying-In Asylum; Physician to the Louise Home, etc., etc.

CHAPTER I.

Anatomy and Histology of the Lymphatic System.

Bibliography. Recklinghausen—Stricker's Manual of Histology. Klein—Anatomy of the Lymphatic System. Flint—Physiology of Man. Marshall—Outlines of Physiology. Köl-liker—Manual of Human Histology. Gray—Descriptive and Surgical Anatomy. Dalton—Treatise on Human Physiology. Küss—Lectures on Physiology; translation by Armory.

The thoracic duct is, excepting those vessels which terminate in the right thoracic duct, the common trunk of the lymphatic vessels of the body, and is the channel through which the chyle and the mass of lymph reach the blood. Commencing at the receptaculum chyli upon the body of the second lumbar vertebra, it ascends between the aorta and vena azygos major, through the aortic opening in the diaphragm, into the thoracic cavity, to the fourth dorsal vertebra; thence, inclining to the the left side, passes behind the aorta to the upper border of the

NOTE.—This essay will only refer to the acquired forms. A paper by the author, entitled Congenital Occlusion and Dilatation of Lymph Channels, will appear in the "American Journal of Obstetrics," commencing with the number for January, 1877. In that essay will be found all the congenital cases. To avoid repetition, references will be made in each paper to points discussed in the other.

seventh cervical vertebra, and curving downwards from this point, terminates in the left subclavian vein, near the junction of the left internal jugular. At its beginning its diameter is about equal to that of a goose quill, diminishes in the middle of the thoracic cavity, and again enlarges before its termination. It is flexuous in its course, varicose in appearance, and is supplied with numerous valves, which are placed at shorter intervals in the upper than in the lower portion.

The right duct, about one inch in length and not exceeding a line and a half in diameter, receives the lymph from the right side of the head and neck, the right upper extremity, the right side of the heart, right lung, right side of the thorax, and from the convex surface of the liver. It terminates at the junction of the right internal jugular and right subclavian veins.

Each of these ducts is provided, at its termination, with a pair of valves with their free borders towards the veins. The left duct receives, at its commencement, several large trunks from the abdominal glands and also the trunk of the lacteal vessels, and along its course numerous connecting branches. Near its entrance into the subclavian vein it receives the trunk from the left side of the head and neck, and from the left thoracic extremity.

Each duct is composed of three coats: the internal consist of a layer of endothelium, resting upon an "elastic reticulated membrane, longitudinally fibrillated;" the tunica media is composed of transverse smooth muscle and transverse elastic fibres; and the adventitia consist of connective tissue, with elastic fibres and muscular fasciculi.

Connecting with these two central trunks, are two sets of vessels, which anatomists have denominated the superficial and deep-seated lymphatic vessels. The former are located in the subcutaneous tissue, accompanying the superficial veins, and in the sub-mucous and sub-serous tissues. The deep-seated vessels, fewer in number and larger than the superficial set, accompany the deep blood-vessels. Between these two sets of vessels, as between the vessels of each set, there is very free anastomosis, and by vessels of equal calibre with those connected, the continuous vessel remaining the same. But more properly, the entire lymphatic system should be divided into two sections; the first, in the language of Recklinghausen, containing the fluid, "immediately after it escapes from the blood-vessels, circulates

around the several elements of the organs, the interstitial spaces; and, secondly, the system of efferent canals, the proper lymphatic vessels." These efferent canals, agreeing ordinarily in form, arrangement, and structure with the blood-vessels, are only found in association with such vessels, being most abundant where the blood-vessels are most numerous. For the purposes of a more accurate description, these efferent vessels may be divided into capillaries, and the larger vessels which issuing from the several organs unite and form the main trunks.* These larger vessels are provided with three coats: "the tunica intima [Recklinghausen], very rich in elastic fibres and lined by a single layer of tesselated epithelium; a tunica media, consisting exclusively of muscular elements; and a tunica adventitia, composed of connective tissue." The walls are thinner than those of the arteries, but are, in thickness, proportionate to their calibre, more like the veins. Like the thoracic duct, they are provided with numerous valves, usually semi-lunar in shape, formed by the duplicatures of the inner coat, and attached by their convex edges to the walls of the vessels, the free borders being in the direction of the course of the fluid contents.

Valves are less numerous in the vessels of the head and neck than in other parts of the body,† and more abundant in the superficial vessels, than in those situated between muscles, and are placed at shorter intervals in all the vessels the nearer they approach the glands. Usually there are two valves placed opposite each other, but there are many irregularities. Immediately above the valves the vessels are wider, which gives to the vessels, when distended with fluid, a "varicose or moniliform appearance."

Lymphatics are very abundant in the lungs; beginning in the walls of the air cells, they surround each lobule with a plexiform arrangement. More recent investigations (Schultze, Buhl, Rindfleish,) have established the existence of a "lymphatic endothelium spread out upon the inner surface of the alveolar walls," and traced communication (Sikorsky) between the cavity of the alveolus and the lymphatic plexus existing in its wall, thus permitting the direct entrance of gases into the alveolar plexus of

* Flint divides the lymphatic system into three sets of vessels: the plexus situated on the general surface, the deep vessels, and the lacteals.

† Valves "are found more frequently in the lymphatics of the neck and upper extremities than in the lower."—Gray, loc. cit., p. 482.

lymphatic vessels. The lymphatics of the lung (Buhl,) from their finest origin in the alveolar walls, follow the course of the bronchial arteries and run as interlobular, interstitial and peri-bronchial branches, to collect at last," either in "the sub-serous pleural envelope," or in the root of the lung.

In the ductless glands, in the liver, kidneys, testicles and ovaries, lymphatics are very numerous.

The lymph from the iris and ciliary processes is collected in the anterior chamber of the eye, and has its outlet through a channel communicating directly with the canal of Petit. "These passages, including the lymphatics of the conjunctiva and the canaliculi of the cornea," Schwalbe designates the anterior lymphatics of the eye.* Lymphatics of the conjunctiva were discovered by Arnold and described by Teichman. Schwalbe doubts the statement of Lightbody, that the "capillaries of the corneal margin are surrounded by lymphatic sheaths."

Robin claims to have first recognized spaces around the vessels of the brain, and His, a peri-vascular canal system, which both observers described as lymph courses. Robin recognized an external boundary membrane, which he held to be the adventitia of the vessel, and maintained that the blood capillaries of the brain are partly surrounded by lymphatic sheaths, the coats of the latter being adherent to the walls of the blood capillaries; thus a portion of the wall of the latter is common to both kinds of vessels. His made the basic substance of the brain the outer wall of the lymph courses. Obersteiner, jun., failed to discover the adventitia described by Robin, and could only recognize as the external wall of the peri-vascular lymph courses the basic substance of the brain strengthened into a thickened zone. Roth insists that the radiating fibres, which form the wall of the vessels, traverse the lymph spaces and penetrate into the substance of the brain. His and Obersteiner hold that a communication does exist between the epicerebral space and the perivascular lymph courses, the latter claims to have filled the perivascular lymph courses from the epicerebral space, and, furthermore, to have demonstrated the existence of other tracks for the lymph, which consist in spaces around the ganglion cells of the brain, which he denominates pericellular lymph cavities. In the accompa-

* "Repeatedly already I have vindicated my far older claim from the year 1851 (this Archiv., Vol. viii., p. 445), but, strange to say, in vain." Virchow, Vol. lv., p. 318, Virch. Archiv.

nying figure he exhibits a portion of an injected perivascular cavity, upon which the only partly injected pericellular [Fig. 1] cavities hang like grapes upon their stem. An epithelium exists upon the inner surface of these lymph courses. Fleische demonstrated upon the surface of the brain, as well as upon the wall of the epicerebral space, a delicate membrane-cuticulum cerebri, and Obersteiner found, under certain conditions, in the lymph cavity, lymphoid corpuscles more or less numerous.

[Figure 1.]

Obersteiner* believes that conditions similar to those described surrounding the ganglion cells exist in the medulla spinalis; "but that the adventitia of the vessels in the medulla spinalis possess a greater independence, so that frequently it is met with as an entirely free hollow cylinder, which floats towards the outside in the perivascular lymph cavity, towards the centre in a space, destined also, perhaps, for the lymph, and which surrounds the vessel proper."

The lymphatics of the uterus have their origin in the lymph spaces between the bundles (Leopold, Tilt) of the connective tissue frame-work of the lining mucous membrane, and in the inter-muscular connective tissue of the muscular structure. In the muscular layers both vessels and spaces are found most numerous in the external layer and along the larger blood-vessels in the other layers. Lymphatics are especially abundant in the cervix and in the muscular tissue about the internal os. The inter-muscular lymphatics are connected with the lymph spaces of the mucous membrane, and the vessels from the uterine tissues unite in the external layer, forming large channels on the sides of the body of the womb, which following the course of the blood-vessels, extend to the broad ligaments, and receive branches from the lymphatics of the ovaries, oviducts, cervix, vagina and labia. The labial lymphatics also send branches to the inguinal glands. The lymphatics found under the serous covering of the uterus are connected by anastomosing branches with those of the deeper parts, and form large networks which cover the anterior and posterior uterine surfaces,

*Virchow's Archiv, Vol. lv. 1872, p. 318.

the Fallopian tubes, and are provided with large varicosities about the insertion of the tubes. Championière has discovered one or more small glands in the midst of these lateral plexuses, situated nearly opposite the os internum. The lateral plexuses also communicate with the glands in the broad ligaments. The lymphatics of the unimpregnated womb are studied with very great difficulty, but they are so enlarged during pregnancy and certain morbid conditions of the pelvic viscera, that ample opportunities have been presented for tracing their anatomical distribution and connections.*

The lymphatics of the skin (Biesiadeckit) consist of vessels and spaces—the latter being the tissue interstices which are filled with a serous fluid. The lymphatic trunks situated beneath the skin in the cellular tissue anastomose freely, and form under the corium a double network, one external to the other. The outer network lies beneath the external vascular capillary plexus, and the inner under the deeper blood vascular plexus. These lymphatic networks are connected by anastomosing vessels, and in the walls of the inner capillary network, elastic fibres are found. The connection of the serous interstices or lymph spaces of the corium with the lymphatic vessels proper has not been demonstrated. Neumann claims that the lymph capillary systems of the integument are closed canals without stomata, unconnected with open spaces, and that the inner plexus of lymph capillaries is supplied with valves and are abundantly supplied to the hair and sebaceous follicles, to the fat, to the sweat glands, and also richly distributed through the connective tissue. Biesiadecki denies that the papillæ of the skin in a normal condition are supplied with lymph vessels. Teichman, however, holds the opposite view, but admits that the central vessels of the papillæ in the normal skin, never reach entirely to the apex of the papillæ, sometimes forming only a slight projection into the bases of the papillæ, and at other places the lymph vessel extends half way the height of the papillæ, but that every papilla is not provided with a central lymph vessel. When found they are derived from the outer network. In the skin of an elephantiatic leg he found, with few exceptions, the papillæ supplied with lymph vessels, extending generally from $\frac{2}{3}$ to $\frac{3}{4}$ their length, greatly enlarged, and usually dividing near the base of the

*See address by the author, Trans. Amer. Med. Association, vol. 27, 1876.
†Stricker's Manual, p. 546.

papillæ into two vessels, which emptied into the superficial network.

The accompanying cut [Fig. 2] (from Teichman*) illustrates these conditions.

[Fig. 2.]

"Perpendicular section through the integument of the sole of the foot affected by elephantiasis: aa, the cul-de-sac-like starting points of the lymph vessels in the enlarged papillæ; b, vessels of external layer; c, vessels of internal layer. The vessels of the internal layer are collapsed, their dimensions are not therefore corresponding to their width."

Odenius, in a case of lymphorrhagic pachydermia, in which the vesicular formations were confined to the inner aspect of the left thigh, about six inches above the knee, found distinctly marked open ducts leading through the bases of the papillæ into the superficial lymph network, and beneath the surface of the cutis he found "wide, canal-like caverns or cavities," from which branches passed upwards towards the papillæ and downwards into the cutis. The arrangement of the lymph track differed from that given by Teichman, in that, a majority of the canals running deeper into the tissues, as well as a portion of those running horizontally, presented equal contours and a rounded form, while others possessed an irregular, angular, sinuous boundary, and a lumen irregularly enlarged. The exuded fluid presented all the characteristics of lymph, with an unusually large amount of fat. These observations of Teichman and Odenius,† so contradictory to the generally accepted opinion, that the skin papillæ are wanting in lymph vessels, suggest the inquiry whether the central lymph vessel of a papilla, when found, is a newly formed or preformed vessel. Odenius found the papillæ, for the most part, which did not participate in the

* Das Saugadersystem, p. 62. Leipzig, 1861.

† Deutsche Klinik. 1874, p. 385.

vesicle formation, "small and without any sign of a cavity," even in their bases, but in certain isolated cases he recognized tracks or sinuses extending from the superficial lymphatic network more or less into the papillæ, which he claims represent the first stage of vesiculation, and corroborates the ordinary supposition that the central lymph vessels of the papillæ, when found, are newly formed vessels, and insists that the "horizontal canals which pass upwards towards the papillæ are mere excavations in the tissue, and not dilated preformed vessels." The lymph spaces acquire a free communication with the lymph vessels proper and afford efflux to the advancing fluid, which as the dilatation of the cavities progresses through the papillæ, forces its way into the epidermis and collects into vesicles. In this manner Odenius would account for the varying development of the central lymph vessel of a papilla, sometimes extending entirely through a papilla and terminating in a vesicle, at other places simply presenting a pouch-like projection into the base, the differing gradations of development depending upon the duration of the morbid process.

It cannot be doubted that the vesicle formations in the case of Odenius were directly connected, through open canals, with the lymph vessels, for the vesicles characterized themselves as true lymphangiectasiæ, and the exuded fluid exhibited chemically and microscopically the unmistakable and essential constitution of lymph, but it cannot be maintained that all vesicle formations, even when presenting all the evidences of a lymphatic origin and connection, are the terminal, ampullar dilatations of newly formed vessels, which have, by a gradual and continuous development, penetrated the skin papillæ, or that they bear any anatomical relation whatever to the papillæ. In many cases, perhaps in most, they are true ectasiæ of the vessels of the superficial network of lymphatics.

The lymphatics are very delicate vessels, with walls very distensible and so translucent that the contained fluid can be easily seen. They are very variable in structure and arrangement, even in different parts of the same animal. Variability is, however, more frequent in the capillaries, which in man are tubular, and occasionally provided with sacciform dilatations, which are sometimes so arranged as to form a kind of valve.

Sœmmerring and others of the older anatomists insist that the

tubular system of lymph vessels is proportionally larger in large animals; that is, that they are necessarily larger in a giant than in a dwarf. Sappey, however, maintains that the lymph ducts are proportionately larger in the infant than in the adult, and Jacobi (*Am. Jour. Obs.*, vol. ii. p. 653) claims they are larger and more numerous in the child.

The investigations of Recklinghausen and Klein have, perhaps, finally determined the structure and mode of development of the capillary lymphatics. Various opinions have been advanced in regard to the existence of a limiting membrane. Brücke formerly held that the central chyle capillaries did not possess any limiting membrane, and Kölliker (loc. cit., vol. ii., p. 3) held that a structureless investing wall did exist. Frey and Teichman maintain that the lymph capillaries are completely closed. More recently, however, Frey has claimed that the lymph capillaries, unlike the blood capillaries, are fused with the surrounding tissue. Recklinghausen has demonstrated the presence of a tesselated epithelium in lymph channels, but denies the existence of a special wall in the open interstices to which he traces the origin of the capillaries.

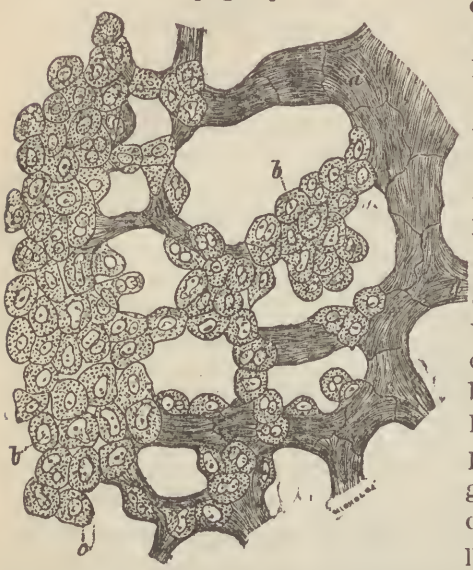
The recent investigations of Klein into the anatomy and histology of the lymphatic system of the serous membranes are so interesting and instructive, and bear such an important relation to the study of the nature and pathology of various affections of the lymphatics, that I must be pardoned for attempting to reproduce his views and conclusions.

In his description of the endothelium of the free surfaces of the serous membranes, Klein dissents from the generally accepted opinion, that it is simply a layer of flattened more or less hyaline cell plates, and holds that in many places there may be found, more especially upon the larger trabeculæ which contain blood-vessels and fat tracts, individual cells and varying-sized groups of cells, polyhedral, club-shaped or columnar, possessing a granular substance, a nucleus either constricted or divided, and a large shining nucleolus. These forms of cells Klein denominates young or "germinating endothelial" cells, to which are usually attached, by a protoplasmic stalk, cells with a divided or constricted nucleus, and also other cells, not unlike lymphoid cells; attached or in process of separation.

"The accompanying figure [Fig. 3], from a silvered preparation

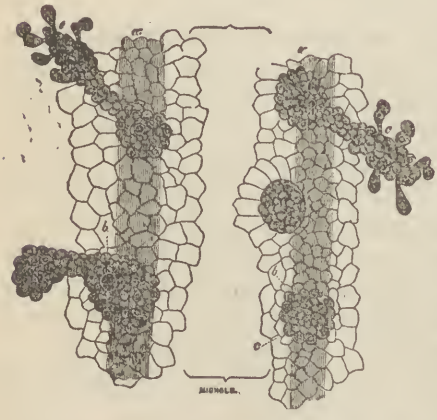
of the fenestrated portion of the omentum of a guinea pig suffering from chronic peritonitis," exhibits at a, thin trabeculæ covered with common flat endothelium; b, abundant germination of endothelium, springing off from the surface of a larger trabecula, c, and continuing on the smaller trabeculæ. (From Klein, fig. 13.)

[Fig. 3.]



These germinating cells are sometimes provided with cilia, and have been observed to perform amœboid movements; they proliferate with marked rapidity, and produce in great abundance lymphoid cells. Occasionally they present the appearance of granular, bud-like bodies, springing from the common endothelial plates.

[Fig. 4.]



[Fig. 4.] "Peritoneal surface of a silvered preparation of a centrum tendineum of a guinea pig which suffered from chronic infect. peritonitis (artificial tuberculosis). (From Klein, fig. 8.) a a a a indicate the straight lymphatic vessels between the tendon bundles; b represents stomata which are plugged up by a substance which has become darkly stained by the reagent (fibrinous plug); the endothelium which surrounds the stomata is in a state of intensive germination, forming buds and villi, freely

projecting over the surface; on the latter ones cells are seen to be in the state of detaching themselves by constriction (lymphoid cells).

The cells of the common endothelial plates do not always touch each other. In such places, with its body filling the interspace and its processes stretching between the individual cells, are found branched cells, varying in size, shape, and in the character of their nuclei and processes. Sometimes the body of the branched cell lies beneath the endothelium and stretches its granular processes between the superficial cells.

[Fig. 5.]

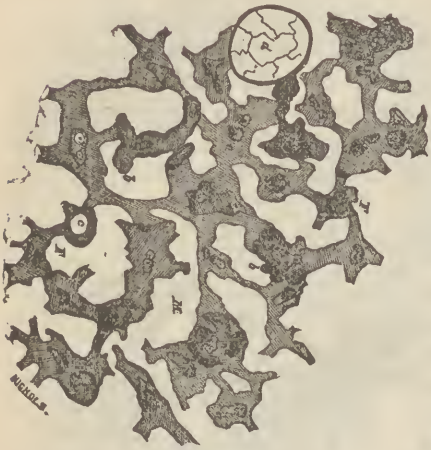
[Fig. 5.] "From a silvered preparation of a pencilled mesentery of an ape suffering from chronic peritonitis (Klein, fig. 19). M, connective tissue matrix not represented; a, the lymph canalicular system, with its corresponding branched cells; b, large migratory cells which lie in the l. c. system beside the branched cells.

It is, however, in the structural organization of the ground substance of serous membranes that the important histological relation of the branched cells to the lymphatic system is to be correctly and definitely traced. In the omentum of the rabbit are found isolated opaque patches, and opaque tracts variable in size and formed by the coalescense of patches, and forming, by intercommunication, a network. These tracts, to which other patches are laterally situated, usually follow the course of the larger blood capillaries. Isolation of patches belongs to youth, confluence advances with age. Hence there is continuous new formation of patches and a continuous coalescense into tracts. In the patches, whether confluent or isolated, however small, are recognized brownish structures which contain larger or smaller brownish granules, an ovoid sharply outlined nucleus with a nucleolus, or a constricted nucleus, or a few small nuclei.

[Fig. 6.] "From a pencilled silver-stained normal omentum of

a rabbit, representing a young patch, the ground substance of which, M, is unstained. (Klein, fig. 30.)

[Fig. 6.]



"a, The lymph canalicular system, with the corresponding branched nucleated cells.

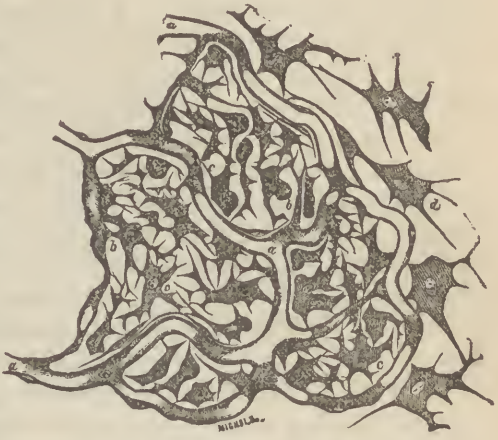
"b, Migratory cells, either perfectly detached from those branched cells or in a state of growing from them.

"c, Vacuolated element, which is a mere knob of a branched cell. In a, the vacuolation has gone so far that a vesicle is formed, the wall of which has differentiated in endothelial plates, (development of a lymphatic vessel) at F division of the branched cells."

These brownish cells are irregular in shape and size, with bodies beset with blunt prominences, always larger than white blood corpuscles, but resembling migratory cells in shape. There are also to be found in such patches granular corpuscles, with one or two nuclei, and very like lymphoid cells, in some places resembling knobs in process of separation from the brownish cells. Besides these cell elements, the ground substance is occupied, to a greater or lesser extent, by a finely granular (a, fig. 6) network, which consists of plate-like enlargements (represented by the granular parts of the figure), containing a nucleus with one or two nuclei, or a constricted or divided nucleus. This network represents the branched cells of the ground substance connected by their granular protoplasmic processes, some of which are in process of division (as at F), and from which grow (b) other granular elements. A young non-vascularized patch is made up of its connective tissue matrix (M) and granular protoplasmic branched cells, with their cell-element contents. In a vascularized patch nearly the entire "matrix is occupied by a network of finely granular nucleated cells (c, fig. 7), which network is in communication with the isolated branched cells (d, fig 7).

[Fig. 7.] "From a silver-stained preparation of normal omentum of a rabbit, representing a vascular patch, the ground substance of which has remained unstained, whereas the very rich network of the branched cells (c) has become very distinct. (Klein, fig. 29.)

[Fig. 7.]



"a, Capillary blood-vessel. At b, their connection with the branched cell of the ground substance; these places represent at the same time where young capillaries are formed. c, Branched cell of the matrix; d, similar ones of the ground substance of the neighborhood of the patch."

In such a vascularized patch, when the connective tissue matrix is stained and the branched cells are unstained, a system of clear lacunæ, communicating by finely granular branched or unbranched canaliculi, becomes apparent: the lacunæ represent the spaces in which lie the branched cells and lymphoid corpuscles. The ground substance of serous membranes is thus mainly composed of finely granular nucleated protoplasmic cells—the lymph canalicular system of Recklinghausen, the bodies of the branched cells occupying the lacunæ and their processes the canaliculi.

Sometimes there are superficial groups of lacunæ, or rather of branched cells, resembling groups of endothelial plates branching out. There may also be found patches, more or less vascularized, in which the matrix, besides containing a few lymphoid cells, is nearly supplanted by branched cells crowded together, which is, perhaps, the result of multiplication by constant division—thus contributing to the growth of the patch. Such patches are not unlike the others in structure, but are farther advanced in the process of development. Another variety of patches consists in a network of capillary blood-vessels, between which are a number of lymphoid corpuscles held together in a reticulum of

branched cells, similar to the reticulum of adenoid tissue. The lymphoid cells, which lie with the branched cells in the lymph canalicular system, and which are found in all sizes between a rounded nucleus surrounded by "a zone of protoplasm up to cells which are twice as large as a colorless blood corpuscle." are derived from the branched cells of the ground substance.

It thus becomes manifest, that in the omentum of the rabbit there are found two lymphangial structures.

"1st. Patches, the matrix of which consists of groups of ordinary, more or less flattened, more or less branched cells, which on the one hand multiply by division, in which way the patch increases in size, and from which, on the other hand, grow up lymphoid cells. The branched cells lie in the lymph canalicular system, together with the lymphoid cells. At an early stage of development these patches do not contain a special system of blood capillaries; at a later period they possess a special rich system of mostly capillary blood-vessels. By growing in length these patches join so as to form whole tracts."

"2d. Patches and tracts, the matrix of which consists of a reticulum, the meshes of which contain a variable number of lymphoid corpuscles; they are generally provided with more or less abundant blood-vessels."

Similar structures are to be found in the omentum of the guinea pig, cat, dog and monkey, which in like manner form tracts, which, by growing in thickness, form nodules, and by coalescence, cords, the larger ones being provided with blood-vessels, and may either follow the course of the blood-vessels or be isolated. As in the omentum of the rabbit, the ground substance contains more or less branched cells, with oblong nuclei, which in some nodules are crowded together and joined by shorter or longer processes, forming a network and corresponding to the lacunæ of the lymph canalicular system. The nearer the cells are to the border of the tracts or nodules, the more they are branched; consequently, in the central part of a nodule the lacunæ may communicate by very short canaliculi, corresponding in length with the protoplasmic processes, or may touch each other. Sometimes nodules are found elongated and consisting of a reticulum of branched cells, the meshes of which are filled with lymphoid corpuscles; and, finally, nodules are found with a rich system of blood-vessels, between which is found a reticulum of branched cells, the meshes of which are filled with

a fluid, or with lymphoid cells either separated or growing from the branched cells.

In all these nodules, as in the tracts in the omentum of the rabbit, are found migratory cells, either resembling lymphoid corpuscles, or which are large and coarsely granular; sometimes having a distinct continuance with the branched cells; sometimes growing up like knobs and becoming separated from the branched cells; sometimes the nucleated knob projects from a reticulum of branched cells, or is only raised from the branched cell by a more or less deep furrow, or is connected with it by a thin pedunele; and, again, the meshes of a reticulum of branched cells may be filled with lymphoid cells. From these observations Klein concludes that the lymphoid corpuscles are the offspring of the branched cells. These views differ from those of Knauff and Recklinghausen, in that the lymphangial tracts and nodules are not mere accumulations of lymphoid corpuscles; and from those of Burdon Sanderson, in that they are not mere tracts of adenoid tissue.

The anatomical relation of the lymphatic and blood capillaries is peculiarly interesting. The very beautiful delineation by Recklinghausen seems adequate to the fulfilment of all the requirements of normal nutrition, and furnishes very ready and plausible explanations for very many obscure and apparently inexplicable morbid phenomena, but in view of the more recent researches of Klein, his demonstration cannot be accepted as complete and entirely satisfactory. Recklinghausen (Strieker, p. 218) says, the larger lymphatic vessels are always situated in close proximity to the blood-vessels, whereas the capillaries are located in the meshes of the blood capillaries—thus most remotely located from the latter. This arrangement, he insists, subserves to the fullest extent the purposes of drainage; for as the fluid from the blood capillaries must reach the lymph capillaries, it follows that it must traverse the entire tissue; hence every part of the intervening tissue must be washed by the fluid flowing towards the lymphatic capillaries, and thus a constant interchange of fluid is going on. If, on the contrary, the two classes of capillary tubes were in immediate proximity, no such constant current and interchange of fluid could take place through or about the tissue elements, and stasis might occur in the remote parts. And furthermore, in the mucous and serous membranes, and in the skin, the lymph capillaries occupy a

deeper locality than the blood capillaries; in the villi of the small intestines the chyle capillaries lie in the central axis, while the blood capillaries lie in the peripheric tissue layer; and Teichman has shown that the lymph capillaries lie in the centre of the papillæ of the cutis, while the blood capillaries are upon the periphery, just beneath the epithelium.

Klein has very minutely investigated the anatomical relation of these vessels in the serous membranes, but does not suggest that there is any absolutely invariable or uniform arrangement. He describes the lymphatics in the omentum and pleura-mediastini of the rabbit as sometimes coursing along both sides of groups of blood capillaries, and again, running independent of such vessels; in the latter manner chiefly in and about lymphatic patches. When accompanying blood-vessels they are much larger, have a sinuous endothelium, possess valves and a corresponding sacculated dilatation. When coursing apart in the tissues, though not unlike the others in calibre and having a sinuous endothelium, they are without valves, but provided with sinus-like dilatations. This latter class only does he regard as capillaries. In some places a single lymphatic, usually of that variety having a sinuous endothelium, may be accompanied on both sides by a vein, and occasionally, also, by an artery, or the blood-vessel may run between two lymphatics, which connect by anastomosing branches. Recklinghausen refers (loc. cit., p. 217) to a form of "lymph tubes accompanying blood-vessels, and not unfrequently with regular sheaths, which partially or wholly surround them." Klein describes three varieties of invaginating lymphatics. In one form the vein and its branches are included up to its entrance into a larger trunk; in a second form, the vessels separate before reaching the larger trunk; and in the third form, the invaginating lymphatic very suddenly acquires an extensive dilatation, through which the blood-vessel penetrates.

[Fig. 8.] "Silver preparation of a pencilled omentum of a rabbit. (Klein, fig. 40.)

"a, Capillary blood-vessel.

"c, Lymphatic capillary vessels showing endothelium; the blood-vessels are invaginated in these lymphatics.

"d, Branches of the lymphatic vessel, which are in communication with the lymph canalicular system of the ground substance.

"f, The lymph canalicular system of a lymphatic patch, which system is also in communication with the lymphatic vessel at g."

Figures 8 and 9 exhibit other forms of invagination.

[Fig. 8.]

The relation which the blood-vessels bear to the lymphatics in the structure and formation of lymphangial nodules and tracts is also peculiarly interesting. Those tracts and nodules resembling adenoid tissue, and those vascularized nodules and tracts in which the spaces of the matrix are subdivided by a reticulum of branched cells, the meshes of which are filled with a fluid containing a few lymphoid corpuscles, are developed within the lymphatic vessels, and denominated endolymphangial nodules or tracts. Such perivascular lymphatics present themselves in one or more forms; as a large tube, with sinuous endothelium, including a portion of a vein, and terminating in a sacciform dilatation which includes the venous and arterial capillaries, thence loosing itself where the artery ceases in a lymph canalicular system, which accompanies the artery; or such lymphatic tube accompanies a vein and terminates in a blind sacciform dilatation, in which the venous capillaries hang like "the glomerulus of a malpigian corpuscle of the kidney." The latter form is the more frequent, because lymphatics more frequently accompany than invaginate a vein. The outer wall of all invaginated blood-vessels has an endothelial covering, resembling the endothelium of the lymphatic capillaries.

[Fig. 9.] "Fresh preparation of an œdematous omentum of a guinea pig suffering from chronic peritonitis. (Klein, fig. 43.)

"a, A venous capillary vessel filled with blood.

"b, An invaginating lymphatic vessel.

"c, Outer endothelial wall.

"e, Inner (covering the blood-vessel) endothelial wall of the lymphatic vessel.

[Fig. 9.]

"d. Endolymphangial reticulum, which is continuous with the endothelial wall of the lymphatic vessel. In this way endolymphangial nodules and tracts are formed."

In the angle formed by the bending of the vein (fig. 9) and between the wall of the lymphatic (c) vessel and the outer wall of the vein (e), is a reticulum formed by branched cells connecting the walls of the blood and lymphatic vessels, which exhibits the mode of formation of an endolymphangial tract or nodule, which may grow and extend, even beyond the walls of the lymphatic, into the surrounding tissue, and become richly supplied with a blood capillary system.

[Fig. 10.] "From same omentum as fig. 9. (Klein, fig. 50.)

[Fig. 10.]

"a, Vein.

"b, Artery.

"c, Capillary.

"d, A lymphatic vessel, in which the whole system of blood-vessels is invaginated.

"e, Reticulum of nucleated branched cells growing from the endothelial wall of the lymphatic vessel into the cavity of the vessel."

The capillaries lie in a lymph sac, in which (e) is seen branched protoplasmic bodies extending from the endothelial outer wall of one capillary to the wall of another and neighboring capillary, forming a reticulum resembling adenoid tissue, in the meshes of which lie lymph corpuscles.

Thus the lumen of a sac or of a vessel may be divided into a number of spaces and finally be transformed into a cavernous or sinuous structure.

Those nodules, tracts and cords, which are formed by the simple accumulation of germinating endothelium on the surface, and by the accumulation of lymph canalicular systems, are developed outside of lymph vessels, and denominated perilymphangial structures. The accumulation of lymph canalicular systems may be formed by the joining together of the lacunæ, or by the fusion of groups of the spaces of the lymph canalicular systems.

It thus appears that some parts of the free surfaces of serous membranes are covered with germinating endothelium, and other parts with lymphangial structures corresponding with the cortical and medullary portions of lymphatic glands. In each of the parts lymphoid or white blood corpuscles are developed, and consequently serous membranes may be regarded as blood-producing organs.

The important question now presents itself, what relation do these tracts, nodules and cords, bear to the lymphatic vessels? Do the tubular vessels terminate cæcally, or communicate directly with the tissue interspaces? Virchow and Donders have advanced the theory that the stellate connective tissue corpuscles, which are intercallated between the blood and lymph capillaries, constitute the channel of the fluid transuded from the arterial capillaries. Mascagni, and since, Fohmann concluded that the tissues were composed entirely of lymph vessels and connective tissue trabeculæ. This view Brücke also maintains. Recklinghausen traces the lymph capillaries to the serous canalicular spaces which traverse the masses of connective tissue and form direct communication with the tubular vessels; and, though not provided with a special wall, are not mere fissures between the components of the tissues, but the interstices of the fibrous fasciculi. The capillary vessels (Recklinghausen) begin where the epithelial lining commences. Kölliker traced the lymphatic capillaries to cæcal terminations, which send out prolongations ultimately connecting with similar prolongations from formative cells. Neumann insists that the lymph capillaries of the integument are closed canals, unconnected with the intercellular connective tissue spaces. Whatever differences of opinion exist, all histologists are agreed that the origin

of lymph vessels is in intimate relation with the connective tissue cells and fibres. Klein's researches are much more satisfactory. He traces the blood and lymph capillaries to the nucleated branched cells of the lymphangial structures, but maintains that the two processes of development are essentially different.

The lymphatic capillaries are formed by the vacuolation and vesiculation of the branched lymph canalicular cells and of the buds which spring from (fig. 6) these cells. In every such nodule or patch there are found a number of vacuolated cells and vacuolated buds springing from branched cells (c, fig. 5; b, fig. 7), in which the vacuolation continues to increase until the protoplasmic body is transformed into a vesicle (d, fig. 6) which finally becomes distinctly differentiated by endothelial cells. These vesicles may arrange themselves in groups or in linear series, or may become connected by protoplasmic process, corresponding with the processes of the branched cells, and, either by fusion or by the extension of the process of vacuolation through the connecting processes, unite with each other; and by similar vacuolated processes communicate directly with the lumen of an existing capillary vessel—thus extending the tubular system of vessels, or forming sinuses and dilatations by lateral connections with the walls of existing capillaries. Hence "there can be no doubt whatever . . . that the lymphatic vessel . . . loses itself (Klein, loc. cit., p. 36) in reality in a labyrinth of spaces, which consists of lacunæ with uniting canals, representing the lymph canalicular system, and, that the endothelial plates of the lymphatics are continued as branched cell plates." Klein thus accepts the views of Recklinghausen, adding the fact of the continuity of the endothelium of the tubular system with the endothelium of the canalicular system, and traces the direct connection of the two systems through the fusion of the endothelial vesicles, which are formed by the conversion of the canalicular system.

Küss erects the lymphatic system into a cone, with its summit at the left subclavian vein and its base at the epithelia, and considers the loose cellular tissue as a "vast chambered lymphatic sac, communicating directly with the lymphatic vessels." It seems generally conceded that the lymphatics communicate with lacunæ of the connective tissue, but it is yet in doubt whether their origin is intracellular or intercellular. Virchow traced their ultimate termination in the connective tissue cor-

puscles or plasmatic cells, which probably correspond with the lacunæ of Recklinghausen.

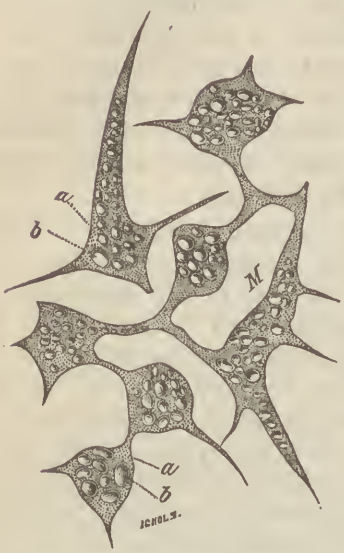
The walls of newly-formed blood capillaries are protoplasmic, and the vessels are formed (Klein) from previously existing capillaries by continuous excavation of the branched cells attached to their walls (fig. 7), and, also, from isolated lymph canalicular cells by vacuolation and immediate fusion with the lumina of capillary vessels. The vacuolation does not, however, proceed to vesiculation, but elongates towards existing capillaries or branches in process of hollowing out.

Notwithstanding the formation of both systems of capillary vessels is traced to developmental processes originating in the branched cells, which are also engaged in the production of lymphoid and white blood corpuscles, Klein does not claim any direct communication between the two systems of capillaries. Recklinghausen, however, considers "it very possible (loc. cit., p. 232) that the serous canals may stand in the same open continuity with the blood-vessels as with the lymphatics." Views somewhat similar have been advanced by Virchow, Kölliker, and Arnold, though recently Tarchanoff has denied any such communication. Assuredly such a communication has not been demonstrated, but many circumstances indicate the ultimate confirmation of Recklinghausen's suggestion.

Klein regards the perilymphangial structures as the analogues of the fat tissue, and traces the similarity in structure and development of the fat tissue and the perilymphangial structures. He insists that the branched cells of the vascularized tracts and nodules may be transformed into fat cells, and that the tracts and nodules may be converted into fat tracts and fat nodules, but that the fat tracts and perilymphangial structures stand in opposite relation to each other, that is, the greater the number of the latter the fewer the fat tracts, and vice versa. Nor is this tendency of the lymphangial structures to be converted into fat tissue uniform in all animals or in different serous membranes of the same animal. Differing with other histologists, he maintains that the transformation of the lymphangial structures into fat tissue is not by conversion of the lymphoid cells, which are in part the offspring of the branched cells of the matrix, but that the fat cells are transformed branched cells; and, consequently, with the increase of the number of fat cells

there occurs a marked diminution in the number of lymphoid cells.

[Fig. 11.]



[Fig. 11.] "From the mesentery of an ape suffering from chronic peritonitis. (Klein, fig. 21.)

"a, Enlarged branched cells of ground substance, filled with fat globules b.

"The ground substance M is not represented."

The nourishment which is normally provided for the production of lymphoid cells is consumed in the formation of fat cells, and this consumption of the nutrient material may progress so far as to arrest the development of lymphoid cells, and no lymph corpuscles would be conveyed through the lymphatic vessels. When this transformation is going on the nodules grow faster, and the blood capillary system is more actively developed. These observations differ in many essential features from the views of Rollet (Stricker, p. 32). The latter investigator regards the fat cells as transformed young cells and the fat tissues as simply the deposition or accumulation of fat cells in the connective tissue, the separate groups or lobules being divided by strong trabeculæ, and insists that the new formation of adipose tissue is always associated with an increased supply of nutrient material—such new formation being invariably preceded by a marked proliferation of young cells.

It remains yet to consider the relation of the lymphatic vessels to the surface of the serous membranes. Klein and Recklinghausen hold that all serous cavities, like the peritoneal, possess an intimate connection with the lymphatic tubular vessels; in fact, that they are sacs with surfaces studded with stomata-openings through the walls of capillaries, and the mouths of lymph channels which connect directly with the lumen of superficial lymphatic vessels. (See fig. 4.) Schweiger-Seidel and Dogiel, found similar openings in the cisterna lympha-

ticæ magna of the frog. Dybkovski has demonstrated them in the pleura of the dog, and Recklinghausen and others have witnessed globules of milk penetrating the walls of the lymphatics of the central tendon of the diaphragm. Flint emphatically denies the existence of any such openings. Klein recognizes two kinds of stomata—stomata vera and stomata spuria. The vera may either be vertical channels lined by endothelium and communicating directly with the lumen of straight lymphatic capillaries, or may simply represent a discontinuity between the surface endothelium and lead into a superficial lymphatic sinus. Both of the above forms are bordered by germinating endothelium. (See fig. 4.) As has been previously stated, there are to be found branched cells occupying the spaces where the endothelial cells of the surface do not touch each other, and also beneath the surface endothelium, sending out their protoplasmic processes between the individual cells and between the groups of cells. As these branched cells lie in the lymph canalicular system, it necessarily follows that this system opens on the surface. Such openings represent the pseudo stomata. These also are lined by germinating endothelium (see fig. 4), possessing a marked tendency to produce bud-like processes, which project over the surface.

The lymphatic follicles "are small spheroidal bodies of the size of millet seed," situated within the mucous and sub-mucous tissues of the digestive tract, and in the spleen and lymphatic glands. The follicular or adenoid tissue is composed of a reticulum and adherent lymph corpuscle-like cells, the reticulum being formed into a close network, the meshes of which are contained a few corpuscle-like cells. The cells constitute the greater part of the adenoid tissue, and when separated flow away in the milky fluid. The peripheric fibrils of the reticulum connect with the intercellular substance of the surrounding connective tissue, and attach themselves also to the blood-vessels and capillaries which traverse the follicles. The relation of the lymphatic vessels to the follicles has not been determined. The follicles of the digestive tract are invested with a network of these vessels, but none have been demonstrated in the interior of the individual follicles, which seem to lie in lymph sinuses formed by the coalescence of some of the vessels of the surrounding plexus of lymphatic vessels. The follicles are supposed to form lymph cells, which ultimately constitute lymph corpuscles.

The lymphatic glands are small solid bodies, varying in size from a hempseed to that of an almond, are of a round or oval form, and situated in the course of the lymphatic and lacteal vessels. They are found in great numbers in the mesentery, in the mediastina, and along the larger blood-vessels in the abdomen. The variability in the structure of the lymphatic system is especially manifest in the glandular bodies.

The gland substance is divided into a cortical and medullary portion, but there is no essential difference in the structural organization of these portions.* More properly the gland substance is composed of follicular tissue, trabeculæ and lymph tracts. The trabeculæ are prolongations of the gland sheath and continuous with the connective tissue of the hilus. In the peripheric portion they are more widely separated than in the central, and, in conjunction with the sheath, form alveolar-like spaces uninvested towards the hilus. As the centre is approached the trabeculæ approximate more closely, thus diminishing the invested spaces, and communicate more freely. The follicular tissue is usually formed into cord-like masses, and consist of a reticulum enclosing lymph corpuscles. The cortically situated portions are simple club-shaped dilatations of the medullary substance, differing from the latter in being more compact, with fewer and smaller lymph spaces. In the medullary substance the cells are densely packed, more distinctly fixed, and not easily washed out with the natural lymph current.

No doubt exists in regard to a channel communication between the afferent and efferent vessels, though not by distinctly formed tubular vessels, but through a complex system of lymph paths, which communicate more directly and distinctly with the afferent than with the efferent vessels. The afferent vessels are distributed on the surface of the gland, and open into lymph sinuses, formed on the superfices of the alveolar trunks by the spaces between the follicular framework and the trabecular system. The rootlets of the vasa efferentia are moniliform, communicate very freely, forming a cavernous structure, the separate vessels of which are very short and are supposed to connect with the lymph paths of the medullary substance. Recklinghausen describes the relations of the several parts, by supposing a "rete mirabile to be introduced between them, the several

* Recklinghausen, loc. cit., p. 235.

branches of which suddenly diverge from the extremity of the afferent vessel, and then proceed to divide and subdivide, becoming consequently more attenuated. These finer branches perforate the intervening layers of tissue in all directions, freely anastomosing with one another, and finally suddenly reunite in the extremity of the continuous and tubular efferent vessel. The follicular substance is chiefly developed in the dilatations near the point at which the vasa efferentia are attached, and from this point become gradually more and more attenuated, till it loses itself on the lymph path at the borders of the medullary substance."

The blood-vessels are, properly speaking, only distributed in the follicular cords: they alone contain any capillary network. The larger blood-vessels, proceeding from the trabeculæ, traverse the lymph spaces of the trabecular system, to reach the follicular masses.

(*To be continued.*)

A CASE OF RESECTION OF ELBOW-JOINT.

By Y. R. LeMonnier, M.D.,

Visiting Surgeon Charity Hospital; Professor of Histology and Pathological Anatomy, Charity Hospital Medical College of New Orleans; Member and Secretary of Board of Health, State of Louisiana.

Labor improbus omnia vincit.

Compound comminuted fracture of left humerus, extending into and laying open the elbow-joint. Suppuration at seat of injury. Resection. Second operation for necrosis of inferior end of humerus. Third operation for caries of shaft of humerus, 2½ inches above seat of last operation. Guerin's wadding dressing (Pansement à la ouate. Pansement par occlusion). Anti-scrofulous Treatment. Fourth and last operation—removal of invaginated sequestrum of humerus and resection of (NEW) *elbow-joint for second time. Recovery with use of joint.*

William Egan, æt. 13 years, entered my ward, 3, Charity Hospital, bed 34, on the 3d of April, 1875; left January 26th, 1876; re-entered April 17th, 1876. Left, almost cured, June 28th, 1876, and on the 15th July he was cured.

This patient is a somnambulist. On the 31st of March, 1875, while walking in his sleep, he fell from the gallery into the yard, and, striking upon the external condyle of the left humerus, fractured this bone transversely, at one inch above the condyles. Another fracture extended from this one, vertically downwards, between the two condyles, thereby fracturing the bone in three pieces and laying open the articulation of the elbow. He was brought to the hospital on the 3d of April. When I took charge of the ward on the 6th—three days after—suppuration at the seat of injury existed, with two fistulous openings on the postero-external surface of the arm. Radio-ulnar articulation sound; movements normal and almost painless. I diagnosed a necrosis at seat of injury, and decided upon a resection of elbow-joint. On April 10th, surgical ischemia being obtained, by Esmarch's method, a longitudinal incision was carried, on the postero-external surface of the arm, entending above and below the elbow-joint, about four inches in length. The radio-ulnar articulation was found uninjured. As much of the inferior extremity of the humerus (three inches) was removed as was found necrosed or denuded of its periosteum, preserving the latter wherever it existed. During the operation all arteries and nerves were respected. The operation over, the wound was plugged with lint (charpie), dressed and washed every day with hydrate of chloral wash (2½ grains to the ounce), and the best nourishment given. Things progressed with satisfaction. An immense quantity, in fact too much, of new bone formed; so much so, that on the 15th of August the hollow left by the removal of three inches of the inferior extremity of the humerus was filled by bone of new formation, and the arm ankylosed at right angle. On the 26th of April, accumulation of pus at the inferior extremity of the humerus, concomitant with an œdematous condition of the arm, forced me to make an incision here, and pass a drainage tube through the cloacum. On the 17th of May the arm was quite swollen, and an abscess forming on the postero-internal surface of arm. ℞—Poultices to the parts. On the 21st I lanced the abscess, which gave issue to eight ounces of pus. The arm was quite swollen and œdematous. I diagnosed a necrosis, passed two drainage tubes through the parts, and instituted an expectant treatment, nourishment ad libitum, and exercise in the yards of the hospital. June 23d, chloroformed patient and removed one and a half inches of the inferior extremity of the humerus,

which was necrosed and invaginated in the newly-formed bony tissue. Things improved for some time, the patient's arm being dressed every day or two with charpie soaked with the solution of hydrate of chloral. During this time he was submitted to the following anti scrofulous treatment: comp. tinct. cinch. ℥vi., sulphate iron grs. vi., sulph. quinine ʒss., sulph. acid q s. M. S. A. S. Tablespoonful three times a day. The arm suppurated more or less when, during the latter part of July, an œdematous condition again called my attention to the probability of an affection of the bone, though I could detect nothing with my probe. About the 10th of August, not only my probe detected denuded bone, but easily penetrated into the shaft of the humerus—caries—at about its centre, on its postero-internal side. On the 12th, the patient being chloroformed, surgical ischemia obtained, an incision three inches long was carried down on the internal surface of the arm, where the caries existed, at the junction of its upper and middle third. The periosteum was carefully and gently pushed aside, and the carious portion of the bone very easily scraped off. The caries was in the shaft of the humerus, extending 2½ inches in length by ¾ inch in width at its largest place. As I ascended the shaft it extended deeper and deeper, finally invading the whole thickness of the bone, leaving the marrow, inflamed, exposed and of a deep claret hue. At the bend of the elbow was another carious spot, which I also scraped off. The shaft of the humerus bled freely, when the circulation of the arm was reëstablished, completely saturating the dressing with blood. I now had two wounds, one at the elbow and one in the shaft of the humerus. In order to obviate an excess of suppuration, and to compare the two modes of dressing, in the same case, I plugged the wounds with wadding soaked in carbolized oil (1 part to 6), and applied the dressing by occlusion (pansement à la ouate d'Alph. Guerin), thereby protecting the wounds *from the contact of the atmosphere and rendering the dressings less frequent.*

This dressing consists in surrounding a limb with sheets of carded cotton, fifteen to thirty or more, and binding them down very tightly with rolls of bandages. If the dressing be well applied, the contact of the atmosphere with the wound will be prevented, and suppuration thereby lessened. This renders the renewal of the dressings less frequent. Besides it has many other advantages, which it is not my province here to mention.

Vide Bulletin de l'Académie de Medecine de Paris, pages 1029, et. seq., 1875.

On the morning of the 13th, the day after the operation, the boy was without fever and going about the hospital.

On the 15th the dressing was removed for the first time since the operation, i. e., on the commencement of the fourth day. It was removed that early on account of the commencing offensive smell of the blood that had permeated through the dressing at the time of the operation. There was not over an ounce of suppuration, which was from the elbow. The wound of the humerus was doing so very well that I did not remove the plugging. I reapplied the dressing and continued the ferrated cinchona and quinine treatment and best nourishment.

On the 21st, bandage removed. Wounds doing very well. Bones and soft parts granulating kindly. Very little suppuration from wound of humerus, but that of the elbow had suppurated freely. The wounds were washed with alcoholized water (spirits of camphor and water), and the dressing reapplied.

On the 30th the bandage was again removed. The suppuration was scanty. The wounds were healing kindly, and the bony surfaces seemed covered over with healthy granulations. Same treatment and dressing.

On September 4th the wounds were doing well, but a carious spot of the shaft of the humerus was detected. The internal treatment was altered to cod-liver oil and comp. tinct. cinch. aa ℥iij., sulph. iron grs. vj. M. Tablespoonful every 3 hours. Same dressing.

On September 10th the dressing was removed, and substituted by a simple dressing of dry charpie, and the necrosis of the humerus was daily watched. The wounds had improved; they were washed, every day or two, with alcoholized water. General treatment continued.

On October 15th he had improved steadily but slowly, and left the hospital to come to my office consultations. From this time out, I again instituted the expectant treatment, and continued the internal one, with the hope that nature would eliminate the necrosis. On the 25th of January, 1876, I saw him for the last time that winter. He was then very fat and used his arm freely. Two fistules existed, leading to necrosed bones.

Act Second. On the 17th of April, 1876, he again presented

himself at my clinic, at the Charity Hospital. His general health was much improved under the anti-scrofulous treatment, which he had followed with more or less regularity. On the internal surface of the arm, where the shaft of the humerus had been scraped, three fistules existed, leading to a loose bone. Satisfied that this sequestrum was invaginated in the shaft of the humerus, and could not be eliminated by the sole efforts of nature, I decided upon an operation for its removal. The patient chloroformed, and surgical ischemia obtained, I made an incision 3½ inches in length, on the tract of the fistules. The healthy, newly-formed bone was easily removed, as is generally the case in young proliferated bony tissue, and in the canal of the humerus a loose sequestrum, 2¼ inches long by ⅔ inch wide, was picked up with the forceps. I then concluded to *reëstablish if possible the movements of the elbow-joint*, which the patient had allowed to become almost completely ankylosed, at an angle of 65 (?) degrees. For this I made a crucial incision at the posterior and exterior surface of the elbow-joint, in the cicatrix of the former incision. With *difficulty* I removed all the bony and ligamentous tissue around the heads of the ulna and radius, which had caused the ankylosis. This was new bone, a year old, and hard, which had proliferated from the periosteum of the humerus, which (periosteum) I had carefully preserved last year while removing the condyles of the humerus. An examination of this new osseous growth showed that, in its proliferation, it had adapted itself to the eminences at the head of the ulna, so as to form a joint somewhat similar to the normal one. The radio-ulnar articulation I did not open, but satisfied myself of its integrity and physiological functions. After the removal ot this newly proliferated bone, the arm could be extended almost to its full extent, to an angle of 80 degrees, and bent *ut supra*. The periosteum throughout was preserved. The operation over, the angles of the wound were sewed up, to obtain if possible union by first intention. The cavity, which was a bony one, was plugged with dry charpie. No disinfection of any kind nor any styptics were used. I am opposed to the use of styptics, as the salts of iron, which only dirties wounds, and retards somewhat the appearance of granulations, by the eschar which it forms. The best hemostatic, in my opinion, is the natural coagulation of the blood by the action of the air, and the contracting effect it (the air) has on the small blood-vessels. As to disinfections, as a general rule

they are useless in this, the climate of our beautiful Louisiana. The operation was bloodless. The gutta-percha ligature was then removed, and the blood allowed to flow back into its emptied vessels, and in order to diminish the shock of the heart's systole, I compressed with the hand the brachial artery, allowing the blood to flow by degrees. With the other hand I held tightly the charpie in the wounds. The patient then lost about five ounces of blood. After treatment: the arm and elbow were next encircled with a sufficient amount of bandages to keep the lint in the wound. The effects of chloroform over, the patient complaining, a third of a grain of sulphate of morphia was injected under the skin of the right arm, which gave instant relief. He was put to bed, and syrup of sulphate of morphia (gr. j. to ℥j.) ordered, p. r. n., to relieve pain. On the 18th he had a little fever, and had passed a good night. The bandage was bloody and dry. Five grains, three times a day, of sulph. quinine were ordered and best nourishment ad libitum. 18th—Bandage removed and wounds washed. Some tumefaction of arm and elbow; no fever; wounds doing well. ℞—Cod-liver oil, comp. tinct. cinchona, aa ℥iv.; sulph. iron, grs. viij. ℔. By table-spoonfuls four times a day. Nourishment ad libitum. Under this treatment he improved steadily and slowly, the wounds being dressed p. r. n. with charpie and simple cerate, and washed with alcoholized water. The patient was watched and made to keep up the movements of the joint during the healing process, in order to prevent ankylosis. On the 5th of June a piece of bone, the size of a pea, was removed, and on the 20th the wounds were almost healed. Another necrosis existed, which would either be eliminated or have to be removed. The general and local treatment were continued. There seemed to be then but little movement in the joint. On the 28th of June he left the hospital, though not yet cured, promising to continue his anti-scrofulous treatment and report to me from time to time. The arm seemed to be ankylosing at an angle of about 70°. I again reminded him of the importance of a free use of the joint, if he did not wish to have a stiff arm, after which we parted. I saw him no more until a fortnight ago, when he called on me to show me his arm, which was cured since the 15th of July, the day on which the wound was completely healed. To-day—October 6th, 1876, by a free and proper use of the joint, he has improved wonderfully. On the 20th of June there seemed to be but little

movement in the joint; so much so, that I entertained fears of an ankylosis. To-day he can extend the arm to its full length and bends it to an angle of 60°. In strength it is almost, if not altogether, equal to the sound one. He easily picks up a bucket (3 gallons) of water, and uses indifferently the one or the other arm. The operated arm is about three inches shorter than the sound one. At the elbow-joint, so great has been the proliferation of new osseous tissue, that this elbow is larger than the sound one. His general health is excellent.

28 Conti Street, New Orleans, La., October 6th, 1876.

CASES OF YELLOW FEVER IN NEW ORLEANS IN 1876. REPORTED TO THE BOARD OF HEALTH.*

BY JOSEPH HOLT, M.D.,

Sanitary Inspector for the Fourth District, New Orleans.

OFFICE SANITARY INSPECTOR, FOURTH DISTRICT,
October 24th, 1876.

F. B. Gaudet, M. D., President of the Board of Health:

Sir—I respectfully submit the following record of cases of yellow fever, together with relative events, in the order of their occurrence in the Fourth District of New Orleans, during the year 1876.

In every instance where it has been possible to obtain an accurate detail of the diagnostic features these have been appended, with the view of furnishing material for analytical comparison.

August 11th. Mean temperature 77° Fahr. Wind S. Dry.

Case 1. Anna Maria Valendor, aged 19 years, native of Germany; in New Orleans 18 months. When taken ill was residing as a servant in the family of Ambrose Leitz, on Tchoupitoulas street, lake side, between First and Second streets. She was

* The facts contained in Dr. Holt's report have been collected with unusual care. They are submitted to the profession as a strictly correct exhibit of the origin and spread of yellow fever in this city during the present year, together with an account of the means employed to arrest its progress. The Editor greatly regrets that it reached his hand at so late a day, that it is necessary to divide the paper in order to secure its publication in the present number.—[EDITOR.]

removed on the second day of her illness to the residence of her aunt, No. 24 Eighth street, between Tchoupitoulas and Fulton. Was taken sick Friday evening, August 11th. Was seen by Dr. Joseph Schmittle the following Monday morning. The symptoms of yellow fever were so pronounced as to leave no doubt in the doctor's mind as to the nature of the disease. However, to avoid a possible error, he called in consultation Drs. F. Lœber, S. S. Wood, F. B. Gaudet, Faget, sr., A. C. Gaudet, and Joseph Holt.

These gentlemen pronounced it a genuine case of yellow fever. Indeed, no symptom peculiar to this disease was lacking. The cyanotic hue commingled with a deep yellow tinge of the skin, capillary stasis, yellow conjunctivæ, red and spongy gums, red and dry tongue and mucous membrane of the mouth, urine heavily albuminous, black vomit, profound prostration, with apathy and wandering mind—and all of this following a fever of one paroxysm and of seventy hours' duration: these justified the diagnosis.

Died, Thursday, 17th, at 5 o'clock p. m.

Disinfection.—Wednesday evening, the 16th, all of the premises on the square bounded by Tchoupitoulas, Fulton, First and Second streets, were thoroughly sprinkled with refined carbolic acid—Calvert's No. 5, in solution, one part of acid to fifty of water. The banquettes were sprinkled with the same. The boundary streets, particularly the gutters, were sprinkled with the crude carbolic acid, one barrel being used.

On the evening of the 18th, immediately after the funeral, the rooms and premises of No. 24 Eighth street were sprinkled with the pure acid solution. This method of disinfection was extended to all the premises on the square bounded by Tchoupitoulas, Fulton, Eighth and Ninth streets, and also on the square bounded by Tchoupitoulas, Fulton, Seventh and Eighth streets. The banquettes were sprinkled with the pure acid solution, and a line of crude carbolic acid extended through the boundary streets. Two barrels of the crude acid were used. The following day Dr. LeMonnier visited the house, 24 Eighth street, and thoroughly disinfected the bedding, clothes, and furniture of the deceased.

The most rigid investigation failed to discover a source of infection from any ship, or from contact with any thing or person conveying the disease.

(The term, pure carbolic acid, is used to designate that compound of cresylic and carbolic acids which is only pure in having been freed from the heavy oils and tar. The best sample is furnished in Calvert's No. 5 acid. In this compound the cresylic acid largely predominates.)

September 3d. Mean temperature, 80° Fahr. Wind N. E. Dry.

Case 2. Thomas Eyrich, age 7 years, native of Tennessee; in New Orleans 3 years. Residence 125½ Philip street, lower side, between Annunciation and Laurel streets. Was taken with a slight chill during the evening of September 3d. This was followed by a fever which became intense during the night, and continued in one paroxysm ninety hours. Dr. W. S. Mitchell attended the case. During the continuance of the fever the skin of the entire body was intensely red; so also were the tongue and gums; eyes injected red. As the fever declined the circulation became languid, the pulse very slow. At this stage, the great restlessness which had been present from the beginning merged into a wild delirium, the child endeavoring to escape from bed.

The skin and eyes were now distinctly yellow. He threw up black vomit on the fourth day. Recovered. Case not reported until the subsequent prevalence of yellow fever confirmed the diagnosis of Dr. Mitchell.

September 5th. Mean temperature, 80.5° Fahr. Wind N. E. Very dry.

Case 3. Katie Smith, age 13 years, native of Honduras; in New Orleans 12 months. Residence, Philip street, lower side, corner Annunciation street. Was taken ill September 5th. Dr. Barbot, the physician attending. In consultation, Drs. Mercier, Durr, and Mainegra. These gentlemen were agreed as to its being yellow fever.

The primary fever lasted three days, and was followed by a sudden fall of temperature, prostration, hemorrhage from nose and gums. Friday, the 8th, black vomit.

Died, September 10th, at 3 o'clock a. m.

The occurrence of this case was discovered through rumor. During the evening of September 13th, I called on Dr. Barbot and obtained his report. Disinfection of premises was attempted the following morning, but was prevented by the illness of two

of the family. These recovered without manifesting symptoms sufficient to confirm a diagnosis.

Within one square radius of this house, thirty-three of the recorded cases took the disease. Fifteen of these were fatal.

September 5th.

Case 4. Albert B. French, age 3 years, native of New Orleans; in New Orleans 3 years. Residence, 120 Jackson street, upper side, between Annunciation and Laurel streets. Was taken, during the evening of September 5th, with a chill and convulsions, quickly followed by fever. Dr. Greenleaf the attending physician; Dr. Layton in consultation.

Fever of one paroxysm of eighty hours, accompanied throughout with congestion of the brain. The febrile stage terminated abruptly in one of collapse, marked by capillary stasis, cyanotic and yellow hue of skin, and black vomit. Died September 10th.

This case was not reported until September 28th.

The attending physicians deemed it prudent, because of the extreme illness of the child's father, to withhold all mention of the character of the disease, fearing the effect it might have upon him.

Although the symptomatic and circumstantial evidence in the case of Mr. French strongly indicated yellow fever, yet the case was not sufficiently free from doubt to permit of being placed on record.

September 5th.

Case 5. Mrs. Delplane, age 23 years, native of Michigan; in New Orleans 4 months. Has resided in the Third District until three weeks prior to her illness, when she removed to No. 104 Jackson street, upper side, between Chippewa and Annunciation streets, on the same square with case 3.

Was taken ill September 5th. Dr. Thomas Layton attending. Reported September 11.

Her case presented all of the prominent features of yellow fever, such as a fever of one paroxysm, and of seventy hours duration; general redness of the skin, with an appearance of œdematous thickening as in the rash of scarlatina; a maintained temperature of 103° to 104°; great dullness of the sensorium, and delirium. This stage was terminated by a sudden fall of temperature, prostration, slow pulse, capillary stasis, yellow but not cyanotic hue of skin, eyes yellow, albumen in the urine, and

on the fifth day copious black vomit, frequently ejected. Being eight months pregnant, she was delivered of a still born child on the ninth day of her illness. Recovered. She came near flooding to death sixty hours after delivery.

September 7th. Mean temperature 81° Fahr. Wind E. Very dry.

Case 6. Mr. J. C. Eyrich, age 30 years, native of Germany, but for many years living in Tennessee; in New Orleans 3 years. Residence 125½ Philip street, lower side, between Annunciation and Laurel streets. Was taken ill September 7th, at 3 o'clock a. m., with a severe chill, accompanied by an almost insupportable pain over the brow and in the eyes; also pain in back and limbs. Two hours later fever was established, soon became intense, and lasted seventy-six hours. The fever presented all of the features common to the febrile stage of yellow fever. It was succeeded by a sudden fall of temperature, languor, and a very slow pulse. Dr. W. S. Mitchell attending. Recovered.

September 7th.

Case 7. Mrs. Eyrich, age 29 years, native of Virginia; in New Orleans 3 years. Residence, 125½ Philip street. Was taken ill at 4 o'clock a. m., September 7th. The phenomena were the same as in the case of her husband, just mentioned. The fever lasted ninety hours.

September 8th. Mean temperature 80.5° Fahr. Wind E. Dry.

Case 8. Wm. H. Chudleigh, age 28 years, native of England; in New Orleans 3 years. Residence, No. 173 Rousseau street, lake side, between Soraparu and First streets. Was taken ill Friday morning, September 8th, with a chill, and severe pains in head, back and limbs. The chill was soon followed by a fever, which became intense during the evening and continued sixty hours. Saturday evening, at 5 o'clock, he became delirious; an hour later Dr. Durr was called, and at 9 o'clock Dr. Drew also saw him.

These gentlemen recognized the case as one of yellow fever.

Monday, September 11th, at 3 o'clock a. m., he threw up black vomit, and died at 6 o'clock p. m. of the same day.

The case was reported on the day of his death.

He was a policeman, and had frequented the locality of cases 2, 3, 4 and 5.

Disinfection.—After the funeral, the rooms, bedding, and clothes of the deceased, the premises, including yard, privy and drain, were disinfected by being made thoroughly wet with the pure carbolic acid solution, one part of acid to forty of water. Calvert's N. 5 was used.

September 8th.

Case 9. Mary Mullane, age 25 years, native of Ireland; in New Orleans 3 years. Residence, No. 20 Josephine street, upper side, between Tchoupitoulas and Roussean.

Was taken sick September 8th. Dr. Bickham the attending physician. Case reported September 13th. Slight chill, followed by intense fever of one paroxysm of forty-eight hours. With the decline of the fever the pulse fell to fifty-five. Great stasis of the circulation; irritable stomach; yellow discoloration of skin and eyes; urine heavily loaded with albumen; untimely and profuse catamenia. Recovered.

September 8th.

Case 10. Alice Reede, colored, age 12 years, native of Arkansas; in New Orleans 7 years. Residence, 45 Polymnia street; a servant in the family of Mr. Eyrich, case 6.

Was taken, September 8th, with a chill, and great pain in the head, back and limbs. The succeeding fever lasted seventy-six hours, and was accompanied by prostration and delirium; tongue and gums red; stomach very irritable; eyes blood-shotten. On the fourth day there was suppression of urine for twenty hours. Recovered.

September 9th. Mean temperature 80.5° F. Wind E. Dry.

Case 11. Carrie Hitch, age 10 years, native of Massachusetts; in New Orleans 9 years. Residence, No. 122 Philip street, upper side, corner Annunciation, obliquely opposite case 3. Was taken ill on Saturday, September 9th in the morning. Dr. Murphy the attending physician.

Case reported September 21st.

Fever of one paroxysm of seventy hours duration. Mucous membrane of mouth, the gums and tongue intensely red; eyes red and becoming yellow; black vomit copiously on the fourth day. Recovered. Fifteen days previous to illness the family had returned from a tour through the Northern States.

September 11th. Mean temperature 79° F. Wind N. W. Dry.

Case 12. George Eyrich, age 6 years, native of Tennessee; in New Orleans 3 years. Residence, 125½ Philip street. Was taken ill September 11th. Fever of sixty hours duration; all the symptoms common in a mild attack of yellow fever. Recovered.

September 12th. Mean temperature 76° F. Wind N. Dry.

Case 13. Mary Young, age 8, native of New Orleans; in New Orleans 4 months, after residing in St. Louis four years. Residence, No. 135 Jackson street, between Annunciation and Laurel. Was taken sick Tuesday, September 12th. Dr. Layton attending. After a prolonged fever of several days she threw up black vomit. The case presented strongly the characteristic symptoms of yellow fever.

Died, at 11.30 p. m., September 18th.

Disinfection.—Immediately after the funeral, the bedding and clothing of deceased, the floors of the entire house, and the premises, were thoroughly treated with the pure carbolic acid solution.

September 12th.

Case 14. Susan Williams, colored, age 50 years, native of Virginia; in New Orleans 5 years. Residence, No. 72 Union street. Sick-nurse in the family of Mr. Eyrich, case 6. She commenced this service Friday night, September 8th. At 10 p. m., Tuesday, 12th, was seized with a hard chill, which lasted nearly two hours. Fever came on and quickly reached a high grade. This stage was characterized by intense pain in head, back and limbs, a sense of utter weakness, and general torpor. It lasted seventy-two hours, and left her exhausted. On the third and fourth days she vomited blood. Recovered.

September 12th.

Case 15. John G. Watson, age 33 years, native of Glasgow, Scotland; in New Orleans 3 years. Residence, No. 166 Jackson street, upper side, between Constance and Magazine streets. Was taken sick Tuesday morning, September 12th, with aching in back and limbs, fullness of head, alternating chilliness and fever. During the night the fever became intense, and so continued until the morning of the 17th. Dr. Bickham the physician attending; Dr. Choppin in consultation. Urine solidly albuminous on test.

Died September 18th. Case was reported on the 14th.

Disinfection.—At 5 o'clock p. m., Tuesday, 19th, the bedding and clothing of deceased, the floors of rooms and halls, the premises, including privies and drains, were thoroughly treated with carbolic acid solution, one to fifty.

September 13th. Mean temperature 72.5° F. Wind N. Dry.

Case 16. J. C. Eyrich, jr., age 4 years, native of Tennessee; in New Orleans 3 years. Residence, 125½ Philip street. Was taken sick September 13th. Fever of one paroxysm of sixty hours. Features of the disease same as in case 12. Recovered.

September 13th.

Case 17. Sister Engratia, age 38 years, native of Germany; in New Orleans 3 months. Residence, St. Joseph's Asylum, Josephine street, lower side, corner Laurel. She came to New Orleans, from Wisconsin, in June, and has resided in the asylum as a cloistered nun. Was taken ill Wednesday night, September 13th. Dr. Layton the attending physician. Reported September 18th.

The case presented all the usual symptoms of a severe case of yellow fever, as a high fever of one paroxysm of ninety hours, the peculiar redness of skin and eyes, in a later stage becoming yellow. Temperature unknown. Albumen in the urine and suppression. Black vomit on the third day. Tongue and gums much swollen and inclined to bleed. Delirium towards the close.

Died 1.15 a. m., September 24th.

September 14th. Mean temperature 74° F. Wind N. Dry.

Case 18. Mrs. Francis E. Wall, age 36 years, native of Pennsylvania; in New Orleans 5 years. Residence, 473 Annunciation street, lake side, between Philip and First streets. Was taken ill Thursday, September 14th. Dr. Bickham was called in on the 18th. Reported on the 19th. Black vomit on the 18th. Urine highly albuminous, and almost wholly suppressed during the last fifty hours of life. Died, September 21st.

Disinfection.—At the time when I learned of the death of this lady, the sanitary force was engaged in the general disinfection of the infected district.

September 15th. Mean temperature 73° F. Wind N. Dry.

Case 19. Susie Eyrich, age 1 year, native of New Orleans. Residence 125½ Philip street. Taken sick September 15th. Fever lasted four days; symptoms mild; the case marked. Recovered.

September 15th.

Case 20. Sister Francis, age 21 years, native of Michigan. Came to New Orleans from Wisconsin, October 1874. Has resided as a cloistered nun at St. Joseph's Asylum. Was taken ill Friday, September 15th. Dr. Layton the physician attending. Reported September 18th. Presented all of the characteristic symptoms of yellow fever except black vomit. Fever of one paroxysm of 80 hours. The redness of skin, mucous membrane of mouth, tongue and gums—the latter red and swollen; albumen in the urine, and the undue appearance of the catamenia: these were especially noted. Recovered.

September 16th. Mean temperature 69°. Wind N. E. Dry.

Case 21. Sister Alfreda, age 30 years, native of Prussia; came to New Orleans from St. Louis in 1870; has resided since, a cloistered nun, in St. Joseph's Asylum. Was taken ill Saturday, at 10 a. m., September 16th. Dr. Thomas Layton attending. Reported September 18th. Symptoms and course of the disease much the same as in case 10. Fever of one paroxysm of seventy hours; tongue and gums red and swollen; urine albuminous. Recovered.

September 16th.

Case 22. Millie Williams, age 7 years, native of New Orleans; in New Orleans 7 years. Residence, No. 191 Josephine street, lower side, between Laurel and Constance streets. Was taken with a chill, Saturday the 16th, followed by a fever of high grade and lasting four days. Dr. Pettit attending. The fever began to decline Monday night. At 6 p. m., Wednesday, temperature 100°; pulse 80; skin and eyes yellow; mucous membrane of mouth, tongue and gums very red, with some bleeding. Recovered.

September 16th.

Case 23. Annie Walsh, age 4 years, native of St. Louis, Mo.; in New Orleans 2 months. Residence, 161 Laurel street, lake side, between Philip and First streets. Was taken ill September 16th, Dr. Bickham attending. Reported, 20th. Continuous fever four days; urine heavily loaded with albumen; black vomit. Recovered.

September 17th. Mean temperature 68° F. Wind N. Dry.

Case 24. Sister Burcharda, age 25 years, native of New York; came to New Orleans from St. Louis in October, 1875. Resi-

dence, St. Joseph's Asylum. Was taken ill at 2 o'clock in the morning, September 17th. Dr. Layton her physician. Reported September 18th. Presented in severe form the symptoms mentioned in case 17. Urine loaded with albumen, and suppressed; copious black vomit, and the same matter freely purged; tongue and gums red and bleeding.

Died at 5 o'clock, p. m., September 21st.

"In the cases of the Sisters, the usual pains in the head, back and limbs, were present. The fever was one of unbroken paroxysm, with a decided typhoid tendency in the cases which recovered. In these, the patients continued having fever, as observed by the thermometer, for a great many days. This secondary fever was of a low grade, and at the time the pulse was at or about the normal standard. All have resembled each other strikingly in the general symptoms and appearance at the outset.

"Yours, very truly, THOMAS LAYTON, M.D."

The disinfection of St. Joseph's Asylum, corner Laurel and Josephine streets, was commenced by the Sisters, directed by Dr. Layton, on Sunday, September 17th. A solution of the pure carbolic acid was used. All bedding and clothing removed from the sick were made wet with it; also the floors of rooms and halls; the sewers and privies. The ejecta of patients were carbolized and buried in the yard, to avoid the possibility of infecting the privies. On the 20th of the month, all of the floors of the buildings, privies, drains and yard, were thoroughly treated with the pure carbolic acid solution, one part to forty, by the sanitary officers. This was repeated on the 25th.

Living on the premises of this asylum are 210 whites; twenty-five of these are cloistered nuns. Number of persons acclimated by having had yellow fever, six.

September 17th.

Case 25. Mrs. L. Spencer, age 35 years, native of England; in New Orleans 3 years. Residence No. 418 Prytania street, river side, between Seventh and Eighth streets. Was taken sick September 17th. Dr. Murphy attending. Reported September 19th.

Black vomit on the 21st. The course and symptoms were those of yellow fever. Died September 23d.

Disinfection.—Beginning at 5 p. m. of the 23d, the bedding,

clothing, and utensils used about the deceased, the floors of the house, and the premises, were disinfected with the pure acid solution. The premises of the square bounded by Coliseum, Prytania, Seventh and Eighth streets, were disinfected with the same solution.

By means of the sprinkling cart, a cordon of the pure acid solution was drawn around the square, a line for each side of the street, and the banquettes thoroughly hand-sprinkled (by means of watering-pots).

September 17th.

Case 26. John Reese, age 35 years, native of England; a seaman on board the British merchantman Belgravia. Has been living on board ship since his arrival in New Orleans, but allowed to go ashore at will. Was taken sick September 17th. Dr. Davieson the physician. Conveyed to the Touro Infirmary September 20th. Dr. F. Lœber the physician. The case was recognized as one of yellow fever; threw up black vomit freely. Died September 20th.

The ship Belgravia arrived, August 29th, direct from Liverpool, with a cargo of bricks and salt. She landed at the wharf foot of Second street. The crew have gone ashore at will.

As soon as the case was declared one of yellow fever, Captain Bell had the ship at once thoroughly disinfected with carbolic acid and chlorinated lime. The bedding and clothes of the dead were tied in a bundle, and with heavy stones sunk in the river. After disinfection the vessel was thoroughly washed and painted.

September 27th.

Case 27. Sophie Diess, age 8 years, native of New Orleans; in New Orleans 8 years. Residence, 71 Laurel street, lake side, between Josephine and St. Andrew, opposite the asylum. Taken ill at 9 p.m., September 17th. Was seen by Dr. Layton Tuesday evening, the 19th. High fever, of one paroxysm and lasting eighty hours. When seen, temperature 106°; pulse 136; face flushed and red; mucous membrane of mouth and gums very red; albumen in the urine. On the fourth day involuntary discharges from the bowels. Case reported on the 23d. Recovered.

September 18th. Mean temperature 69° F. Wind N. W. Dry.

Case 28. Minnie Hitch, age 7 years, native of New Orleans; in New Orleans 7 years. Residence, 122 Philip street, corner

Annunciation. Was taken ill Monday, September 18th. Dr. Murphy attending. Fever of one paroxysm of seventy hours; congestion of the brain, and wild delirium from the beginning; black vomit on the third day, continuing until she died, which occurred September 22. Reported September 21st.

No disinfection of house and premises, because of case 11.

September 18th.

Case 29. G. E. Wilcox, age 36 years, native of New York; in New Orleans 7 years. Residence, No. 137 Laurel street, between Philip and First streets. Was taken ill September 18th. Dr. W. H. Berthelot the attendant. Died Sept. 21st. Case reported yellow fever September 22d.

Disinfection.—The boundary streets of this case were disinfected during the night of the 22d September. A special disinfection of rooms, bedding, clothes and premises, was not accomplished until several days later, because of the occupation of the sanitary force in general disinfection.

September 18th.

Case 30. Mrs. Emma Kouns, age 25 years, native of Texas; in New Orleans for many months at a time, but has never spent a summer here. Residence, 505 Annunciation street, lake side, between First and Second streets. Was taken sick Monday, September 18th. Dr. Bickham the attending physician. An intense fever of eighty hours, and manifesting all the appearances of yellow fever. Urine albuminous. On the third day of attack was delivered of a seven months' fœtus. Died September 23d.

Disinfection.—Another case of illness prevented a special disinfection of the house and premises. The other premises on the square and the boundary streets were disinfected on the 22d and 23d.

September 19th. Mean temperature 71° F. Wind S. E. Dry.

Case 31. George Creighton Kouns, age 22 years, native of Ohio; in New Orleans 2 weeks. Residence, No. 505 Annunciation street. Was taken sick September 19th, during the night. Chill followed by fever of one paroxysm of forty-eight hours and very intense. This stage was characterized by those common symptoms, the exanthematous redness of skin, blood-shotten eyes, red tongue and gums, and great irritability of stomach.

On the third day, the dangerous symptoms were greatly intensified by mental shock, occasioned by startling and bad news told him, and also by getting out of bed. He rapidly sank into an adynamic state, presenting the nervous depression and irritability of typhoid; extreme yellowness of skin and eyes; urine solidly albuminous on test, with casts; occasional black vomit; during the last two days incessant hiccup. Died at 8 o'clock a. m., October 4th, after an illness of fifteen days.

Disinfection.—The bedding, clothing, the floors of the house, the yard, privy and entire premises, were freely treated with the pure carbolic acid solution the day after the funeral. The sick-room was fumigated also with burning sulphur.

September 21st. Mean temperature 73.5° F. Wind N. Dry.

Case 32. Annie Fisher, age 14 years, native of Arkansas; in New Orleans 9 months. Inmate of the Jewish Orphan's Home, Jackson street, upper side, between Rousseau and Chippewa streets. Was taken ill Thursday night, September 21st; was conveyed to the Touro Infirmary the following evening. Dr. F. Lœber attending. Fever of one paroxysm of sixty hours, and presenting the exanthematous redness of skin, red eyes and mucous membrane of mouth and gums. During a period of eighteen hours the temperature stood at 104½°. Immediately after blood-letting by cut-cups it fell to 102°, and never approached its former heighth. With decline of fever on the third day the pulse became exceedingly slow and feeble. This stage was accompanied with nausea and great oppression over the epigastrium, and vomiting of clear blood; yellow discoloration of skin and eyes well marked; albumen abundantly in the urine; untimely return of catamenia. Recovered.

SANITARY OFFICE FOURTH DISTRICT,
September 21st, 1876.

F. B. Gaudet, M.D., President of Board of Health:

Sir—I would respectfully state that on the 20th September the St. Joseph's Asylum, corner Laurel and Josephine streets, was disinfected throughout with pure carbolic acid. Six gallons were used, diluted with forty parts of water. The floors of the entire building, including the halls and twenty rooms, were made thoroughly wet with the solution, besides, also, the yard, privies, sewers and walks. Wherever a death has occurred from

the disease—yellow fever—immediately after the funeral the same method of disinfection has been observed: the floors, the bedding, clothes, and everything that has been in contact with or about the deceased, have been wetted with a solution of the acid; the bedding and clothes subjected to boiling water; the entire premises sprinkled with the solution.

I remain, sir, very respectfully,

Your obedient servant,

JOSEPH HOLT, M.D.,
Sanitary Inspector Fourth District.

September 22d.

Case 33. Miss Garrett, age 24 years, native of Louisiana; in New Orleans 10 years. Residence, No. 130 Philip street, upper side, between Annunciation and Laurel streets. Was taken with chill at 4 p. m. Friday, September 22d. Dr. Bemiss attending. Diagnosis perfected by symptoms. Fever of one paroxysm of fifty-six hours, with an abrupt decline, and pulse falling to sixty; undue return of catamenia on the fifth day of attack; the regular term had been completed seven days before illness. Case reported September 28th. Recovered.

September 22d.

Case 34. Walter Cushman, age 3 years, native of Mississippi; in New Orleans 2 years. Residence, 502 Annunciation street, river side, between First and Second streets. Was taken ill September 22d. Dr. W. S. Mitchell attending. Reported September 26th; died September 26th.

At 12.30 p. m., September 22d, I received from Dr. Gaudet verbal instructions to extend disinfection; to disinfect with pure carbolic acid the streets, banquettes, and premises of squares within the infected area.

OFFICE SANITARY INSPECTOR FOURTH DISTRICT,
September 22d, 1876.

Mr. Thomas Pickles:

Sir—Mr. Curtis will convey to you this note, and will explain particulars. Dr. Gaudet requests that you report to this office at once with both of your sprinkling carts. You will thoroughly disinfect all of the streets within the area I will name. I wish you also to have all premises of squares within the same area thoroughly disinfected. You will use the pure acid as furnished by

the Board of Health. Dilute this acid one part to forty of water; sprinkle the streets thoroughly, a line along each gutter. Have the banquettes hand-sprinkled with the same solution. I have here one cask of forty-five gallons pure acid. As much more as you will need you must procure, to an extent sufficient to accomplish the object, viz., a complete disinfection of the infected district.

I remain, sir, &c.,

JOSEPH HOLT, M.D.,
Sanitary Inspector Fourth District.

The area mentioned contained thirty-nine inhabited squares, bounded as follows: Constance street and the river front, St. Andrew and Second streets; also the square bounded by Magazine, Constance, Jackson and Philip streets.

Mr. Pickles reported as directed, bringing with him from Wheelock & Co. one hundred gallons of the pure carbolic acid. The Administrator of Police sent in addition three barrels of the same.

The general disinfection of the infected area was commenced at 9 o'clock p. m., September 22d. The work accomplished that night consisted in throwing a double *cordon* around the infected locality. The sprinkling carts commenced on Second street, corner Constance, one for each side the street. Sprinkling freely, they were slowly driven along Second street to Tchoupitoulas, along Tchoupitoulas to St. Andrew, St. Andrew to Constance, Constance to Second. The next inner line of boundary streets was then treated in the same manner.

September 23d. Mean temperature 73°. Wind N. E. Dry.

Case 35. John Maxwell, age 30 years, native of Alabama; in New Orleans four days. Residence, No. 429 Annunciation street, lake side, between Jackson and Philip streets. Was taken ill Saturday, September 23d, at 10 a. m. Dr. Axson the attending physician. Reported September 26th. The clinical signs were those of a severe case of yellow fever: a period of malaise, ending in rigors superseded by a fever of many hours' duration; hiccup and cramp in stomach twelve hours before death. Post mortem changes very rapid. Died September 29th.

September 23d.

Case 35. Mrs. Williams, colored, age 35 years, native of Mis-

sissippi; in New Orleans 5 years. Taken ill during the night of September 23d. Dr. W. H. Watkins attending. Reported September 25th. Residence, First street, upper side, between Liberty and Howard streets. Fever of one paroxysm of seventy hours. As it declined the pulse fell, ultimately to sixty. Recovered.

Disinfection.—The premises and adjoining premises with pure acid solution, September 26th.

September 23d, I made a requisition on G. R. Finlay & Co., for ten barrels of pure carbolic acid, which were sent to this office during the evening. Also repeated the order on Mr. Pickles for two sprinkling carts. Beginning at 9 p. m., all the streets and banquettes of the infected area were thoroughly sprinkled with the pure carbolic acid solution.

September 24th. Mean temperature 74.5° F. Wind N. Dry.

Case 37. Mrs. H. Garrett, age 61 years, native of Kentucky; in New Orleans 10 years. Residence, No. 130 Philip street. Returned, September 15th, after an absence of several months; was taken ill September 24th, at 7 o'clock p. m. Dr. Bemiss attending. Fever of one paroxysm of thirty hours' duration; marked turgescence of skin, and much redness of mucous membrane of mouth, tongue and gums; pulse fifty-six on the sixth day. Case reported September 26th. Recovered.

September 24th.

Case 38. Mrs. McAdams, age 25 years, native of England; in New Orleans 4 months. Residence, No. 107 Philip street, lower side, between Annunciation and Chippewa streets. Was taken ill during the night of September 24th. Dr. Mainegra attending. Reported September 27th. Fever of one paroxysm of seventy-five hours, intense, and attended with extreme nausea throughout. Recovered.

September 25th. Mean temperature 75° F. Wind N. W. Dry.

Case 39. Colonel Saunders, age 48 years, native of Louisiana; in New Orleans 11 months. Residence, No. 567 Carondelet street, lake side, between Philip and First streets (a half mile from the infected area). Taken ill September 25th, before day in the morning. Dr. Stillé his physician. Reported September 26. This gentleman spent several evenings, immediately before

his attack, with his friends, cases 33 and 37, in the infected locality. Recovered.

Disinfection.—At 6 p. m. of the 26th, all of the premises of the square bounded by Carondelet, Brainard, Philip and First streets, excepting those of the patient, and the premises of the square opposite, were disinfected with the pure acid solution. The boundary streets and banquettes of these two squares were freely sprinkled with the same.

September 25th.

Case 40. Rev. Mr. Kienle, age 26 years, native of Germany; in New Orleans 2 years. Residence, No. 126 Seventh street, upper side, between Laurel and Constance streets. Was taken ill September 25th. Dr. J. Schmittle attending. Reported September 30th. He moved into the Fourth District eight days previous to his attack, and visited much in the infected locality. A hard chill followed by fever of one paroxysm of seventy-six hours' duration. Temperature ranging from 103° to 104°. On the fourth day temperature fell to 98°, and the pulse to seventy-two, with great exhaustion, epigastric tenderness and nausea, hemmorrhage from nose, stasis of circulation, eyes and skin becoming very yellow; albumen in urine one half. Recovered.

September 25th.

Case 41 Jane Cushman, age one year, native of New Orleans. Residence same as case 34, No. 502 Annunciation street. Dr. W. S. Mitchell attending physician. Taken September 25th. Reported September 26th. The case presented all the features of a well-marked attack of yellow fever. Recovered.

September 25th.

Case 42. Miss Marie Clander, age 25 years, native of Louisiana, Parish St. James. Residence, 141 Eighth street, corner Constance and Laurel streets, lower side; in New Orleans eight days. Was taken ill at 11 o'clock p. m., September 25th. Dr. Layton attending. Reported September 28. She spent Sunday, 24th, and Monday, 25th, with a friend in the infected locality. The case presented strikingly the symptoms and course of yellow fever. Recovered.

September 25th.

Case 43. Mamie Ruding, age 10 years, native of New Orleans; in New Orleans 10 years. Residence, No. 178 Jackson street, upper side, between Constance and Magazine streets. Was

taken ill September 25th. Dr Bickham attending. The case resembled closely case 31: black vomit; albumen in urine abundantly. Recovered. Reported September 27th.

Disinfection.—The premises on this square, except those of the patient, were again disinfected on the 27th. The boundary streets and banquettes were sprinkled with the pure carbolic acid solution during the night. Also the opposite square and streets bounded by Jackson, Josephine, Constance and Magazine streets.

September 25th.

Case 44. Sidney Wheeler, age 2 years, native of New Orleans. Residence, No. 128 Laurel street, river side, between Philip and First streets. Dr. Wood attending. Was taken sick Monday, September 25th. The case presented all the features of a severe attack of yellow fever: black vomit; suppression of urine during the last two days. Died at 2 p. m., September 29th. Case reported 27th.

Disinfection.—Bedding, clothing, rooms and premises, with pure acid solution.

September 25th.

Case 45. August Johne, age 31 years, native of Austria; in New Orleans 1 year. Residence, Jewish Home, corner Jackson and Chippewa streets. Was taken ill the morning of September 25th, with malaise, culminating in a chill late in the evening. Fever of one paroxysm of eighty hours' duration. During the fever he did not present strikingly the appearance of yellow fever, but on the contrary, seemed rather to be the subject of malaria. He was conveyed to the Touro Infirmary. Temperature on the evening of the 26th, 104°; the following morning, 101°—in the evening, 104°; the next morning, 100°. The decline of fever on the fourth day was followed by great prostration, slow and feeble pulse, and other prominent symptoms of the adynamic stage of yellow fever: yellow skin and eyes, tongue red and fissured, gums swollen, red, dark sordes on teeth, albuminuria; black vomit on the fifth day; violent delirium, ending in convulsions, coma; death September 29th, at 9 o'clock p. m. He had recently frequented the centre of infection; visiting a friend ill of yellow fever.

Received on requisition, September 25th, from Administrator of Police, three barrels of pure carbolic acid.

Disinfected during the day, St. Joseph's Asylum and the premises on five infected squares.

September 26th. Mean temperature 77.5° F. Wind N. Dry.

Case 46. Carrie Yalitz, age 2 years, native of New Orleans. Residence, 478 Annunciation street, river side, corner Soraparu street. Was taken, September 26th, with light chill, followed by a fever of one paroxysm and of ninety-six hours' duration; great prostration attending the decline of fever; the cyanotic hue and yellow tinge of skin after the fourth day; eyes yellow; delirium, ending in convulsions and coma on the eighth day; feeble pulse and capillary stasis. Died October 5th. Dr. Lœber the physician attending. Reported October 4th.

Disinfection.—October 6th, the floors of the house, bed, bedding and clothing, the premises, and the premises on either side, were thoroughly treated with the pure carbolic acid solution; a cordon of the same was then drawn around this area.

During the day, September 26th, the premises of five squares in the infected area were disinfected, and in the same locality seven streets and banquettes were again sprinkled by the carts.

September 27th. Mean temperature 76°. Wind N. Dry.

Case 47. Louisa Hitch, age 2 years, native of New Orleans. Residence, 122 Philip street, same as cases 11 and 28. Was taken ill Wednesday morning, September 27th, with sudden and alarming prostration, cold, clammy sweat, accompanying a chill. Reaction came on at 3 p. m. The fever rose speedily to 104°, and maintaining a high temperature, continued sixty three hours. Congestion of the brain with delirium from the beginning; on the third day black vomit and purging. Dr. Murphy attending. Reported September 30th. Died October 1st.

September 27th.

Case 48. Katie Hitch, age 4 years, native of New Orleans. Residence, same as case 47. Was taken ill September 27th. Dr. Murphy attending. Reported September 30th. Fever of one paroxysm of thirty-six hours. Besides the general symptoms of yellow fever, there was congestion of brain with wild delirium. Recovered.

Disinfection.—After the death of case 47, this house, containing eight rooms, everything about the sick, the premises and adjoining premises, were most thoroughly disinfected with the pure solution, and a cordon of it was drawn around the whole.

September 27th.

Case 49. Louis Heilborne, age 6 years, native of Arkansas; in New Orleans 8 months. Residence, Jewish Orphan's Home, corner Jackson and Chippewa streets. Was taken sick September 27th, after many hours of malaise, with fever; was conveyed to the Touro Infirmary on the 29th; temperature at that time, 104° The next morning, the fourth day, it had fallen to 100°. His condition was one of collapse, with evidence of complete blood disorganization. Stasis of circulation almost complete; cyanosis; marked yellowness of skin and eyes; suppression of urine; black vomit and purging of tarry matter; delirium, followed by convulsions and coma, lasting fifteen hours. Died Monday, October 2d.

Disinfection.—The building and premises of the Jewish Orphan's Home were disinfected during the evening of the 27th, in the same manner as St. Joseph's Asylum (see case 24); since, frequently carbolized by the inmates.

September 28th. Mean temperature 72.5°. Wind N. E. Dry.

Case 50. Joseph Kinsella,, age 18 years, native of Chicago; in New Orleans 5 years. Residence, No. 689 Magazine street, lake side, between First and Second streets. Was taken ill September 28th. Dr. Layton attending. Reported September 30th. This patient spent much of his time in the infected locality. Recovered. House and premises disinfected Oct. 2d.

September 28th.

Case 51. Louisa Herwig, age 29 years, native of Germany; in New Orleans 7 months. Residence, Sixth street, lower side, corner Constance street. She nursed Mrs. Watson, case 15, who died September 18th. Was taken sick September 28th, at 6 p. m. Dr. Albert Gaudet attending. Reported September 30th. Plethoric and of fair complexion. Her attack was peculiarly malignant; a moderate chill, followed by a fever of seventy hours' duration, with high temperature steadily maintained; entire skin of a dusky or mahogany red; eyes blood-shotten; lips, gums and tongue very red; profound lethargy, with mental wandering when undisturbed; albuminuria. During the stages of collapse and secondary fever, the urine became highly albuminous; the skin and eyes yellow; hemorrhage from gums; catamenia appearing unduly and free. Died October 6th. On the 30th September the neighboring premises, two on either side, were carbolized, and a cordon of the disinfectant thrown around these. During

the night a line of crude carbolic acid was thrown around the square. Immediately after the funeral, October 7th, the rooms, bedding and everything about the deceased, the premises, and again all the premises of the square, were disinfected—also with crude acid the surrounding streets.

September 28th.

Case 52. Robert Kelly, age 37 years, native of Holland; in New Orleans 18 days. Sailor on the steamship Bolivar, laying at the foot of Jackson street. Taken ill September 28th. Conveyed to the Touro Infirmary October 4th. At that time he presented all signs of the closing stage of a fatal case of yellow fever. Temperature 104° of secondary fever. Dark bronze of skin and eyes; hemorrhage from gums, nose, ears and anus; copious black vomit; urine suppressed; violent delirium with screaming; convulsions; coma. Died October 6th.

Received of Administrator of Police, on requisition made September 28th, eight barrels crude carbolic acid, and one of pure. During the day the premises on the square containing Case 42, No. 141 Eighth street—*outside the infected area but contracted within it*—and those of the square opposite, were disinfected with the pure solution. After ten o'clock at night, a cordon of the crude acid was extended through the boundary streets by the carts, a line for each gutter. As a precautionary measure, and inasmuch as a prevailing strong wind, together with a burning heat of sun during the day, both had been acting to dissipate the volatile combination of cresylic and carbolic acid, called pure acid, distributed on the night of the 23d, I therefore used the crude acid, whereby these might be longer retained by the tar and heavier coal-tar products. Beginning after ten o'clock p. m., the sprinkling carts were filled with this crude carbolic acid undiluted. They were then driven through a double line of boundary streets of the originally infected area, as already described for the night of the 22d.

September 29th. Mean temperature 69° F. Wind N. W. Dry.

Case 53. Sister Mary Patricia, age 21 years, native of Ireland. In New Orleans eighteen months. Residence, Convent of the Sisters of Mercy, on St. Andrew street, lower side, between Magazine and Constance streets. Was taken ill

(*Continued on page* 427.)

MISCELLANEOUS.

INTERNATIONAL MEDICAL CONGRESS OF 1876.

(From "The Medical News and Library.")

The International Medical Congress of 1876, which convened in Philadelphia on the 4th of September, was the most distinguished medical gathering ever assembled on this continent. It was composed of 447 delegates. Of these 71 were foreigners, representing England, Ireland, Scotland, Belgium, Denmark, Prussia, Austria, Norway, Finland, Russia, Australia, Japan, the Argentine Republic, Cuba, Mexico, Canada, and the remainder were from the United States.

Of the delegates, it may be said that they were in every respect representative men, being the leaders of the profession of the districts or countries from whence they came, and some were the official representatives of their governments.

Among the distinguished foreigners who were present, the following may be mentioned: Mr. William Adams, President of the Medical Society of London; Dr. Robert Barnes, Obstetric Physician to St. George's Hospital, London; Dr. Gregorio Barroeta, San Luis Potosi, Mexico; Dr. T. Lauder Brunton, London, editor of *The Practitioner;* Mr. R. Brudenell Carter, Ophthalmic Surgeon to St. George's Hospital, London; Mr. Richard Davy, Hon. Sec. of Medical Society of London; Dr. Pierre Debaisieux, Professor in University of Louvain; S. Engelsted, M.D., Physician in Chief of Copenhagen Hospital; J. A. Estlander, of Helsingfors, Finland; Dr. M. W. C. Gori, of Amsterdam; Dr. J. A. Grant, of Ottawa; Edmund Hansen, M.D., President of Medical Society of Copenhagen; Dr. William H. Hingston, Mayor of Montreal; Prof. Johan Hjort, of Christiania, Norway; Dr. Edward M. Hodder, Toronto; Dr. R. P. Howard, Montreal; Dr. R. F. Hudson, of Ballarat, Australia; Prof. Hueter, of Griefswald; T. Ishigouro, Tokio, Japan; Dr. C. Lange, Lecturer on Pathological Anatomy in University of Copenhagen; Mr. Joseph Lister, Professor of Surgery in University of Edinburgh; Dr. Marcas de J. Malero, Havana; H. Miyake, Professor of Pathology in Medical College of Tokio, Japan; S. Nagayo, Director of Medical College of Tokio, Japan; Dr. G. Rawson, Buenos Ayres; D. Argyll Robertson, M.D., Edinburgh; Dr. A. M. Rosebrugh, Toronto; M. Rudnew, Professor of Pathological Anatomy in Medico-Chirurgical Academy, St. Petersburg; Dr. Leopold Servais, Antwerp; Dr. Alex. R. Simpson, Professor of Obstetrics in University of Edinburgh; Dr. James Thorburn, Toronto; Dr. Edward H. Trenholme, Montreal; Mr. Jolliffe Tufnell, President of Royal College of Surgeons, Ireland; Dr. W. A. Koukol de Yasnopolsky, St. Petersburg.

Of the proceedings of the Congress, the minutes herewith given show an amount of work, and of good work, accomplished,

such as is unparalleled by any medical gathering previously held in this country. The addresses before the Congress in general meeting were admirable résumés of the progress of medicine in America during the past century, and the papers read before the sections, and the discussions thereon, were of unusual merit.

The Congress met daily at 10 a. m., and at 1 adjourned to lunch provided them in the University Building by the medical profession of Philadelphia; at 2 o'clock it reassembled in Sections, each Section having a room admirably suited for its purposes.

At the opening of the Congress a pragramme was published, giving in detail the work for each day of the week, which was faithfully adhered to. For the convenience of the delegates, a complete list of the members registered, with their residences in Philadelphia, was published daily.

On Monday evening a public reception was tendered the delegates and their ladies at the Judges' Hall. Centennial grounds. On the other evenings, the delegates were the recipients of private hospitality. On Friday evening, the Public Dinner of the Congress was given in St. George's Hall. About 170 delegates were present. Prof. Gross presided, supported on his right by Prof. Lister, of the University of Edinburgh, and General Hawley, President of the United States Centennial Commission, and on his left by His Excellency the Governor of Pennsylvania, and Mr. Wm. Adams, President of the Medical Society of London.

On Saturday, Sept. 11, at noon, after the passage of a number of complimentary and congratulatory resolutions, the Congress was adjourned without day. Thus ended a meeting which will be long and pleasantly remembered by those who participated in it, and whose beneficial influence on American medicine will be perceived for many years to come.

Such widespread interest attaches to the proceedings of this Congress that we have devoted our entire number to it, to the crowding out of the usual sixteen pages of Gosselin's Clinical Lectures on Surgery.

International Medical Congress, Philadelphia, 1876. *Report of Proceedings.*

Sept. 4., *General Meeting.* At noon in the Hall of the University of Pennsylvania, in the presence of a large and distinguished audience, and after the invocation of the divine blessing by the Right Rev. Wm. Bacon Stevens, M.D., D.D., LL.D., Bishop of Pennsylvania, International Medical Congress of 1876 was called to order by Samuel D. Gross, M.D., LL.D., D.C.L. Oxon., President of the Centennial Medical Commission, in the following words:

My colleagues have confided to me, as the President of the Centennial Medical Commission, the agreeable and honorable duty of opening this International Medical Congress, so long

the object of their solicitude and earnest labor. In their name, then, as well as my own and that of the entire medical profession, whose great heart this day throbs in unison with ours, I extend to you our right hand, and bid you a thrice cordial welcome to the City of Brotherly Love. The occasion which has brought us together this morning is one of no ordinary kind; it is one also which has been long and, I may say, anxiously anticipated. It might, perhaps, seem ungracious if I were to tell you how much time and labor have been bestowed by the Commission through its Committee of Arrangements upon the organization of the Congress; how often they met to devise plans and to interchange views; how earnestly and thoughtfully they performed their works; in a word, how faithfully and conscientiously they discharged the great trust confided to them by the different medical bodies of the City and County of Philadelphia, in which the Congress originated nearly two years ago.

It is at all times a source of gratification to welcome friends, especially when they are united by the bonds of a common brotherhood, or an identity of interest; but on this occasion, so pregnant with important events, the feeling is vastly heightened by the fact that we have assembled around us brethren not only from every section of this great continent, but from various foreign climes—from Europe, the far East, from Japan and China, the Islands of the Pacific, South America, Mexico, the West Indies, and I had almost said, from every country in the world.

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Men laying aside for a while their ordinary pursuits, crossing vast continents and perilous seas, congregating to unite with us in celebrating our first Medical Centennial, in interchanging cordial salutations, in deliberating upon the best means of promoting the holiest and dearest interests of our profession, and in laying their contributions, the accumulations of years of study and observation, upon a common altar for the common good! In its wide range the present Congress is without a parrallel. Similar bodies have repeatedly met, but none on so grand a scale or with such a cosmopolitan outlook. * * *

We are upon the threshold of a new century. One hundred years have passed away since the grand old bell upon Independence Hall announced to the world the birth of a new nation, and liberty not only to our own citizens but to all peoples of the earth. The century that has just elapsed was the most wonderful in all that pertains to human progress, to discovery, to invention, to refinement, and to intellectual culture; in a word to all that ennobles and exalts human nature in its various aspects and phases, that has been vouchsafed to man since God said, "Let there be light." The science of medicine has been completely revolutionized within our own day. The saying, "Old things have passed away, behold all things are new," has literally been fulfilled. The microscope, chemical analysis, clinical observation, and experiments upon the inferior animals, are leading on the medical

mind with wondrous velocity in the pursuit of knowledge, and adding daily new facts to our stock of information far beyond what the wildest fancy could have conceived of even a third of a century ago. Dogmatism, once so dominant in the schools, has ceased to exist, and no unacknowledged theories are any longer received by the scientist. Facts resting upon the broad basis of observation and experiment, repeated and varied in a thousand ways, alone are relied upon as worthy of acceptance and as safe guides in practice. Hippocratic medicine is the order of the day. Everything bows before its divine behests.

In every corner of the habitable globe penetrated by the light of civilization, busy, active minds, endowed with high culture, and actuated by the noblest resolves, are at work, exploring the mysteries of disease, and devising means or methods of treatment for the relief of suffering and the prolongation of life. The busy bee was never more industriously engaged in gathering honey from the flower of the field than the modern physician is in gathering knowledge at the bedside of the sick, and garnering it for future use. Much of what is considered by many as established must be reviewed in the light of modern science; new avenues must be opened, and the ball composed of myriads of threads more delicately formed than any ever spun by Penelope, must be pushed onward and upward by the united efforts of the medical profession in all parts of the world. How far the Centennial International Congress shall promote these desirable objects time alone can determine. It may safely be predicted that, if it do not fulfil all the promises of hope that have been formed of it, it will accomplish a vast deal of useful work, and thus afford the world an earnest of its interest in the advancement of scientific medicine and in international unity. Science can have no higher mission than that of strengthening the bonds and securing the co-operation of its votaries in various parts of the globe, assembled to deliberate upon everything calculated to promote its holiest interests.

And now that the labor of the Centennial Medical Commission is completed, it only remains for the Congress, which I now declare open, to perfect its organization by the election of its own officers.

The following committee of thirteen was then appointed to nominate officers for the Congress, Mr. Wm. Adams, of London, Prof. Engelsted, of Copenhagen; Prof. Heuter, of Griefswald; Prof. Rudnew, of St. Petersburg; Dr. J. A. Grant, of Ottawa; Dr. Henry I. Bowditch, of Boston; Dr. L. A. Dugas, of Augusta, Ga.; Dr. J. T. Hodgen, of St. Louis; Dr. Christopher Johnson, of Baltimore; Dr. Austin Flint, of New York; Dr. W. S. W. Ruschenberger, of the U. S. Navy; Dr. Joseph R. Smith, of the U. S. Army, and Dr. Edwin M. Snow, of Providence.

The "Address in Medicine" was then delivered by Austin Flint, M.D., Professor of Practice of Medicine in Bellevue Hospital Medical College, New York. In it the history of medicine

and medical progress in the United States during the past century was studied from the philosophical standpoint of the agencies concerned in originating and modifying past events.

Referring to the influence exerted upon medical progress by medical journalism, Dr. Flint said the American Journal of the Medical Sciences, continued up to the present time, under the same title, issued by the several successors of the first publishers, Lea & Carey, for fifty years under the editorship of Isaac Hays, has had a powerful influence on the progress of medicine in this country. This influence has been exerted not less by its original communications than by its reviews, notices, and general intelligence. Without any disparagement of the numerous able and useful periodicals published during the last half century, may we not with a feeling of pride refer especially to a journal which, with such a history, is now the oldest living representative of medical periodical literature, and which has probably a circulation larger than that of any other in Europe or America.

The Committee on Nominations presented the following nominations as part of their report:

President—S. D. Gross, M.D., LL.D., D.C.L. Oxon., Philadelphia.

Vice-Presidents—Dr. Paul F. Eve, Tennessee; Mr. Jolliffe Tufnell, Dublin; Dr. W. L. Atlee, Philadelphia; Dr. C. Lange, Copenhagen; Dr. T. G. Richardson, New Orleans; Dr. W. H. Hingston, Montreal; Dr. J. P. White, Buffalo; Dr. H. Miyake, Japan; Prof. N. R. Smith, Baltimore; Prof. M. Rudnew, St. Petersburg; Dr. J. M. Toner, Washington, D. C.; Prof. Hueter, Griefswald; Dr. J. B. Johnson, St. Louis; Dr. F. Semeleder, Vienna; Dr. Hunter McGuire, Virginia; Dr. Johan Hjort, Christiania, Norway; Dr. G. L. Collins, R. I.; Dr. R. F. Hudson, Australia; Dr. H. Gibbons, California; Dr Pierre De Baisieux, Belgium; Dr. N. S. Davis, Chicago; Mr. William Adams, London; Dr. L. A. Dugas, Georgia; Prof. Simpson, Edinburgh; Dr. J. K. Bartlett, Wis.

Honorary Vice-Presidents—Surgeon-General Barnes, U. S. A.; Surgeon-General Beale, U. S. N.

Secretary-General—Dr. I. Minis Hays, Philadelphia.

Secretaries of Meeting—Drs. William B. Atkinson, R. J. Dunglison, R. A. Cleemann, W. W. Keen, R. M. Bertolet.

Section of Medicine—President, Prof. Alfred Stillé, Philadelphia; Secretary, Dr. J. Ewing Mears, Philadelphia.

Biology—President, Prof. J. C. Dalton, New York; Secretary, Dr. James Tyson, Philadelphia.

Surgery—President, Prof. Joseph Lister, Edinburgh; Secretary, Dr. J. H. Packard, Philadelphia.

Dermatology and Syphilology—President, Dr. J. C. White, Boston; Secretary, Dr. A. Van Harlingen, Philadelphia.

Obstetrics—President, Prof. Robert Barnes, London; Secretary, Dr. William Goodell, Philadelphia.

Ophthalmology—President, Dr. R. Brudenell Carter, London; Secretary, Dr. John Green, St. Louis.

Otology—President, Dr. Clarence J. Blake, Boston; Secretary, Dr. H. N. Spencer, St. Louis.

Sanitary Science.—President, Dr. Stephen Smith, New York; Secretary, Dr. E. M. Hunt, New Jersey.

Mental Diseases.—President, Dr. J. P. Gray, Utica; Secretary, Dr. W. Kempster, Wisconsin.

The report was accepted, and the nominees were unanimously elected.

Dr. Gross, on taking the Presidential Chair, thanked the Congress for the honor conferred on him, and said that no other would be dearer to him during the remainder of his life than that of presiding over their deliberations. He considered it was an honor not solely bestowed on him, but as a tribute to the profession of Philadelphia, who had been so instrumental in organizing this Congress. To preside over such a body, he said, is an honor of no ordinary kind.

At 3 p. m., after luncheon, the Congress met in Sections.

SECTION I. *Medicine.*—The subject assigned for discussion was "Typho-malarial Fever: Is it a Special Type of Fever?" and was introduced by Surgeon J. J. Woodward, U. S. Army.

Dr. Woodward made some preliminary remarks on the mortality of armies from disease, with comments on the comparison recently drawn by Professor Virchow between the mortality of the United States armies during the late civil war and that of the German armies during the war with France.

He then referred to the fatality of camp fevers during the American civil war, and to the general belief among medical officers early in the war that these fevers represented a "new type of disease."

The history of the introduction of the term typho-malarial fever was then given, and the proposition submitted that whenever great armies campaign in malarial regions the prevalent fevers are hybrids, between malarial fevers and some form of typhus. Historical illustrations were drawn from (*a*) the siege of Naples, 1528; (*b*) the Hungarian campaigns, from 1526 to 1788; (*c*) the morbus mucosus of Roederer and Wagler; (*d*) the Walchern expedition of 1809; (*e*) Virchow's comments on the fevers of the German army in France.

Dr. Woodward then remarked on the distribution of malarial fevers and of typhoid fever in the United States, and on their relation to season of year; on the substitution of malarial fevers in particular regions, or at particular times, by typhoid; on the early recognition of hybrid forms by Drake; and on the recognition of similar hybrids by European authors as well as by Americans.

The author then referred to the typho malarial fever of the civil war. This term, he said, was never meant to represent a specific

type of fever, but intended to designate all the many-faced brood of hybrid forms resulting from the combined influence of the causes of malarial fevers and of enteric fever. He then sketched the symptoms and pathological anatomy, and referred to the two great group of cases: those in which the malarial element predominates, and those in which the typhoid element predominates; and to the scorbutic taint as a complication of either group during the civil war.

After considerable discussion, the Section adopted as its opinion the following conclusion: Typho-malarial fevers is not a special or distinct type of disease, but the term may be conveniently supplied to the compound forms of fevers which result from the combined influence of the causes of the malarial fevers and of typhoid fever.

SECTION II., *Biology.*—Christopher Johnston, M.D., Prof. of Surgery in the University of Maryland, opened the discussion on the "Microscopy of the Blood." He referred to the original source of blood in vertebrates; elements of blood in vertebrates; the normal elements having *form* exclusively considered, as regarded from two points of view; *a*, that of anatomy and physiology; and, *b*, that of medical jurisprudence; genesis of corpuscles; form of colored corpuscles and their structure; leucocytes; size of colored corpuscles; their enumeration; the colored blood corpuscles in medical jurisprudence. The paper was descriptive, and no conclusions were presented.

SECTION III., *Surgery.*—Dr. John T. Hodgen, Prof. of Surgery in St. Louis Medical College, opened the discussion on "Antiseptic Surgery," and laid down the following propositions:

I. Putrefaction may and does occur in the solids and liquids of the body both with and without the direct contact of germs borne in the air or water.

II. Putrefaction of the solids and liquids of an open wound may in many cases be prevented if the contact of living germs with the surface is not permitted, or by destroying their vitality after contact with it.

III. It is possible that the living solids and liquids of the body may be so altered that they shall not furnish the conditions necessary to putrefaction.

IV. Practically, the conditions to be met in preventing putrefaction are so difficult that in many cases it is impossible to comply with them. Yet, even partial success is eminently worthy of our best efforts.

This subject led to a very animated debate, which consumed the entire afternoon, and was adjourned to the next day.

SECTION IV., *Dermatology and Syphilology.*—The discussion on the "Variations in Type and Prevalence of Diseases of the Skin in Different Countries of Equal Civilization" was introduced by James C. White, M.D., Prof. of Dermatology in Harvard University. The Section adopted the following conclusions on the subject:

1. Certain obscure affections, the etiology of which is little if at all unnerstood, even in those parts of Europe to which they are mostly confined, may be regarded as practically non-existent among us—of such are *prurigo*, *pellagra*, and *lichen exudativus rubra*.

2. Certain diseases, directly connected with and dependent upon poverty and habits of personal uncleanliness, are less prevalent in the United States than in those parts of Europe of which we have sufficient statistical information for comparison. Examples of this class are the *animal parasitic affections* especially.

3. Some cutaneous affections of grave character, which are dependent upon, or a part of serious constitutional disorders, are of less frequent occurrence and of milder type amongst us than in Europe in general, or those parts of it where they are endemic. *Lupus*, the *syphilodermata*, and *leprosy* are the most marked instances of this class.

4 Certain disorders of the skin, especially those of its glandular systems, and these connected more immediately with its nervous system, are apparently more prevalent with us than in Europe. The most notable examples of the former are *seborrhœa*, acne, and possibly the heat rashes; of the latter, *herpes*, *urticaria*, and *pruritus*.

In addition to the above-mentioned conclusions, the following additional proposition was adopted by the Section:

5. The type of certain acute congestive and nervous diseases of the skin is more severe in this country than abroad.

SECTION V., *Obstetrics*.—Prof. Robert Barnes, of London, on taking the chair, said: I do not know how I can express myself for the very unexpected honor of being called upon to preside over this Section, one of the most important connected with this Congress. In England we recognize the value of this branch of study, but there is no country that can claim superiority over America in the development of the science of the subject. Your authors and writers are acknowledged as authorities, and, as you are in the lead, it is incumbent upon you to cultivate and improve your discoveries. It is doubly incumbent upon us to cultivate the practice of obstetrics, for it lies at the very root of the race, and unless you practise those sciences which make it more effective, we are cut off at the root.

I am not as yet familiar with the order of business, and shall have to depend upon the secretary, Dr. Goodell, and may need coaching from the vice-presidents and members. I have no doubt the secretary will aid me as to the names of those who take part in our discussions. That this is a great feature in the Congress no one can doubt. I was asked why I did not attend a congress in St. Petersburg, which might be called a great centre. I preferred to come here, and yet it seems singular to leave the centre and come to what we might call the outside. It is no

slight task to spend three weeks of one's holiday on the stormy ocean; but our assembly to-day is an event, it might be called an epoch, in the history of medicine. I hope to hear some interesting discussions upon topics brought before us, and have no doubt I shall go back to my home wiser than when I came.

The question for discussion was "The Causes and the Treatment of Non-Puerperal Hemorrhages of the Womb," and it was introduced by William H. Byford, M.D., Professor of Obstetrics in Chicago Medical College.

The Reporter approached a sequential classification by showing—

(*a*) That the uterus is prone to homorrhage, because of the conditions connected with menstruation;

(*b*) That the causes of metrorrhagia act by aggravating these conditions;

(*c*) That these causes sometimes have their origin in the nervous system, and sometimes in the vascular;

(*d*) That of the latter causes some operate by increasing the flow of blood through the uterine vessels, while others effect the same results by retarding the current of blood in them.

The mode of treatment advocated consists—(*a*) In removing the causes, and (*b*) in surgical, mechanical, and medicinal means to check the flow in great emergencies.

SECTION VI., *Ophthalmology.*—Henry W. Williams, M.D., Professor of Ophthalmology in Harvard University, introduced for discussion "The Comparative Value of Caustics and of Astringents in the Treatment of Diseases of the Conjunctiva, and the Best Mode of applying them."

He spoke of affections of the conjunctiva in which neither caustics nor astringents are indicated; of the various forms of conjunctivitis, and the extent in which caustics or astringents may be usefully applied; of the modes of applying these remedies to best advantage; and of complications—in which the conjunctivitis is the rssult of other morbid processes—or in which the existing morbid conditions are the consequence of previous conjunctivitis, with the treatment of such complications.

The conclusions offered by the Reporter were, after slight amendment, adopted by the Section:

1. In a considerable number of essentially transient affections of the conjunctiva and in pterygium or other growths, no active treatment by caustics or astringents is required.

2. When disease affects only a limited portion of the conjunctiva, as in phlyctenular inflammation, the mildest stimulating or astringent remedies are usually sufficient.

3. In the acute and chronic forms of general conjunctivitis, astringents are, as a rule, safer, as well as more efficacious than caustics, and therefore better adapted to the requirements of the general practitioner.

SECTION VII., *Otology.*—The subject for discussion, "The Importance of Treatment of Aural Diseases in their Early Stages,

especially when arising from the Exanthemata," was introduced by Albert H. Buck, M.D., of New York.

His remarks were based exclusively on affections of the middle ear associated with the formation of pus; the serious nature of this form of disease, oftentimes impairing the hearing very markedly, and occasionally terminating in death.

He remarked that the anatomical relations of the middle ear afford an explanation of the serious results that may follow an acute inflammation of these parts; on the impotent nature of the means commonly employed for the relief of such an inflammation; on the great value of paracentesis of the membrana tympani as a preventive of chronic purulent inflammation of the middle ear, and all its serious consequences.

The general practictioner was urged to acquaint himself with the use of the speculum and mirror, as means of ascertaining accurately the condition of the ear.

The Section adopted the following conclusions on the subject:

1. Chronic Otorrhœa is at the present time a very common disease, due in most cases to the want of proper treatment during the acute stage of the affection.

2. It is by no means a harmless affection.

3. It may be fairly classed as a preventable disease; at least among those who possess a healthy constitution.

4. Paracentesis of the membrana tympani, if resorted to during the first few days of the acute attack, and if not carried out too timidly, *i. e.*, if a free incision be made, and not a mere prick, is almost a sure preventive of the subsequent chronic disease.

5. The profession at large, and especially the medical schools, should give the subject more earnest thought than they have in the past.

SECTION VIII., *Sanitary Science.*—The discussion on the "Present Condition of the Evidence concerning Disease-Germs" was introduced by the Reporter, Thomas E. Satterthwaite, M.D., of New York.

He first considered the (1) Vegetable Germ Theory in contradistinction from other prominent theories, especially (2) the Bioplasm Theory, and (3) the Physico-Chemical Theory.

Especial attention was directed towards the general topics: (*a*) The agency of minute, organized particles of a vegetable nature in the production of fermentation and putrefaction; (*b*) the epidemic diseases of certain plants and animals in their relation to minute vegetable organisms; (*c*) rapid multiplication of bacteria *pari passu* with the rapid spread of disease manifestations throughout the system; (*d*) the constant ratio between the most active changes in the so-called septic diseases, such as pyæmia, erysipelas, and puerperal fever, with the numerical increase in bacteria at the points involved; (*e*) can any strictly chemical substance be a fever producer? (*f*) bacteria and dis-

ease poisons; their capacity for successfully maintaining active properties; (*g*) inoculation of bacteria in healthy tissues.

The following special topics were then considered:

I. Bacteria: (*a*) their classification; (*b*) diagnosis; (*c*) appearances under varying conditions.

II. The poisonous fluids of infective diseases, as regards their physical properties and the solid particles contained in them.

III. The value of vacuum tube experiments.

IV. How far are either the Bioplasm or the Physico-Chemical Theories competent to explain the spread of infective diseases?

V. The poisons of special diseases, such as cholera, small-pox, the carbuncular diseases of men and animals, typhus and relapsing fevers, and diphtheria, in their relations to minute organisms.

The author's conclusions, after slight modification, were adopted as the opinion of the Section, as follows:

1. That so far as inquiry has been made as to the results of the active principles in infective diseases, it is probable that in a certain number the matter is particulate or molecular in form, and in the instances named, in no sense a soluble substance.

2. That in regard to the causes of septicæmia, pyæmia, puerperal fever, erysipelas, and hospital gangrene, and in cholera, small-pox, the carbuncular diseases of men and animals, of typhoid and relapsing fevers, and diphtheria, there is not satisfactory proof that they are necessarily connected with minute vegetable organisms.

3. That the real nature of these causes is still uncertain.

A paper on the "Vital Statistics of the City of Buenos Ayres" was read in abstract by G. Rawson, M.D., of Buenos Ayres.

SECTION IX., *Mental Diseases.*—The first question for discussion, the "Microscopical Study of the Brain," was reported upon by Walter Kempster, M.D., Physician and Superintendent of Northern Hospital for Insane, Oshkosh, Wis.

He first gave a brief statement, outlining the progress made by recent investigators in studying the pathological histology of the brain in insanity, and the following subjects were introduced:

(*a*) The importance of microscopic observations of the several cerebral membranes, to determine their pathological condition, and the relations that the various pathological states hold to the forms of mental aberration;

(*b*) The abnormalities in arterioles and capillaries, including the various deposits on the walls of the vessels; engorgement and its consequences; the several changes observed in the coats of the vessels, occlusion from minute thrombi; and embolism; alterations in the course of the vessels, and the effect these conditions have upon the surrounding brain tissue;

(*c*) Miliary aneurisms and miliary hemorrhages; the effect they have in the production of brain disease;

(*d*) The perivascular sheath, and perivascular canal, as they

are found in cases of insanity, considered in their relations to adjacent brain tissue;

(*e*) The various alterations of structure and form noted in nerve cells and nerve fibres, in the several forms of insanity,

(*f*) The abnormalities in the neuroglia, and the conditions called "miliary sclerosis" and "celloid degenerations" were described, and the influence each condition has in impairing normal cerebral action was discussed;

(*g*) The various pathological conditions found in the microscopic examination of the brain in a number of cases of insanity were beautifully illustrated by means of photo-micrographs and lantern views, made from fresh and prepared specimens. The pathological states observed were considered with reference to the mental symptoms noticed during the course of the various forms of insanity.

At 8 p. m. a Public Reception was tendered the Congress by the Medical Profession of Philadelphia, in Judges' Hall, Exhibition Grounds, Fairmount Park. It was largely attended by the delegates and their ladies.

September 5th., 2d General Meeting.—The Congress met at 10 a. m. The President, Dr. S. D. Gross, in the chair.

Reports from the various sections, containing the results of their deliberations, were read and accepted.

Dr. T. G. Richardson, of New Orleans, moved that the Congress holds itself in no way responsible for the conclusions adopted by the Sections. Adopted.

Dr. N. S. Davis, of Chicago, moved that the order upon the reports from Sections be only upon their acceptance and reference for publication.

The Secretary-General read letters of greeting to the Congress from the Imperial Medical Society of St. Petersburg, Russia, and from the University of Christiania, Norway. Also a letter from Assistant-Surgeon J S. Billings, U. S. Army, presenting a copy of the Specimen Fasciculus of the Subject Catalogue of the National Medical Library.

Dr. Austin Flint, of New York, offered the following preamble and resolutions:

Whereas, The institution of a National Library containing all the important bibliographical and periodical publications relating to medicine and the collateral sciences, in the past and present time, is of importance, not alone to the medical profession, but to persons in other pursuits who may desire to refer to works treating of topics embraced in these departments of knowledge, and also concerns greatly the public welfare in so far as this is involved in the elevation of the standard of medical education; and

Whereas, Through the wisdom of the National Legislators of the United States Government, a medical library has been estab-

lished, containing, at the present time, about 40,000 volumes, and about the same number of single pamphlets; and

Whereas, Experience has already shown the practical advantage of the present library, and, at the same time, the great need of its being made more complete by increasing at least tenfold the number of publications which it now contains; and

Whereas, In order to render such a library available for reference, especially to medical men and others residing at a distance, a catalogue wherein publications are classified after the names of authors and subjects, the scope of each publication being stated, is indispensable; and

Whereas, Such a catalogue of the National Medical Library has been prepared under the direction of the Surgeon-General of the United States Army by Assistant-Surgeon J. S. Billings, and copies of a specimen fasciculus having been forwarded for examination by the members of the International Medical Congress; therefore

Resolved, First. That the members of this International Medical Congress regard with great interest the institution of a National Medical Library, in the City of Washington, and respectfully petition the Congress of the United States to provide for additions to the number of volumes and periodical publications, until the library is made as complete as possible.

Second. That in view of the necessity of what is known as a *Catalogue raisonné* in order to render the Library properly available for reference, this International Medical Congress urges the importance of an early completion and publication of such a catalogue.

Third. That the Specimen Fasciculus of the Catalogue, which is stated to be nearly ready for the press, affords evidence of great labor and care, and the arrangements for convenience of reference it is believed will prove in all respects satisfactory.

Fourth. That those of the delegates to this International Medical Congress who are citizens of the United States, and other members of the medical profession in this country, are urged individually to exert their influence to secure the enlargement of the Library and the speedy publication of the Catalogue.

Adopted.

The Committee on Nominations presented the following additional report, which was accepted, and the nominees were unanimously elected.

Committee on Publication (with power to choose its chairman and an editor)—Dr. John Ashhurst, Jr., Dr. R. J. Dunglison, Dr. William Goodell, Dr. James H. Hutchinson, Dr. Caspar Wister.

Vice-Presidents of the Sections.

Medicine—Dr. R. P. Howard, Canada; Dr. J. J. Woodward, U. S. A.

Biology—Dr. A. Flint, Jr., New York; Dr. F. W. Campbell, Canada.

Surgery—Dr. J. A. Grant, Canada; Dr. J. Ashhurst, Jr., Philadelphia.

Dermatology and Syphilology—Dr. S. Englested, Copenhagen; Dr. E. Shippen, U. S. Navy.

Obstetrics—Prof. Alex. Simpson, Edinburgh; Dr. W. H. Byford, Illinois.

Ophthalmology—Dr. William Thompson, Philadelphia; Dr. Henry W. Williams, Boston.

Otology—Dr. A. H. Buck, New York.

Sanitary Science—Dr. J. S. Billings, U. S. Army; Dr. H. B. Baker, Michigan.

Mental Diseases—Dr. I. Ray, Philadelphia; Dr. E. Grissom, North Carolina.

The address on "Hygiene and Preventive Medicine," by Henry I. Bowditch, M.D., President of the State Board of Health of Massachusetts, was then read, Vice-President Paul F. Eve, M.D., of Tennessee, in the chair. Of this address the following is a brief abstract:

The paper stated that public hygiene, as we now understand that term, has, till within a very short time, been wofully neglected; save when, under the stimulus of some great and terrible epidemic, frantic but temporary efforts have been made to stay the plague by hygienic or by other means. Of late, however, a new and better era seems opening to our view, and State preventive medicine affords us higher hopes for all coming time. To this last, this noblest phase of public hygiene, its very gradual evolution out of the dogmatism and scepticism of the past, its present status, our duties relative thereto, and our golden hopes for its future, the writer craves the candid consideration of the Congress.

During the past three or four years there has sprung up in many parts of the country a widespread thoughtfulness about the great necessity of hygienic measures. A large majority of the States and Territories of this Union do not appreciate the duties devolving upon them to care for the health of their citizens. Of the forty-eight governments in this Union thirty-four show but little care for the health of their citizens.

With reference to public hygiene, thirty-six States reply that they are unwilling to spend money for the formation of local or State Boards of Health, and ten reply that they are willing.

To the question, Is the State willing to spend money to carry out scientific investigation as to the cause of disease? thirty answered, no, and twelve, yes.

To the question, Is the State willing to spend money to suppress noxious or offensive trades? twenty-six answered, no, and fourteen, yes.

To the question, Is the State willing to spend money to prevent the adulteration of food? twenty-three answered, no, and sixteen, yes.

To the inquiry, Is the State willing to spend money to prevent the cattle disease? twenty-one answered, no, and ten, yes; and to the inquiry, Is the State willing to spend money to carry on investigations tending to Public Health, or to prevent ill health? twenty-eight answered, no, and ten, yes.

Twelve only of the States have State Boards of Health, and not one has a full list of correspondents.

In but four of the States have county boards of health been established by law. Not one State has ever made a sanitary survey of its territory.

Twenty States answer that they have a law for the registration of births, deaths, and marriages, and sixteen have none.

Twenty-four States report that nothing has been done for the drainage of land, and one cannot but recommend the example of Illinois to the consideration of her sister legislatures.

To the question, Has any law been passed looking to the irrigation of land? five answered, yes, and thirty-one, no. All the affirmative replies, except one, viz., Utah, report that it was done for agricultural purposes. In but fourteen of the States has any law been passed for introducing water into cities.

To the questions, Has any law been passed relative to the prevention of contagious diseases? 1st. Small-pox, sixteen answer, no; twenty-one, yes. 2d. Cholera, twenty-one, no; sixteen, yes. 3d. Yellow fever, twenty, no; twelve, yes. 4th. Cattle disease, twenty, no; eleven, yes.

Relative to the passing of a law regulating tenement houses for the poor, Dr. Bowditch said there are houses in this country and in Europe where the poor are obliged to reside, and where it is impossible for them to grow up except to crime, filth, and disease.

Two-thirds of the people of this Union are living utterly regardless of whether they are drinking pure water, or water impregnated with filth.

The address on "Medical Chemistry and Toxicology" was then delivered by Theodore G. Wormley, M.D., Professor of Chemistry in Sterling Medical College, Columbus, Ohio.

The *Sections* met at 2 p. m.

SECTION I., *Medicine.*—Dr. J. Lewis Smith, Physician to the New York Infant's Hospital, introduced the discussion on the question, "Are Diphtheritic and Pseudo-membranous Croup Identical or Distinct affections?"

The points made by the author were, that croup is a local malady, and that diphtheritic laryngitis is the expression or manifestation of a general malady.

He referred to the anatomical characters of the affections, and adduced evidence to show that they are identical in kind as regards the state of the larynx, but differing in degree or intensity.

He illustrated his remarks by clinical facts, which indicated their duality.

The following conclusion was adopted by the Section: That in view of the wide diversity of opinion at present existing as to the relations between diphtheria and croup, the Section on Medicine prefers to recommend the paper of Dr. J. Lewis Smith to the Congress for publication, with the expression of their opinion of its high value as an important contribution to the literature of the subject, but without the expression of any definite conclusion upon the point at issue.

SECTION II., *Biology*.—The subject for the afternoon's discussion was "The Excretory Function of the Liver," with Austin Flint, Jr., M.D., Professor of Physiology in Bellevue Hospital Medical College, New York, as Reporter. The following conclusions of the Reporter were adopted by the Section:

1. Cholesterin exists in health, in the bile, blood, and nervous matter, also in the crystalline lens, the spleen, and meconium.

2. Cholesterin is formed for the most part in the nervous matter, from which it is passed into the blood. The blood gains cholesterin in its passage through the brain. Its formation is constant, and it is always found in the blood.

3. Cholesterin is separated from the blood by the liver, and discharged with the bile. It pre-exists in the blood, serves there no useful purpose, and if allowed to accumulate, blood poisoning results.

4. The bile has two separate and distinct functions, one connected with nutrition, to which the so-called biliary salts, glycocholate and taurocholate of soda, contribute; these do not exist preformed in the blood, but are products of *secretion*. The second function of the bile is *excretory*, connected with depuration or excretion; this is accomplished by the removal of the cholesterin which it obtains from the blood.

5. Normal feces do not contain cholerestin. The latter substance is represented by *stereorin*, formerly called serolin, into which it is converted in its passage down the intestine. The conversion of cholesterin into stercorin does not, however, take place when digestion is arrested or when it is not necessary, as is shown by the presence of cholesterin in its own form in the feces during fasting, and in the meconium.

6. The difference between the two varieties of jaundice; one mild and the other severe, is dependent on obstruction of the bile-ducts in one instance, with reabsorption of the bilary coloring matters, while in the others there is retention of cholesterin in the blood in consequence of destruction of the parenchyma of the liver.

7. That the condition of the blood dependent upon the presence of cholesterin in the blood is called *cholesteræmia*. It is characterized by symptoms referable to the brain, and may or may not be attended with jaundice.

8. Cholesteræmia does not occur in every disorder of the liver, because, even when a part of the organ is disorganized, there may remain a part still capable of performing the functions of excreting cholesterin.

9. In cases of simple jaundice, even when feces are decolorized; there is no accumulation of cholesterin in the blood.

10. Cholesterin bears the same relation to the liver as urea does to the kidneys.

SECTION III., *Surgery.*—The afternoon was devoted to the continuation of the discussion of the previous day on Antiseptic Surgery, the principal speaker being Mr. Joseph Lister, Prof. of Surgery in the University of Edinburgh. His remarks were illustrated by a partial demonstration of his antiseptic method.

The Section decided by vote that it was unable, in the present state of the subject, to come to any distinct conclusion in regard to the antiseptic method.

SECTION IV., *Dermatology and Syphilology.*—Question, "Are Eczema and Psoriasis Local Diseases, or are they Manifestations of Constitutional Disorders?" Reporter; L. D. Bulkley, M.D., of New York. His arguments were drawn from—

I. Nature of the eruption in constitutional disorders affecting the skin, as in the contagious fevers, syphilis, etc.

II. Nature of local diseases.

III. Microscopic anatomy of eczema and psoriasis.

IV. Clinical history of eczema and psoriasis; *a*, age; *b*, sex; *c*, location; *d*, relapses; e, hereditary transmission; *f*, gouty and rheumatic systoms; *g*, urinary disturbances; *h*, bronchitis, etc.

V. Clinical history of local diseases, epithelioma, verruca, parasitic and mechanical disease of the skin, etc.

VI. Effect of local treatment.

VII. Effect of constitutional treatment.

The conclusions offered by Dr. Bulkley and adopted by the Section are as follows:

1. Eczema and psoriasis are distinct diseases. The former is to be clearly distinguished from artificial dermatitis, and the latter from the eruption of syphilis, scaly eczema, and leprosy.

2. Eczema and psoriasis cannot own a double causation or nature at one time local and at another constitutional; but, with other diseases, may have a twofold cause, a predisposing and an exciting.

3. Eczema and psoriasis in many of their features resemble the accepted constitutional diseases more than they do those recognized as local.

4. Eczema is most properly likened to catarrh of the mucous membranes; it is very probable that some attacks called catarrh are eczema and psoriasis of the mucous tissue.

5. Both eczema and psoriasis resemble gout and rheumatism in certain respects, and are dependent upon a somewhat similar, although as yet unknown, constitutional cause; much of the skin

lesion must be looked upon as the local result or remains of the diseases.

6. There as yet exists no microscopical or physiological proof that eczema and psoriasis are the sole result of local cell disorder, either congenital or acquired, or due alone to perverted nerve action.

7. Local causes play a very important part in the etiology of eczema. They are probably inoperative in psorisis.

8. Local treatment is often insufficient alone to remove the lesions of eczema and psoriasis, and cannot prevent or delay relapses; its success does not necessarily demonstrate the local nature of these affections.

9. Constitutional treatment, alone and singly, can cure many cases of eczema and psoriasis, and prevent or delay relapses in a certain proportion of cases; under constitutional treatment is included every agency not properly classed among local measures.

10. The total weight of evidence and argument is that eczema and psoriasis are both manifestations of constitutional disorders and not local diseases of the skin.

There was also read in this Section an interesting paper on "Leprosy," by F. H. Enders, M.D., Government Physician to Sandwich Islands, and one entitled "What is the Disease known as Lupus," by Dr. Woskrijinjky, of St. Petersburg.

SECTION V., *Obstetrics.*—The question for discussion, "The Mechanism of Natural and Artificial Labor in Narrow Pelves," was introduced by Wm. Goodell, M.D., Clinical Professor of Diseases of Women in University of Pennsylvania.

After defining a narrow pelves, and describing the more common kinds of pelvic deformity, the following topics, regarding alone the mechanism of labor, were introduced for discussion:

How does the head enter and pass the brim in the flat pelvis; and how in the generally contracted pelvis? The commonly accepted doctrine of the initial flexion of the head was contested.

II. How does the after-coming head behave in the flat pelvis, and how in the generally contracted pelvis?

III. What effect has instrumental interference on the mechanism of labor in such pelves?

IV. Has turning any mechanical advantages over the use of the forceps?

Regarding then the mechanism alone of labor in narrow pelves, to which the scope of this paper is strictly limited, the following conclusions were reached:

1. The unaided first-coming head, and the aided after-coming head observe in a flat pelvis precisely the same general laws of engagement and of descent. Hence, version here means art *plus* nature.

2. The forceps, however, applied in a flat pelvis antagonizes more or less with the natural mechanism of labor. Hence, the forceps here means art *versus* nature.

3. The aided and the unaided first-coming head observe in a uniformly narrowed pelvis precisely the same laws of engagement and of descent. But version violates these laws. Hence, the forceps here means art *plus* nature; version, art *versus* nature.

4. That at, or above, the brim of a flat pelvis, the fronto-mastoid, or even the fronto-occipital, application of the forceps interferes less with the moulding of the head, and violates the natural mechanism of labor less than the biparietal pelvis.

5. In the flat pelvis, the vectis aids the natural mechanism of labor, and, therefore, meets the indications better than the forceps.

Dr. T. K. Holmes, of Chatham, Canada, then read a paper on the "Management of Convulsions in Children depending upon a High Temperature of the Body."

Dr. Julius F. Miner, of Buffalo, read a paper on the "Enucleation of the Ovarian Cyst."

SECTION VI., *Ophthalmology.*—"Tumours of the Optic Nerve." In opening this discussion, Dr. Hermann Knapp, of New York, presented a careful analysis of all recorded cases, including those which had fallen under his own observation.

Dr. C. R. Agnew, of New York, presented a valuable paper, entitled "Contributions to the Statistics of the Conditions of the Eyes of Scholars."

SECTION VII., *Otology.*—The question "What is the best means of Testing the Hearing?" was reported upon by Dr. Charles H. Burnett, Aural Surgeon to the Presbyterian Hospital in Philadelphia.

He considered (I.) the character of the three principal tests (the watch, the tuning-fork, and speech) in use among aurists. The manner in which these tests are heard by the normal ear, and wherein the diseased ear fails to hear them.

II. Deficiencies are discrepancies in the hearing power of the diseased ear. In some cases the power to hear certain sounds in the musical scale drops out, while the power to hear others remains comparatively good.

Can diseases be diagnosed by the manner in which an ear hears certain tests? If so, what will give most aid in such a search? Most probably the voice.

III. *Manner of Testing.*—(*a*) The importance of isolation of the better ear, during the test, in one-sided deafness. In any case, important to know how much is heard through the air, and how much is conveyed through the bones of the head. Want of precision in this has led to great errors in diagnosis and prognosis, in cases in which the nerve is good, but in which the sound-conducting apparatus, chiefly the middle ear, has been greatly diseased

(*b*) Consideration of what is needed for any form or test. An arbitrary sound unit may be established. Its usefulness and its objections. An apparatus might be made to give out a set of

notes of fixed value. The usefulness of such an apparatus as well as its disadvantages. How well the demands of any test are met by watch, tuning-fork, and *human voice*. Conclusions favorable to the latter drawn from preceding remarks, with the recommendation of a series of test words.

SECTION VIII., *Sanitary Science*.—The discussion on the question of "Hospital Construction and Ventilation" was opened by a valuable historical paper by Dr. Stephen Smith, Prof. of Orthopædic Surgery in University of City of New York.

Dr. J. S. Billings, U. S. A., explained the preliminary plans for the Johns Hopkins Hospital, Baltimore.

SECTION IX., *Mental Diseases*.—The "Responsibility of the Insane for Criminal Acts." The following is a summary of remarks made by Dr. Isaac Ray, of Philadelphia, in opening the discussion on this subject:

Still great differences of opinion among physicians, lawyers, and men of the world on the question how far insanity shall be admitted as an excuse for crime. Lord Hale's doctrine that partial insanity—that in which the patient is reasonable and correct on many subjects—does not necessarily exempt one from the penal consequences of crime, still shapes the decisions of English and American courts. Tests for determining what kind of partial insanity does and what does not excuse for crime are diverse, unsatisfactory, and none supported by correct scientific knowledge of insanity. Delusion has been decided to be a sufficient excuse only when the criminal act committed under its influence would have been legally justified had the delusion been true. Notwithstanding many of the insane think and act correctly to some extent, yet it is impossible to say, with any near approach to certainty in any given case, where sanity ends and insanity begins.

Two mistakes are made by lawyers in estimating the responsibility of the insane, viz., they define the scope of the influence of the mental disorder in an arbitrary manner, unsupported by the facts of psychological science, and they regard the affective faculties as without any part in the play of disease. The latter mistake pervades the theories of the law and the judgments of those who pretend to no law. The moral like the intellectual faculties are dependent for their exercise on the brain—the larger part of the brain, probably, being devoted to this purpose, Consequently, disease of the brain must necessarily affect the manifestations of these faculties. Whether the one or the other class, or both, is affected will depend on the part of the brain diseased. Sanity supposes the integrity is destroyed, insanity is the result, wherever the lesion may be. Whatever faculties may be affected or not affected, apparently, responsibility is presumably impaired. It is for the party alleging the contrary to prove it. Punishment of persons admitted to be insane, for criminal acts, has been advocated for the sake of the example. No good effect can be shown by a single case in point. Patients

in our hospitals are never punished; they may be deprived of a favor or privilege which they have shown themselves incapable of using properly.

Wrong as our present mode of procedure is, no change for the better seems very practicable, unless it may be that which takes the question of insanity entirely from the court and gives it to the jury as one exclusively of fact.

The Section adopted, by unanimous vote, the following conclusions: 1. There is at present a manifest tendency to hold the insane responsible for criminal acts. 2. That this tendency is unjust, unphilosophical, and contrary to the teachings of pathology, which clearly points out that insanity is but the expression of disease.

September 6th, 10 a. m., *3d General Meeting.*—Dr. Gross, President, in the chair.

Reporters from the various Sections were received and accepted.

Dr. John A. Atlee, of Lancaster, Pa., moved that the Committee on Publication be instructed to send to the governor of each State and Territory, for transmission to their respective legislatures, a copy of the address of Dr. Bowditch on Hygiene and Preventive Medicine. Adopted.

On motion of Dr. Trenholme, of Montreal, each Province of the Dominion of Canada was included.

The following resolutions from the Section on Medicine were adopted:

Resolved, That the International Medical Congress of 1876 recognizes the advantages which would accrue from the introduction of a gradual uniformity in the multiple and heterogeneous elements of physic, as posology, nomenclatures, etc., and in the means and records of medical observation.

Resolved, That in consequence this Congress authorizes the President to appoint three delegates to the International Congress of 1877, with the special mission of presenting a schedule of the means of uniformity in physic actually applicable in all countries, and another of those which could soon be made acceptable by the profession at large.

Resolved, That the said delegates be advised to invite the cooperation of the men who have already worked for the same cause at the International or National Medical or Pharmaceutical Congress of Paris, Vienna, St. Petersburg, Brussels and Buffalo.

Under the resolution the following delegates were appointed: Henry I. Bowditch, of Boston, Dr. J. J. Woodward, of Washington, and E. Seguin, of New York.

The "Address in Surgery" was then delivered by Paul F. Eve, M.D., Prof. of Surgery in University of Nashville; Prof. Rudnew of St. Petersburg, Vice-President, in the chair.

After this the "Address on Medical Biography" was read by Dr. J. M. Toner, of Washington, D. C. He said: I appear before

you to discharge the duty assigned me of preparing a biographical retrospect of the medical profession of the United States during the Centennial period just passed.

In glancing over the period to be embraced in this retrospect, I am struck by the paucity of really striking events which influenced the practice of medicine, and that have left special marks at the end of the first century of our national existence. Wars have generally been promotive of medical science, and our profession was no doubt much benefited by the contest for independence.

For the first quarter of a century after this armed struggle, the leading physicians and surgeons were those who had served in the army. The most notable event of this period was the occurrence of an epidemic of yellow fever, which appeared in the summer of 1793 and 1798 in nearly all our Atlantic cities. This disease tested the courage and taxed the energies and best skill of the profession, and prompted the more eminent to reduce their observations to writing and to have them published either in defence of their practice or for the laudable purpose of making contributions to medical science.

The second quarter of the Centennial period was distinguished by the introduction of vaccination, the occurrence of spotted fever, and the war of 1812. All of these were events which stimulated the profession to more extended studies and became incentives to authorship; this was especially true of the disease known as spotted fever.

The war of 1812 proved to be another great school of experience, although it was not fruitful in medical reports or publications. The aspiration which it aroused, however, in the profession, gave an impetus to the establishment of medical periodicals and the founding of medical colleges and hospitals.

In following out the plan of dividing the century into quarters, the third may be marked as noted for the discovery of anæsthesia, the epidemic of Asiatic cholera of 1832 and 1848; and the war with Mexico, as well as the discovery and the application of many new and improved methods of physical exploration in the search for disease.

The last quarter which has just closed is specially distinguished by the vast experience of the late war, which was a great school, and which has benefited the medical profession of the whole country.

After luncheon, the Congress reconvened in *Sections* at 2 p. m.

SECTION I., *Medicine.*—Dr. Roberts Bartholow, Professor of Medicine in Medical College of Ohio, opened the discussion on the question, "Do the Conditions of Modern Life favor specially the Development of Nervous Diseases?"

The author quoted numerous references in the writings of the ancients to mental and nervous maladies, and spoke of the influence in ancient times of those conditions supposed to be most

active in our day in the production of nervous maladies, viz., social excitements, political revolutions, sexual excesses, indulgence in wine.

He mentioned the recognition of nervous maladies in the sixteenth century, and said, that if in modern times an increase in nervous maladies had occurred, the result must be exhibited to a limited extent in an increased sickness and mortality rate. With the improvement in the general well-being wrought by our modern civilization, a manifest increase in longevity has occurred. With an improved hygiene, the sickness rates and the mortality from epidemics have diminished.

The supposed increase in the number of nervous diseases is more apparent than real.

The art of printing has greatly increased the diffusion of knowledge amongst men, and hence every medical fact has not only a more prominent record, but is more generally known.

In modern times, within this century especially, nervous diseases have been more accurately studied and better differentiated.

The growth of a higher humanitarian sentiment has led to a more abundant provision for the insane.

The paper was recommended by the Section for publication; but without an expression of the opinion of the Section on the question involved.

A "Contribution to the Etiology of Epilepsy" was then read by Wm. B. Neftel, M.D., of New York.

SECTION II., *Biology.*—Prof. Rudnew, of St. Petersburg, presented four papers emanating from the Institute of Normal Histology, St. Petersburg, viz.: On the Structure of the Sweat Glands in Man, the Horse and Sheep, by Dr. Galani; On the Nerves and their Termination in the Pleuræ of the Rabbit, the Dog, and the Cat, by Dr. Lebedeff; Upon the Microscopical Anatomy of the Nervous Apparatus of the Bronchi and Lungs in the Frog, the Rabbit, and the Dog, by Dr. Jantchich; Upon the Endings of the Nerves in the Skin of Man, by Dr. Jantchich.

Dr. J. G. Richardson, of Philadelphia, also read a paper on the Occurrence of Fungus Growths in Solutions for Hypodermic Medication, and their Prevention by Salicylic Acid.

SECTION III., *Surgery.*—"The Medical and Surgical Treatment of Aneurism" was reported upan by Wm. H. Van Buren, M.D., Professor of Surgery in Bellevue Hospital Medical College, New York. The following is a summary of the views presented;

After a glance at the causes of aneurism and the sources of information at the command of the reporter, he enumerated the several modes of treatment at present in use, and endeavored to estimate the remedial value and applicability of each.

In a given case of aneurism, he considered what method or methods, in the present state of our knowledge, promise the most safe and most certain cure.

The following mooted questions were touched upon, viz.: (*a*) Why the blood coagulates so much more promptly in some cases of aneurism than in others where conditions are apparently alike; (*b*) The value of antiseptic treatment in securing quick union of the wound after applying a carbolized catgut ligature for the cure of aneurism after the Hunterian method; (*c*) The propriety of employing the carbolized catgut ligature upon a large artery; (*d*) The value of the "constricting" ligature of silver wire; (*e*) The comparative value of rapid and slow pressure; (*f*) The value of galvano-puncture—of coagulating injections, etc.

The following conclusions, offered by Dr. Van Buren, were adopted.

1. Tufnell's treatment of aneurism, by rest, position, and restricted diet, offers a valuable resource in thoracic and abdominal aneurisms.

2. It should always be tried in innominate, subclavian, subclavio-axillary, and iliac aneurisms, before resorting to measures attended by risk to life.

3. For aneurisms of the subclavian and iliac arteries, the Hunterian operation, with our present means of preventing secondary hemorrhage, is not justifiable.

4. For reasons formally set forth by Holmes and Henry Lee, the "old operation" cannot properly be substituted for the Hunterian operation in these cases, but should be held in reserve for special cases.

5. It is the most safe and surgical resource in gluteal aneurism, if the circulation can be commanded by the hand *in secto*.

6. The mode of cure by embolism, aimed at in the method of manipulation, is a not unfrequent explanation of what is called spontaneous cure of aneurism.

7. The value of Esmarch's bandage in the treatment of aneurism is probably not fully estimated.

8. In view of the promising features presented by the cases of Levis and Bryant, in which horse-hair was introduced into an aneurismal tumor, the repetition of this operation, or the substitution for horse-hair of Lister's prepared catgut or other animal substances, may be properly tried.

Mr. Jolliffe Tufnell, of Dublin, made some interesting remarks on the treatment of aneurism.

SECTION IV., *Dermatology and Syphilology.*—The question assigned for discussion was "The Virus of Venereal Sores, its Unity or Duality," and the reporter was Freeman J. Bumstead, M.D., late Professor of Venereal Diseases at College of Physicians and Surgeons, New York.

The author stated that three views as to the origin of venereal sores have been entertained:

1. All venereal sores are due to a single specific virus, the virus of syphilis.

2. Some venereal sores are due to the syphilitic virus, and others to a distinct virus, known as the *chancroidal.*

3. Some venereal sores are due to the syphilitic virus, and others to the inoculation of the products of simple inflammation, in which latter case no specific virus exists.

The evidence for and against each of these suppositions, drawn from clinical experience and artificial inoculation, was then given.

The conclusions of the Reporter were adopted by the Section, with some modifications, as follows:

1. The virus of venereal sores is dual.

2. Venereal sores may be due to the inoculation of the syphilitic virus, and also to the inoculation of products of simple inflammation.

3. These two poisons may be inoculated simultaneously.

4 (additional). The present state of science has demonstrated that suppurating inflammatory lesions resembling chancroids may be produced on various portions of the body by inoculation with simple pus from various lesions.

A paper upon the same subject by Charles R. Drysdale, M.D., Senior Physician to Metropolitan Free Hospital, was read by title.

Dr. Charles Heitzman, of New York, read a paper on the "Treatment of Seborrhœa."

SECTION V., *Obstetrics.*—Dr. Washington L. Atlee introduced the question of "The Treatment of Fibroid Tumors of the Uterus."

The subject was treated mainly from the standpoint of personal experience.

Two principal divisions of the subject were stated, as—

I. Tumors usually accompanied with hemorrhage, embracing (*a*) fibroids occupying the vaginal canal; (*b*) fibroids within the cavity of the uterus; (*c*) interstitial submucous fibroids; (*d*) interstitial fibroids proper; (*e*) recurrent fibroids.

II. Tumors usually not accompanied with hemorrhage, including (*a*) interstitial subperitoneal fibroids; *(b)* sessile peritoneal fibroids; *(c)* pedunculated peritoneal fibroid; *(d)* interstitial cervical fibroid; *(e)* myomatous degeneration of the uterus; *(f)* fibrocysts of the uterus.

The author considered the best mode of treatment both surgical and medicinal—the removal of tumors *per vias naturales*—and by abdominal section—the propriety of extirpating a fibroid uterus by either of these methods—a consideration of the several agents which are supposed to control the growth of fibroid tumors.

A paper entitled "The Three most Important Obstetrical Instruments," by Professor Lazarewich, of the University of Kharkoff, Russia, and a paper on "Electrolysis, especially for the Cure of Ovarian Cysts," by Frederick Semeleder, M.D., late Lecturer at the University of Vienna, were read.

SECTION VI., *Ophthalmology.*—Dr. E. Williams, Professor of Ophthalmology in Miami Medical College of Cincinnati, was the Reporter on "Orbital Aneurismal Disease and Pulsating Exophthalmia, their Diagnosis and Treatment."

Dr. George C. Harlan, of Philadelphia, contributed the notes of two cases of orbital aneurism.

SECTION VII., *Otology.*—Question, "In what percentage of cases do Artificial Drum-membranes prove of Practical Advantage?" Reporter, H. N. Spencer, M.D., of St. Louis.

After reviewing the history of the artificial drum-membrane, the author considered (*a*) the condition of the ear admitting of its use; (*b*) contraindicating conditions.

He then took up (*a*) the forms of artificial drum-membranes (under which head a preference was stated for Yearsley's cotton-wool). (*b*) The offices performed functional and therapeutical.

When the conditions are the most favorable it was claimed that the cases are the fewest in number where the artificial drum-membrane will be worn, whether the reasons be objective or subjective.

The Section then adopted the conclusions of the Reporter, as follows:

1. Of the various forms of artificial drum-membranes in use, the cotton pellet is preferable for its greater simplicity and its easier introduction, for the greater uniformity of its effect and the comparative safety in its employment.

2. It has an advantage over all other forms of artificial drum-membrane in that, additional to the functional gain which may be derived, there may be added its value as a means of treating tympanum, and this therapeutical use of the artificial membrane has a great future in otology.

3. The continued use of the artificial drum-membrane as a means of improving the hearing is indicated in rare conditions which can only be determined by the aural surgeon.

A valuable paper on "Certain Modifications of the Ordinary Methods of treating Chronic Non-suppurative Inflammation of the Eustachian Tubes and Middle Ear" was read by Samuel J. Jones, M.D., Professor of Otology in Chicago Medical College.

SECTION VIII., *Sanitary Science.*—Question, "The General Subject of Quarantine, with particular reference to Cholera and Yellow Fever." Reporter, J. M. Woodworth, M.D., Supervising Surgeon-General U. S. Marine Hospital Service.

After reviewing briefly the practice of quarantine in the past, and as at present administered, the mode of propagation of cholera and yellow fever was discussed with the view of arriving, as near as possible, at what precautions are necessary and what restrictions superfluous in the administration of quarantine, which led to the principal question—the practice and methods which should be pursued to secure the greatest protection to the public health against cholera and yellow fever with the least restriction upon commerce.

In this connection was considered (*a*) the want of prompt information to threatened ports of the shipment of passengers or goods from infected districts; (*b*) The question of time as an element in quarantine; (*c*) The value and practice of disinfection; (*d*) The importance of municipal sanitary coöpperation; and (*e*) What may be gained by imparting to masters of vessels correct views of sanitary measures to be enforced by them in outbreaks of cholera or yellow fever on shipboard, etc.

The following conclusions of the Reporter were adopted by the Section:

1. The supervision of ocean travel ought to be directed to securing good sanitary condition of vessels at all times, out of as well as in port.

2. A system of *Port Sanitation* should be adopted and administered for each country or place, separately, modified in particular cases by taking into account the liability of the port to infection, the period of incubation of the disease, the length of time consumed in the voyage, and the measures enforced by the vessels *en route.*

3. In some countries the detention of passengers and crews of ships hailing from infected ports is warranted, but for such time only as is necessary to complete the period of incubation of cholera or yellow fever, counting from the date of departure from an infected port or landing from an infected vessel; but in no instance should passengers or sailors be held for observation on board an infected vessel, and such vessel should not be detained beyond the period required for inspection and thorough disinfection and cleansing.

4. Recognizing the fact that the modifications of infectious diseases may sometimes elude the most vigilant sanitary supervision of shipping, the importance of wisely directed internal sanitary measures can scarcely be overestimated.

5. So far as America is concerned, it is desirable that prompt and authoritative information should be had of the shipment of passengers or goods from cholera and yellow fever infected districts, thereby insuring the thorough disinfection of infected articles.

6. It is believed that the endemic forms of cholera and yellow fever are the fields which give the greatest promise of satisfactory results to well-directed and energetic sanitary measures, and to this end an international sentiment should be awakened, so strong as to compel the careless and offending people to employ rational means of prevention.

SECTION IX., *Mental Diseases.*—Question, "Simulation of Insanity by the Insane." Reporter, C. H. Hughes, M.D., of St. Louis, Missouri. The following is a brief summary of his remarks:

The feigning of insanity by the sane has been long recognized as a practical fact. The possibility of similar efforts on the part

of men really insane has been ignored or forgotten. The fact that the proof of simulation possesses no real practical value, in the case of a person already adjudged to be insane, is, probably one cause of the rareness of recorded cases.

Advanced general dementia is incompatible with simulation. Acute and general mania is also incapable of coexistence with feigning. In recovery from the latter condition, circumstances might easily give rise to simulation of a state recently passed through. Experience and observation might certainly help to an excellent imitation of a state so lately endured.

Simulation requires and implies some degree of rationality, and usually some motive. This is by no means incompatible with insanity. In the remissions of periodic mania, in certain cases of chronic general mania and certain forms of hysterical mania, and especially in affective or moral insanity without distinct intellectual impairment, simulation is perfectly possible and practicable. The existence of susceptibility to ordinary motives is recognized in the management of every insane asylum.

Striking instances of success in the simulated abandonment of delusions, so common in alienistic literature, suggest an equal facility at invention or pretence.

The criminal classes of our great cities are born and trained to deception. Simulation might very naturally be added to constitutional infirmity. Such cases probably occur oftener than is supposed. Many famous and historic cases might be most correctly characterized as compounds of simulation with actual disease.

Rarely does insanity affect all the faculties alike. Among the rational acts done by the insane man simulation may happen to occur. Especially probable is it that a man recovering from mania might imitate the crazy acts recently prompted by disease if adequate motive existed.

Simulation is peculiarly practicable in those forms of insanity which involve the affective faculties, leaving the intellect comparatively untouched.

The question of responsibility in cases where simulation is mingled with actual disease is a very difficult one. The ancient legal test, "knowledge of right and wrong," is here wholly inadequate.

The motive for simulation in the insane of hysterical tendencies is often the craving for sympathy and attention. Occasionally, however, it seems to be wholly motiveless—a mere freak of disease. We should beware of inferring because of detected simulation, the non-existence of disease.

The following conclusion of the reporter was adopted as the opinion of the Section.

It is not only not impossible for the insane to simulate insanity for a purpose in any but its gravest forms of profound general mental involvement, but that they actually do simulate acts

and forms of insanity for which there exists no pathological warrant that we can discover in the real disease affecting them.

At 7:30 p. m. the Congress was addressed by J. J. Woodward, M.D., Surgeon U. S. Army, on "The Medical Staff of the United States Army, and its Scientific Work."

September 7, 10 a. m. *4th General Meeting.*—The President, Dr. S. D. Gross, in the chair.

Reports from the Sections were received and accepted.

On motion of Dr. Henry I Bowditch, of Boston, the following preamble and resolutions were adopted:

Whereas, The work already accomplished by the officers connected with the Bureau of the Surgeon-General of the United States Army, in the establishment of a medical library, and in the preparation of its complete and unique catalogue, in the formation of an anatomical museum, from which important scientific results have already been obtained, and which have been not only a source of honor to these United States, but of value to foreign lands and wherever science is cultivated; and

Whereas, This Congress learns with regret, that owing to a lack of a sufficient clerical force and of pecuniary means, not only some of the work already in progress has been supended, but that other work of equal value cannot be undertaken, although ample materials for the same are now lying unused in the Surgeon General's office; therefore

Resolved, That a committee of three be appointed to prepare a memorial to be presented to the Congress of the United States, at the earliest day possible, at its next session, to urge efficient support to these most important works.

Resolved, That it is desirable that said memorial be signed by the President, Vice-President, and Secretary General of this body.

The President appointed Drs. Bowditch of Boston, Rudnew of St. Petersburg, and N. S. Davis of Chicago, as the Committee to prepare this Memorial.

Upon motion of Dr. J. P. White, of Buffalo, N. Y., it was ordered that the printed pamphlet containing Dr. Bowditch's paper on Hygiene and Preventive Medicine be sent to the Presidents of State and Territorial Medical Societies and Sanitary Boards of the United States and the Societies and Sanitary Boards of the Dominion of Canada.

The "Address in Obstetrics" was then delivered by Theophilus Parvin, M.D., Professor of Obstetrics in College of Physicians and Surgeons of Indiana; Prof. H. Miyake, of Tokio, Japan, Vice-President, in the chair.

In his address, Dr. Parvin declared that American obstetric knowledge had its origin with the British rather than the French, and rehearsed the progress of the science in the century, and paid high tribute to Professor Wm. Potts Dewees, whom he called the father of American obstetrics.

Of the late Dr. Hugh L. Hodge, he said, few men have studied the mechanism of labour more thoroughly, none have expounded it more clearly. Generations may come and depart, until another century pours its treasures upon the race, but it is doubtful if among these will be found another work on obstetrics of greater relative merit and of more enduring value than the treatise of Dr. Hodge. He said that the improvements and advances in obstetrics have saved more lives and accomplished greater benefits to humanity than those in surgery and other operative sciences.

Anæsthesia in obstetrics must be counted one of the greatest glories of the century. Of advances in gynæcology, the author said, but only two can be considered as the greatest glories of American gynæcology, the operation for genito-urinary fistula, and that for removal of ovarian tumours. Holding these up to the world, she may with just pride exclaim, "These are my offerings to humanity and medicine."

The "Address on Medical Jurisprudence" was then delivered by Stanford E. Chaillé, Prof. of Physiology and Path. Anat. in University of Louisiana.

He said: Medical Jurisprudence owes its power to knowledge derived from every branch of medicine, but the law determines how far this power shall be utilized in the administration of justice. Hence the development of medical jurisprudence has varied in different nations with the progress of medical science, and with the extent of its applications to the protection of property, reputation, and life. Efficiency in this legal application varies with the appreciation of medical knowledge by the rulers of a nation; and, since an adequate appreciation is limited to the educated few, and is not yet disseminated among the mass of any people, it results that laws more favourable to the culture of legal medicine are to be found in nations ruled by the educated few, than in those governed by the people.

How much of the medico-legal science has been transported from Germany and France to Great Britain and the United States, would, I fear, prove offensive to Gallic and still more to Anglo-American vanity.

Great Britain transmitted to this nation laws barbarously conspicuous for the absence of provisions to apply medical knowledge to the administration of justice, and Anglo-American law continues to be, in large measure, hostile to medical jurisprudence. However, British laws have done something for the science and a little for the art. For Great Britain has fostered medical education; did in 1803 found a chair of forensic medicine in one university, and has now such chairs in all its medical colleges; has by the Registration Act and other laws greatly strengthened the medical profession, and has compelled its courts to accept expert evidence only from registered and therefore educated medical men; still "the crowned republic" remains destitute, as does its democratic American offspring, of popular,

hence of governmental, appreciation of the legal importance of medical knowledge, as is proved by the same lack of any system to secure the medical evidence of competent experts, as characterized its laws when surgeons were barbers and physicians were astrologers, sorcerers, and interpreters of dreams. What wonder that Germany and France began the study earlier and have prosecuted it more successfully.

The States of the Union have, for the most part, left the culture of medical science to individual enterprise, which supplies solely that which the private citizen demands—practitioners of medicine to heal the sick. The States have as yet made no demand for competent medical experts to aid the administration of justice, and have done nothing designedly for the culture of medical jurisprudence. What growth can this branch of State medicine have so long as a State does not recognize even its existence?

In the United States there are probably forty-five thousand medico-legal autopsies made annually. The service of a skilled expert at these "coronor's inquests" is of inestimable importance.

Further, our courts have annually from forty-five hundred to treble this number of criminal trials necessitating medical testimony. Whatever the number may be, it would indicate inadequately the number of citizens whose welfare is involved in the efficient application of medical knowledge to the administration of justice.

What are the methods which Anglo-American law adopts to secure in practice that "best attainable evidence" which in theory it demands? It entrusts medico-legal autopsies, which require special medical and some legal knowledge, to those having neither the one nor the other, except by accident; for these coroners—whose inexperience our law assures by constant "rotation of office"—owe their position solely to political popularity, a qualification which a competent expert is most unlikely to possess. Are these *unqualified* officials supplied with efficient aid? If so, again by accident, since the law leaves it to chance, or to the coroner, or to his still less qualified jury, to provide a medical expert; and, as is usual, accident and ignorance provide inexperience and incompetence. Could *ingenuity* devise for medico-legal autopsies any methods *more* inefficient than these, which Anglo-American laws, framed before the birth of medical jurisprudence, have barbarously perpetuated?

With the power of medical science thus crippled at the coroner's inquests, then prostituted by the partisan opinions of incompetent experts, then perverted by advocates, and at last, when emasculated of all vigor, submitted for decision to those unable to estimate its weight, what wonder that such gross misapplication of medical knowledge brings upon it that public contempt which justly belongs to methods so monstrous, and to which true medical knowledge is a helpless, pitiable, and disgusted victim.

At 2 p. m. the Congress met in *Sections.*

SECTION I., *Medicine.*—Question for discussion; "The Influence of High Altitudes on the Progress of Phthisis." Reporter, Charles Denison, M.D., of Denver, Colorado. The paper was an exceedingly elaborate one. The author considered—

I. The past history of the climatic treatment of phthisis. (*a*) The climates of high altitudes were considered by their important attributes, which were contrasted with the same qualities in less elevated health resorts; in America the elevated inland plains and "backbone" of the continent, between elevations of four and ten thousand feet, being matched with sea-side and inland resorts, below the elevation of two thousand feet.

II. *a. Temperature.* Too much importance has been placed upon *equable temperature*, equability often entailing excessive moisture and other conditions comparatively unfavorable to the majority of the consumptives. Cool dry climates are better than warm moist ones. *b. Relative Humidity.*—The injustice of the advocates of low climates in not considering this point was noted. The questions were then asked, is the comparison of high and low altitudes by the relative humidity of each, temperature being accounted for, fair? How does altitude affect humidity both absolute and relative? The cause of low relative humidity on the eastern Rocky Mountain slope was considered. *c. Diathermacy of the Air.*—A rule, depending upon elevation, given. The conditions for the greatest benefit from the direct influence of the sun grow more favorable with increasing elevation. *d. Electric tension, Ozone, etc.*—Their increase in high altitudes, peculiar effects, and great utility. How can we best utilize atmospheric electricity? Relation of this topic to temperature and humidity. *e. Altitude.*—The subject analyzed. The utility of the changed mechanical conditions of respiration. Influence of lessened atmospheric pressure upon the circulation and animal economy.

III. To what extent does phthisis originate above the elevation of 5000 feet? Instances analyzed. Favorable conditions for preventing phthisis and lengthening the years of the naturally short-lived.

IV. In the treatment of phthisis the utility of high altitudes rests with the *adaptability* of climate to the needs of special forms and complications of the disease. Comparison of experience elsewhere. Injurious effects of great elevations, precautions, etc.

V. Relation of typical cases, with analysis; inferences and conclusions.

VI. When and how to go to the Rocky Mountain slope; kind of life to lead; advantages in winter and summer compared. A partial recovery necessitates a permanent residence. The remedy of high altitude too long delayed in the majority of instances. Duty of physicians in this regard was then dwelt upon.

The Section voted thanks to the author, and recommended the publication of the paper, "but without an expression of the opinion of the Section on the question involved."

SECTION II., *Biology.*—"The Mechanism of Joints." Reporter, Harrison Allen, M.D., Professor of Comparative Anatomy in the University of Pennsylvania.

(I.) Starting with the idea that joints are of dynamic and static values, it was shown that in most movable joints the ball and socket arrangement predominates. When the ball is supported by the socket, as at the occipito-atloid articulation, *rest* is suggested. But when the ball is suspended from the socket, as at the temporo-maxillary articulation, *motion* is suggested. He illustrated the etiology of fracture and dislocation by reference to this method of study.

(II.) It was premised that articular surfaces are of three kinds: *axial*, *actinic*, and *lateral*. The *axial* or primary surfaces are those situated upon proximal and distal ends of a bone in the line of its longitudinal axis. The *actinic* or secondary (rarely seen) are those placed in a line which is deflected from the longitudinal axis. The *lateral* or tertiary are those situated upon the sides of the shaft or body of a bone and serve for articulation with corresponding surfaces of other bones. *E. g.* The outer femoral condyle is axial, since it is placed in the line of the longitudinal axis of the femur. The internal femoral condyle is *actinic*, since its line intersects the long axis of the femur, from which it may be said to be deflected. The *lateral* facets of the metatarsal or tarsal bones serve to illustrate the lateral kind.

(III.) Axial surfaces, it is believed, are static; actinic surfaces are dynamic; while lateral surfaces have subordinate degrees of value—some of them being adventitious. The outer femoral condyle is active in extension = static; the inner femoral condyle is active in flexion = dynamic; but the lateral facets have no independent action.

(IV.) Joints are fixed or locked at extremes of flexion and extension, and are most relaxed at the intervals between these extremes. An application of these premises was made to the etiology of dislocation.

(V.) When a facet is actively employed, it enters into a combination with which the entire limb is in harmony. Hence in the study of any one facet its relations to all others of its kind, as well as to the bones, muscles, and fasciæ of its limb, become essential.

(VI.) It was shown in conclusion that a correct knowledge of the symptomatology and treatment of diseases of the joints is dependent upon a true conception of the complex nature of articular surfaces.

The conclusions of the author were accepted by the Section.

SECTION III., *Surgery.*—Question, "Treatment of Coxalgia."

Reporter, Louis A. Sayre, M.D., Professor of Orthopædic Surgery in Bellevue Hospital Medical College, New York.

The author described coxalgia, and divided the disease into three different stages, giving the symptoms in each stage, so that they can be accurately diagnosticated. He then referred to the pathological changes in the joint in the three different stages of the disease, and to the etiology or causation of the disease—

(*a*) That the disease may occur in *any* person from a sufficient exciting cause, and that it is not of necessity of scrofulous origin.

(*b*) That, instead of being a constitutional disease, arising without any exciting cause except the general taint of the system, proof was offered that it is *traumatic* in its origin almost always if not always.

He next alluded to the treatment in the different stages, and stated that proper treatment in the majority of cases will result in recovery with good or perfect motion and without deformity; and that if proper treatment has been neglected until the bone has become carious, *exsection* is *justifiable* and far preferable to the slow exfoliations of nature, giving much better results as to the usefulness of the limb, and infinitely better as to deformity of the body and *motion* of the joint.

The following conclusions of Dr. Sayre, after a very animated discussion, were reported to the Congress as the opinion of the Section, with the statement that in conclusion No. 2 the Section does not unanimously coincide.

1. That morbus coxarius is a disease most frequently met with in early childhood, or the age of reckless indifference.

2. That it is almost always of traumatic origin, and not necessarily connected with a vitiated constitution.

3. That rest and freedom from pressure of the parts involved, while at the same time the rest of the body is allowed free exercise in the open air, and a nutritious diet, is the best treatment that has yet been devised for this disease.

4. That if this plan of treatment is adopted in the early stages of this disease, the majority of cases will recover, with nearly if not quite perfect motion, and without deformity.

5. That in the advanced second stage of the disease, when absorption of the effused fluid cannot be produced, then it is better to puncture or aspirate the joint and remove its contents, than to leave it to rupture by ulceration.

6. That in the third stage of the disease when the treatment recommended in this paper has been properly applied without satisfactory improvement, but progressive caries continues, the exsection of the diseased bone is not only justifiable, but in many cases absolutely necessary.

7. That the operation of exsection of hip is easily performed, and in itself attended with little or no danger.

8. That after exsection of the hip-joint in cases of progressive

caries, the recovery is much more rapid and certain, and infinitely more perfect, as to form, motion, and the usefulness of the joint and limb, than when left to the slow process of nature.

Question, "The Causes and Geographical Distribution of Calculous Diseases." Reporter, Claudius H. Mastin, M.D., of Mobile, Ala.

In treating this subject the author gave a brief notice of the varieties and constituents of calculous concretions, tracing the formation and *probable* causes of gravel in the kidney, and afterwards of stone in the bladder:

(*a*) Hereditary influences governing diathesis, with the effect of habit and mode of life upon the formation of these deposits. (*b*) Climate, food, water, and the default of exercise, as bearing upon healthy digestion and assimilation. (*c*) The influence of age, sex, race, and occupation, and of moral and physical emotions; also the mechanical and traumatic causes of these affections. (*d*) The agency of the colloids in the formation of calculi.

The author then gave a review of the manner of formation of gravel in the kidney, its passage through the ureter, and lodgment in the bladder; and an outline of the geographical sections in which calculous diseases are found to abound, with a summary of their probable causes.

SECTION IV., *Dermatology and Syphilology.*—Question, "The Treatment of Syphilis with Special Reference to the Constitutional Remedies appropriate to its various stages, the Duration of their Use, and the question of their Continuous or Intermittent Employment." Reporter, E. L. Keyes, M.D., Adjunct Professor of Surgery and Professor of Dermatology in Bellevue Hospital Medical College, New York.

In the course of the paper the following points were taken up: (*a*)Does a mild beginning in syphilis necessarily indicate that the malady will run a mild course so that the duration of treatment may be regulated thereby? (*b*) Is the internal use of mercury debilitating? (*c*) When is mercury useful in syphilis? Has it any control over the late symptoms? (*d*) When is iodine useful in syphilis? Can it replace mercury in any stage of the disease? (*e*) Does iodine act by liberating mercury lying latent in the tissues? (*f*) Should treatment be continuous or interrupted?

A general outline of a course of internal treatment was then given.

The following propositions, slightly modified from those originally presented by the reporter, were adopted by the Section:

Negative conclusions, views for which there would seem to be no foundation in fact.

1. Syphilis commencing mildly needs but little treatment, and does not require mercury.
2. Mercury given internally is necessarily debilitating.
3. Mercury is only useful in secondary syphilis.

4. Iodide of potassium is of considerable value in secondary syphilis.

5. Iodide of potassium is of no value unless preceded by mercury.

6. Iodide of potassium acts by liberating mercury which has being lying latent.

Positive conclusions, which, in the present state of our knowledge, may be affirmed.

1. Mercury is an antidote to the syphilitic poison, and of service in controlling all its symptoms in all, even the latest stages of the disease, its power over gummata being least, and not to be relied upon.

2. Mercury in minute doses is a tonic.

3. Iodine cures certain symptoms of syphilis, but does not prevent relapses.

4. Mercury, long continued uninterruptedly, so far as practicable in small doses from the time of earliest eruption, constitutes the best treatment of syphilis.

A paper on the same subject by Dr. Charles R. Drysdale, of London, was read by title.

A paper entitled "Verrugas, a disease peculiar to Peru," by Dr. George A. Ward, of Lima, was also read by title.

SECTION V., *Obstetrics.*—Question, "The Nature, Causes, and Prevention of Puerperal fever." Reporter, Wm. T. Lusk, M.D., Professor of Obstetrics in Bellevue Hospital Medical College, New York.

After stating that puerperal fever is a generic term, the author defined its varieties and the distinction between non-infectious and infectious forms.

The non-infectious form the result of (*a*) Traumatic injuries; (*b*) Old peritoneal adhesions; (*c*) Disregard of hygienic precautions; (*d*, Mental Influences. The infectious form he stated was a septic disease, and that the local lesions were the usual though not necessary point through which the poison enters the system. He referred to the relations of bacteria to puerperal fever; the influence of erysipelas, scarlatina, diphtheria, etc., upon the puerperal state, and to atmospheric influences. As regards the causes, deductions were drawn from civil statistics, hospital statistics, and private practice, and in the prevention of the disease we must be guided by our knowledge of its causes.

A paper was then read by Dr. Simon Fitch, of New York, on "Paracentesis, Aspiration, and Transfusion."

SECTION VI., *Ophthalmology.*—Question, "Are progressive Myopia and Posterior Staphyloma due to Hereditary Predisposition, or can they be induced by Defects of Refraction, acting through the Influence of the Ciliary Muscle?" Reporter, E. G. Loring, M.D., of New York.

The author first referred to the hereditary predisposition of myopia. (*a*) How far the law of direct transmission is influenced by the secondary law of heredity, which expresses itself in the

tendency to revert to the normal standard. (*b*) How far this tendency is influenced by intermarriage of different races, change of occupation, food, and manner of living.

These topics were illustrated by a brief comparison of the statistics of foreign countries with those taken in America.

He then referred to the development of the normal eye, and its relation to the conus and posterior staphyloma, and debated whether the conus is an anatomical and congenital defect inherent in myopic eyes, and such that become myopic through hereditary tendency, or is it simply the expression of a distension of the investing membranes which may occur in any eye from various causes?

He finally considered the action of the ciliary muscle as a cause of myopia. (*a*) The anatomy of the part, and its relation to myopia. (*b*) Can the continued contraction of the ciliary muscle produce myopia, either primarily through a permanent increased curvature of the lens, or secondarily through tension and irritation of the deeper seated membranes? (*c*) A short consideration of the statistics published by various authorities in regard to spasm of the muscle. (*d*) An inquiry whether negative accommodation, even in connection with faulty refraction, can ever produce myopia and posterior staphyloma.

The following were the conclusions of the reporter:

1. From the fact that so large a percentage of children are myopic, whose parents are not near-sighted, while the myopia increases directly with the amount of increased tension of the eyes, and from the fact that an interchange of refraction may occur, whereby an eye which is not congenitally myopic may become so in spite of hereditary tendency against it, it would seem to follow that hereditary prodisposition, though undoubtedly a potent cause, is not only not the sole cause, but it is not even the predominating cause.

2. The action of the ciliary muscle, taken by itself, exerts but little influence on the production of myopia, and still less on the formation of the cone.

Of these conclusion, the first was adopted by the Section unanimously, and the second by a majority of 15 to 7.

Dr. George T. Stevens, of Albany, read a paper "On the Relations between Corneal Diseases and Refractive Lesions of the Eye."

Section VII., *Otololy.* Question, What is the best Mode of Determining the Hearing of School Children; and how should Partially Deaf Children be instructed—in Mixed Classes with those who hear well, or in Separate Classes where due allowance will be made for their defective hearing?" Reporter, Clarence J. Blake, M.D., Instructor in Otology in Harvard University.

The author considered first the methods of testing the hearing, preference being given to (*a*) test with the human voice as proposed by Oskar Wolf, for classes of consonant sounds at varying distances; (*b*) tests with the watch and musical tones. In cases

of defective hearing detected in school children, an examination of the condition of the ear was advised with reference to progress in defect of hearing and classification accordingly.

Classification according to degree of defect in hearing, in accordance with which it is advisable either to place the child in an ordinary school or in a special class. The author then considered the diseases which most commonly cause deafness in children.

Attention was then called to that class requiring special instruction, for which preference was given to the system of visible speech or lip reading in contrast to the sign language.

The author gave a form for tabulation of examination of the ears in school children, and then proceeded to the consideration of the facilities at present afforded in common schools for the instruction of partially deaf children. He then gave an illustration of the method of instruction by visible speech.

The following conclusions of Dr. Blake were endorsed by the Section:

1. The frequency of partial deafness in children during the period of school life renders it advisable to make some definite provisions in Public School Systems for compensatory instruction.

2. Since partial deafness is a comparative term, some provisions should be made for a proper determination of the degree of disability.

3. This is best accomplished either by establishing a series of speech tests to be used by the teachers, or by instituting competent medical examination at the hands of a medical supervisor of schools.

4. Partially deaf children, when hearing is not so defective as to require special instruction in articulation and lip reading, are better taught in mixed classes with those who hear well.

5. Partially deaf children whose hearing is so defective as to interfere with the natural acquirement of articulation and to render the ear of little or no value as a medium for instruction, should be accorded the advantages of special instruction, of which instruction, articulation and lip reading should form a part.

SECTION VIII., *Sanitary Science.*—Question, "Disposal and Utilization of Sewage and Refuse." The discussion was opened by Henry Hartshorne, M.D., Professor of Hygiene in the University of Pennsylvania.

The following conclusions which he offered were adopted by the Section:

1. Every plan for the laying out, or extension, of a city or town, should have as an indispensable part of it, a corresponding and coextensive plan for the continuance or substitution of the natural drainage of the locality, and for the proper construction of a system of sewers.

2. The question in regard to the removal of waste and impu-

rities from towns is not as to the maintenance of sewers, but as to whether they should be depended upon alone, or should be supplemented, more or less largely, by other means of conservancy.

3. Every sewer not supplied with a sufficient flow of water to secure the transportation of its contents is a nuisance, intensifying the evils it ought to remove. Ventilation of sewers will mitigate, but not entirely correct such evils.

4. Conditions sufficient for sanitary security are afforded by the discharge of sewage at a considerable distance from a town, into the sea, or into a large and rapid river, whose water, at least for many miles below the exit of the sewers, is not used for drinking.

5. The earth-closet method of removal of excreta is, theoretically and practically, satisfactory in a sanitary aspect; the obstacles to its general adoption belonging only to economy and convenience.

A supplementary proposition, affirming that the sewage-irrigation of arable land, well under-drained, is, where practicable, the most economical method of disposal of sewage, and is free from well-grounded sanitary objections, was not concurred in by the Section, which declined to express an opinion upon that subject, as still open to investigation.

Dr. E. R. Squibb, of Brooklyn, N. Y., read a paper on a "Universal Pharmacopœia."

SECTION IX., *Mental Diseases.*—Question, "The best Provision for the Chronic Insane." Reporter, C. H. Nichols, M.D., Physician and Superintendent of Government Hospital for Insane, Washington. His conclusions, adopted by the Section, were as follows:

1. That provision for the chronic insane should be made by constructing buildings in connection with the several hospitals for the insane.

2. That it is not desirable to construct institutions solely for the care of the chronic insane.

Sept. 8, 10 a. m. *5th General Meeting.*—Dr. S. D. Gross, President, in the chair.

On motion of Dr. Paul F. Eve, of Nashville, it was

Resolved, That no papers or addresses read before this body, and ordered to be printed, shall be furnished either in abstract or otherwise for publication in any journal prior to the publication of the Transactions.

Reports from Sections were received.

Dr. N. S. Davis, of Chicago, offered the following:—

Whereas, This Congress marks an era in the history of medicine in the United States of America, the addresses as delivered presenting a summary of progress in the various departments which will be of great historical value in all coming time; and

Whereas, it is highly probable that these addresses, in con-

nection with the many very valuable papers read and discussed in the Sections, will require for their early and proper publication more funds than are at present in the hands of the Treasurer for the purpose; therefore

Resolved, That the Committee on Publication be authorized and instructed, as soon as practicable after the final adjournment of the Congress, to ascertain the probable cost of publishing the full transactions in a style appropriate for the work, and if the money on hand is found deficient, they shall address a circular letter to such American members of the Congress, asking for such additional sum, not exceeding $10 for each, of such members as will supply the deficiency; and that said committee be authorized to withhold the volume or volumes, when published, from any member who may neglect to pay the additional sum required.

Resolved, That the Committee on Publication be authorized and requested to exercise a careful and liberal discretion in preparing and revising the proceedings and reported discussions in the several Sections, for publication in the transactions of the Congress.

The "Address on Mental Hygiene" was delivered by John P. Gray, M.D., Sup't and Phys. to N. Y. State Lunatic Asylum, Utica; Hunter McGuire, M.D., of Virginia, Vice-President, in the chair.

Upon its conclusion, Lunsford P. Landell, M.D., late Prof. of Physiology in University of Louisville, read the "Address on Medicinal Literature;" Dr. T. G. Richardson, of Louisiana, Vice-President, in the chair.

At 2 p. m., the Congress met in Sections.

SECTION I., *Medicine.*—The following papers were read:—

The Treatment of Simple Ulcer of the Stomach, by Dr. H. Lebert, formerly Prof. of Clin. Med. at Zurich and at Breslau. (Translated by Charles W. Dulles, M.D., of Phila.)

Progressive Pernicious Anæmia. By R. P. Howard, M. D., of Montreal.

Alcohol in its Therapeutic Relations as a Food and a Medicine. By Ezra M. Hunt, M.D , of Metuchen, New Jersey. The following propositions of Dr. Hunt the Section affirmed and ordered them to be reported to the Congress in general meeting:—

1. Alcohol is not shown to have a definite food value by any of the methods of chemical analysis or physiological investigation.

2. Its use as a medicine is chiefly that of a cardiac stimulant, and often admits of substitution.

3. As a medicine it is not well fitted for self-prescription by the laity, and the medical profession is not accountable for such administration, or for the enormous evils resulting therefrom.

4. The purity of alcoholic liquors is not as well assured as

that of articles used for medicine should be. The various mixtures when used as medicine should have definite and known composition, and should not be interchanged promiscuously.

Prof. Rudnew, of the Medico-Chirurgical Academy, St. Petersburg, read a paper on "Sclerosis of the Vessels of the Lungs."

SECTION III., *Surgery.*—Mr. William Adams, President of the Medical Society of London, read an interesting paper on "Subcutaneous Division of the Neck of the Thigh-Bone." The following conclusions offered by Mr. Adams were adopted by the Section.

1. That bones can be divided subcutaneously like tendons; and that the operation of completely dividing the neck of the thigh-bone by a small saw, introduced through a small subcutaneous puncture, is a well established surgical operation, attended with very little risk.

2. That the long bones can be completely divided by the same method in any part of their length, with very little risk.

3. That in a large proportion of these cases, the healing of the wound takes place by the first intention, and that no swelling, redness, or inflammation follows. These cases of subcutaneous osteotomy proceed as favorably as subcutaneous tenotomy.

4. In some cases a little suppuration from the track of the wound, amounting only to a few drops in the day, does occur for a week or more after the operation.

5. That in a very few cases deep-seated suppuration occurs, but in only one of these, so far as at present known, has death resulted from pyæmia out of the 23 recorded cases. In one other case death was accelerated by the operation, or rather by the prolonged suppuration which followed; the patient died eight months afterwards from albuminuria and phthisis.

6. That the permanent result of the operation has hitherto generally been to correct the deformity and to obtain bony anchylosis with the limb in the straight position; but in several instances free motion has been obtained, and remained only for a few months, when it has been gradually lost. In a few cases free motion has remained for about a year, and we hope will persist through life, but time and further experience are necessary before this can be confidently stated to be a reliable result of the operation.

Dr. L. A. Dugas, Prof. of Surgery in Medical College of Georgia, then read a paper on "Penetrating Wounds of the Abdomen; with the Suggestions of a Change of Practice in such Cases."

SECTION IV., *Dermatology and Syphilology.*—Dr. S. Engelsted, Physician in Chief of the Copenhagen Hospital, read a paper entitled "Measures to Prevent the Propagation of Veneral Diseases in Denmark." The paper was interesting and valuable. It stated very fully the laws in successful operation in Denmark, and gave statistics showing very favorable results.

A paper on the "Prevention of Syphilis," by Dr. Chas. R. Drysdale, of London, was then read.

SECTION V., *Obstetrics.*—Dr. E. H. Trenholme, Prof. of Mid-

wifery and Diseases of Women in Bishop's College, Montreal, read a paper on "Uterine Hemorrhage." Dr. James P. White, of Buffalo, presented a paper on "Chronic Inversion of the Uterus." Dr. T. F. Rochester, of Buffalo, read a paper on "Retroversion of the Gravid Uterus."

Dr. Alex. R. Simpson, Professor of Obstetrics in the University of Edinburgh, arose, and thanking the Section for having made him one of their presiding officers, and after a few parting words, resigned the chair to Dr. W. H. Byford, of Chicago.

Dr. James P. White, of Buffalo, moved, and it was unanimously adopted, that the thanks of the Obstetric Section of the International Medical Congress of 1876 are returned to Dr. Robert Barnes, of London, and to Prof. Alex. R. Simpson, of Edinburgh, for the able manner in which they presided.

Dr. Goodell presented, for Dr. Alexander Strubell, of Dresden, a new clamp for ovariotomy.

SECTION VI., *Opthalmology.*—Dr. Dudley S. Reynolds, of Louisville, Ky., presented a "Report of One Hundred Cases of Senile Cataract."

SECTION VII., *Otology.*—Dr. Charles H. Burnett, Aural Surgeon to Presbyterian Hospital of Philadelphia, presented a paper on "Aural Vertigo with Variable Hearing."

SECTION VIII., *Sanitary Science.*—Dr. E. R. Squibb, of Brooklyn, N. Y., submitted a paper on "Metrical System of Weights and Measures," and the following resolutions offered by Dr. Squibb were adopted:

Resolved, That the following conclusions or inferences presented in this paper be regarded as the expression of opinion of the Section, and be recommended to the Congress for confirmation.

1. That the metric system of metrology, though by no means faultless, is now by its almost universal acceptance practically inevitable; and, therefore, that all means should be used whereby it may be gradually adopted, so as to avoid, as far as possible, the abrupt shock incident to its sudden and forcible introduction in the future.

2. That the medical and pharmaceutical professions be recommended to adopt the suggestion of giving the equivalent values of the old and new systems in their writings as an easy way of rendering them familiar in use.

3. That the medical profession be urged to use their influence in having the metric system introduced into the leading colleges and schools.

Dr. J. G. Kerr, of China, then read a paper on "Medical Missions."

SECTION IX., *Mental Diseases.*—Dr. Edward C. Spityka, of New York, read a paper "On the Methods of Examination which will reveal a clear and decisive connection between the Symptoms of Insanity and the Pathological Lesions on which they depend."

At 7 p. m. the Public Dinner of the Congress was served in St. George's Hall.

Sept. 9, 10 a. m. *6th General Meeting.*—The President, Dr. Gross in the chair.

The Secretary-General reported that 447 delegates had registered, and that the register was printed and in the hands of the delegates. Dr. Toner, of Washington, moved that the list be confirmed. Adopted.

Reports from Sections were received.

On motion of Dr. J. P. White, of Buffalo, and seconded in several complimentary speeches, the following resolutions were unanimously adopted.

Resolved, That the Centennial Medical Commission of Philadelphia are hereby tendered the cordial thanks of this Congress for the most excellent manner in which its members have discharged the arduous duties devolved upon them, and by which our pleasure and profit have been so much enhanced.

Resolved, That the President and other officers of the International Medical Congress of 1876 are hereby tendered the cordial thanks of the Congress for the excellent manner in which they have discharged the arduous duties devolved upon them, and by which our pleasure and profit have been so much enhanced.

Resolved, That the officers and trustees of the University of Pennsylvania are hereby tendered our cordial thanks for the very liberal use of their excellent buildings for the meetings of this International Medical Congress.

Resolved, That the officers and trustees of the Jefferson Medical College are hereby tendered the cordial thanks of this Congress for the use of their lecture-room for the most interesting lecture of Dr. J. J. Woodward, U. S. A.

Resolved, That the cordial thanks of the International Medical Congress are especially due to Drs. Thomson, Wilson, and Strawbridge, and to Messrs. Henry C. Lea and J. B. Lippincott, for their generous hospitality.

On motion of Dr. Bowditch, of Boston, the following additional resolution was appended:—

Resolved, That we, a brotherhood of physicians from the North, South, East and West of this country, hereby tender to our associates from other lands our most earnest wishes that they may have safe and happy returns to their homes, and we would suggest the hope that they will carry back many pleasant memories of this fraternal meeting, now closing, and which has been, most appropriately, held in this generous and noble city of Philadelphia.

Dr. Grant, of Ottawa, Canada, arose and stated that a meeting of the members of the Canadian medical delegates, held yesterday, the following resolutions were adopted unanimously:

Resolved, That the Canadian members of the International Medical Congress desires to express their sense of the great con-

sideration and urbanity with which they have been treated by the officers and members of the Centennial Medical Commission, and beg, by this resolution, to tender their warm thanks for the same.

Resolved, That the Canadian members of the International Medical Congress most cordially join with the other members of the Congress in thanking the members, and citizens of Philadelphia, for the generous hospitality extended to its members throughout the present session.

Dr. Charles J. Hare, of London, read the following expression of congratulation from the delegates of Great Britain:

The delegates from Great Britain to the International Medical Congress of Philadelphia beg to congratulate the President and the several committees on the complete success of the Congress, on the high value of the various addresses presented to it, and on the forward impulse which it has given to the progress of medicine in the widest sense of that word. They desire at the same time to express in the strongest and warmest terms their sense of and their thanks for the unmeasured kindness and courtesy and the unbounded hospitality with which they have been received on this Centennial occasion, and to add that they will carry back with them a most grateful recollection of that warm right hand of fellowship which has been so warmly extended to them by their brethren of the United States.

Signed on behalf of the British delegates by Chas. J. Hare, M.D., Cantab, F. R. C. P., late Professor of Clinical Medicine in University College, and Physician to University College Hospital; R. Brudenell Carter, F.R.C.S., of England, Hunterian Professor of Surgery to the Royal College of Surgeons of England; William Adams, F.R.C.S., President of Medical Society of London.

Dr. Sayre, of New York, offered the following:

Resolved, That this International Medical Congress request their President, Professor Gross, to sit for his portrait, and that the Committee on Publication be instructed to have the same engraved and printed in the frontispiece to the volume of the transactions. Adopted.

The Secretary-General stated that a circular had been received announcing that an International Medical Congress would be held in Geneva in September, 1877.

The "Address on Medical Education and Medical Institutions" was then delivered by N. S. Davis, Professor of Medicine in the Chicago Medical College; Dr. Henry Gibbons, of California, Vice-President, in the chair.

Dr. Davis sketched the history of medical education and of medical schools in his country during the past century, and concluded with the following peroration:

Let us, then, in the same self-reliant, independent spirit that actuated those who founded, and with the same untiring zeal and generous emulation that characterized the host of others

who have sustained and developed the medical institutions of our country thus far, endeavor to manage the high trust they have left us wisely. Let us neither be blinded by reverence for the past, nor be fretful with impatience because clearly perceived evils will not fade at our bidding, nor yet with childish weakness call on the government to do our work for us; but let us, with boldness, yet persevering steadiness of purpose, carry forward our educational organizations, both improving their adjustments and adding to their superstructure; and we shall thereby most certainly enable those who come after us, in celebrating the next Centennial Anniversary of our national progress, to review *our work* with the same pleasure and profit that we derive to-day in contemplating the works and characters of those whose names are an honor to the century which has just passed.

Upon its conclusion Dr. Gross said: "Gentlemen—Before I put the question of the final adjournment of the Congress, I beg leave to say a few parting words. First and foremost, I must be permitted again to thank you for the great honour you have done me in electing me as your presiding officer. It is the last honour I can reasonably expect from my professional brethren, who have always been so kind to me in the bestowal of their favours and of their good opinion. For these courtesies I shall never cease to be grateful, for they have served to cheer me in my labours, and have been as a balm to my soul.

The International Medical Congress of 1876 is about to pass into history as a thing of the past, and, although its exercises are but at an end, its work will live and form an interesting era in our profession as marking the reunion of a great body of men in the Centennial year of American independence. We have listened to a number of valuable and instructive discourses, illustrative of the progress of American medicine and surgery; have been engaged in profitable debates affecting some of the most vital interests of society; have performed a large amount of earnest work in the Sections, have met at the festive board; have clasped hands, and have formed warm and, as I trust, lasting friendships, all without any discord, one unkind expression, or even one word of misunderstanding. Altogether we have every reason for self-congratulation. When another Centennial century shall have passed away, the men who shall then be upon the stage will not fail to commemorate our meeting, and to bless us for what has been done this week in the interests of humanity and of medical science. In dissolving this meeting, as I now do, permit me to invoke upon our labours the choicest blessings of Almighty God, and to wish each and all of you a safe return to your homes and a happy reunion with your families and friends. May we not hope that you may long, if not forever, retain pleasant memories of our meetings in this Chapel, and that in your leisure moments your minds may occasionally resort to those of us from whom you are about to separate.

CURRENT MEDICAL LITERATURE.

PRACTICAL MEDICINE.

BY S. M. BEMISS, M.D.,

Professor of Theory and Practice of Medicine, and Clinical Medicine, Medical Department, University of Louisiana.

BERTALOT ON TUBERCULAR MENINGITIS IN CHILDREN.

Dr. H. Bertalot, of Pfeddersheim (*Jahrbuch für Kinderheilkunde*, Band ix. Heft 3), after an interesting account of the early literature of the disease, relates his experience of twenty-four cases distributed over a period of fifteen years, and comprising those only in which a *post-mortem* examination was made.

Fourteen were boys, ten were girls. Two cases occurred in the first year of life, seven in the second, five in the third, three in the fourth, three in the twelfth, and one each in the fifth, ninth, tenth, and fourteenth years. The youngest patient was ten weeks old. Twenty-two out of the twenty-four were attacked between November and the end of June. The children were all more or less delicate, they had frequently grown up under bad hygienic conditions, and were generally scrofulous or scrofulo-rhachitic. In twelve there was a distinct hereditary predisposition to tuberculosis; two cases supervened upon chronic coxitis, one upon traumatic erysipelas, two upon pertussis, one upon measles, and one upon the first signs of dentition.

The prodromal symptoms were very various and were often absent; the most constant was wasting. This appeared early, was very gradual in its progress, and was unaccompanied by fever. It frequently spared the face. The other symptoms were pallor, dullness about the eyes, altered expression, indifference to games, depression, diminished or irregular appetite, and alternately relaxed and constipated bowels. The symptoms, in short; were those of the cause of the disease rather than those of the disease itself. Not unfrequently, however, others of a more suspicious character presented themselves in this stage—such as sleepiness, frequently recurring headaches, restless nights with half-opened eyes, terrifying dreams and grinding of teeth. Photophobia appeared but rarely at this period. Older children appeared to be giddy, their gait was unsteady, and they were very forgetful and abstracted.

The symptoms of the disease proper were very differently grouped. Every case had its peculiarities. In many complete, though transient, remissions occurred. The statement of Legendre that cases in which marked pulmonary phthisis has long existed run a very irregular course, was confirmed in only one of the three cases in which this condition was present. Vomit-

ing was absent in only two cases; it varied much, however, in duration and frequency. Most commonly, it occurred once or twice a day. It was rarely repeated after having once ceased for any time, though in one case, after a cessation lasting some days, it reappeared, then ceased once more, and, after a shorter interval, again presented itself. It was accomplished as a rule without exertion, and was unaccompanied by nausea; its immediate cause was usually either sudden change of position or the ingestion of food. Constipation was present in twenty; it generally persisted to the end, and was sometimes very obstinate. In two cases diarrhœa was present throughout; in one of these the bowel was ulcerated (this condition in two others was quite latent); in the other no cause could be discovered. In the remaining two the symptoms began with diarrhœa, though this afterwards gave place to obstinate constipation. Retraction of the abdomen was present in all but three, and in them its form was unchanged. The walls were flaccid in all. Abdominal pain was not common, and in the three cases that were not complicated with ulcerated intestines was not noted at all. The tongue, at the commencement, was commonly moist and clean, only in a few cases showing a thick white coating of varying extent; it did not become dry till near the end of the disease. Foul breath, when present, was always a late symptom.

Fever was always present, and in the majority from the beginning. The temperature never exceeded 103.1° Fahr. On the approach of death it either remained unaltered or showed a gradual rise or fall, though sometimes this was more sudden; thus, in one case it rose rapidly 3.6°, in another it fell to the same extent. The extremities were often cold while the face was burning. The pulse at first was, as a rule, frequent; later, except in three of the cases, it became slow, and was irritable and remarkably irregular in force, frequency, and intermittance; in one only was the intermission at every third beat. In five it was cord-like. As death approached it became more frequent in all, and at last often uncountable; at this period also it usually grew regular, or nearly so, and was both smaller and weaker. The skin was nearly always dry, though towards the end of the disease it frequently showed a tendency to become moist. Flushings of the usually pale face were remarkably constant, and were considered of more importance than the *taches cérébrales*, which, indeed, do not appear to have been noted. The eruption described by Formey was partially present in one. Cerebral breathing was observed in all, but it was never an early symptom. Towards the termination respiration became more labored, and in many cases both more frequent and superficial.

Headache, either continuous or remittent, and usually frontal, was a very common, and as a rule, an early symptom. It was entirely absent only in one case. The almost characteristic shriek, to which it probably gives rise, recurred at longer intervals as consciousness began to fade.

Psychical symptoms were never entirely absent; but, in the pronounced form, they were rarely sufficiently early to assist diagnosis. Delirium was most frequent in the older children; in only two cases did it equal in intensity that of purulent meningitis; in the others it was of the muttering variety. As the disease advanced the delirium gradually gave place to somnolence, which, in its turn, passed into coma. This last never appeared suddenly, and once developed never entirely retroceded, though transient remissions occurred in two cases. General convulsions were, as a rule, late; partial convulsions, involving especially the facial, masticatory, and ocular muscles, early. Trembling, especially of the upper extremities, was slight in the early stage, severe in the later. Strabismus was observed in nearly all—in one as early as the tenth day before death; it was apt to vary in degree, and was most marked on waking the patient. Spastic contractions were commonest in the thumb, which was then forced into the palm; more rarely some of the joints were rigidly flexed. Nuchal contraction, which occasionally passed into opisthotonos, was present in the majority; at the earliest, however, seven days before death. As the disease advanced, the convulsions became both more general and more frequent, and were repeatedly observed to be unilateral. Paralysis, as a rule, was late; the earliest forms were ptosis and strabismus; and in one case the movements of the tongue were affected so that speech became indistinct, and finally unintelligible. Retention of urine was present in three. Incontinence was frequent towards the close. Photophobia, present in some at the beginning, became more marked when the disease was developed, but disappeared with the supervention of coma. Dilatation of one or both pupils then set in. This, however, was in some an early symptom, while in others it was absent throughout. Occasionally contraction followed dilatation. Sluggishness of action existed usually in proportion to the size of the pupil. Oscillation of the eyeballs was never met with. The author took a good deal of trouble with the ophthalmoscope, but never detected either enlargement of the papilla or choroideal tubercles. Hearing appeared to be present almost to the last. The duration of the disease, as nearly as could be made out, was commonly from two to three weeks.

The chief points of importance revealed by the necropsies were that, in twenty-two, other organs were affected, in twenty the bronchial glands were cheesy—one of these being a child ten weeks old. The ventricles were distended with fluid in all, the quantity varying from two to four ounces. Tubercles of the convexity were present in only two cases, and then but scantily. They were never found in the brain-substance; but in three cases tubercular tumors existed, one of which was as large as a walnut. Softening of the stomach was present in three cases. The treatment, which was chiefly locally antiphlogistic, at most, mode-

rated for a time some of the symptoms.—Ralph W. Leftwich, M.D., in *The London Medical Record.*

THE PROGRESS OF FEVER PATHOLOGY.

Extracts from an Address delivered at the Annual Meeting of the Bath and Bristol Branch.

By Henry F. A. Goodridge, M.D., F.R.C.P.,

Senior Physician to the Royal United Hospital, Bath; President of the Branch.

[Recognizing the advantage of making these annual addresses fulfil a sort of *comte rendu* purpose, Dr. Goodridge selected for his subject, the progress of fever pathology. There were at least three reasons, he thought, why the subject of fever should possess especial attractions to the medical mind. 1. The frequency of its occurrence. 2. The gravity of its import; and 3. The occult nature of the process. He then continued]: "Occult in times past it most certainly was, unsurpassed in this respect by any other disorder of the nosology; occult, it is to be feared, we must confess, the febrile process, in not a few nor unimportant particulars, still is. But has not the light of modern research which has illumined so many dark corners of medical science at length penetrated the thick darkness here? Have not the improved means and methods of investigation—the introduction of the various so-called instruments of precision into clinical and pathological use—nay, the great and important department of experimental physiology, which has of late so rapidly developed, borne some fruit in this quarter? It is just to these questions that we would now address ourselves; and I think we shall find that if the results achieved are not so successful, so brilliant, as are witnessed elsewhere, it is at least not because of any neglect of the advantages referred to, nor of any lack of able and zealous laborers in the field or of solid and enduring work done, but rather because of the intricacy and recondite character of the subject to be dealt with, the exceeding difficulty and complication of the many problems to be solved, and the manifold sources of fallacy which continually start up on the right hand and on the left, while prosecuting the several branches of the inquiry.

Deriving, as we do, the word fever from *febris*, and that from *fervere*, it might be supposed that the recognition of excess of heat as the most characteristic feature of the disorder was as old as the Latin noun itself, and coëxtensive with its use. Yet this would not be quite correct. For, firstly, since the days of Hippocrates until quite recent times, authorities had frequently maintained that fever was a favorable circumstance, a salutary process, and they found that their etymology and their pathology coincided, or at any rate they made them coincide, for they derived the word from *februare*, which, as we well know from the name of our second month, at one time the final one of the

Roman year, means to make pure. And, secondly, Boerhaave and his followers held that the increased frequency of the pulse was the great characteristic of the febrile state. The opinions entertained by the ancients upon the subject of fever will always form a curious and interesting chapter in the history of medicine. We cannot, however, at present further advert to them, but must content ourselves with the single remark, that if ever in matters medical speculation could be said to have run riot, assuredly it would be in reference to fever. And as in some other matters, so here; what men found they could not succeed in explaining to their satisfaction, they at last came to deny the existence of altogether. The school of Broussais, or the pathologico-anatomical school of his period, rejected all essential fever or fever that was not demonstrably dependent upon a local inflammation, or that had not, as it was termed, a material basis; thus, I hardly need remind you, typhoid or enteric fever was with them a dothinenteritis, intermittent fever a periodical gastro-enteritis, or an inflammation of the spleen, and so on; and well do I remember that, when proceeding in 1846 to the final examination for my M.B. degree, no candidate was thought to be safe who was not well posted up in the arguments in defence of the essentiality of fever. Nobody, I suppose, nowadays expects to be challenged on this matter.

In tracing the development of modern views of fever, we have not *really* then (and this will more distinctly appear immediately) to go back much further than a quarter of a century ago. Certain events are conspicuous as having played an important part in the process. I will briefly review them.

First of all, of course, was the introduction of the thermometer as a clinical instrument. Until the time of De Haen, the ordinary method employed for estimating the heat of a fever patient, was the application to his skin of the hand of the observer, than which, we know, none could be more fallacious. De Haen, using the mercurial thermometer, and with precautions previously neglected, carried out by its aid the first systematically conducted observations which laid the foundation for the regular employment of thermometry at the bedside. He ascertained, what at first seemed paradoxical, that during the cold stage of intermittent fever, when the patient is shivering almost intolerably, the temperature of the interior of his body exceeds to a considerable amount the normal standard, and becomes as high as in the succeeding hot stage. De Haen flourished about the middle of the last century. He did not, however, recognize the wide bearing of his own discovery, nor the consequences deducible therefrom, but only found therein a weapon wherewith to fight the iatro-mechanical physicians, whose theory that fever was due to friction was then rife, the Dutch professor himself being all the while satisfied that fever was one of those things which it was not vouchsafed to mortal man to know. His contemporaries and the following generation were alike supine, and

so De Haen's observations almost passed into oblivion, until first Gavarret in 1839, and then to a much more considerable extent G. Zimmermann in 1851, brought them to light again. The latter demonstrated the great practical value of the thermometer and of temperature observations, and subsequently Wunderlich may be said to have fully established the same. While, then, on the one hand, the thermometer has only confirmed an observation as old as the days of Galen, that "calor præter naturam" is an essential symptom of fever; on the other, this instrument has furnished the means of determining with exactitude the presence or absence of this pathological condition, of measuring the intensity of the same, and of registering the fluctuations, even to minute fractions of a degree, which, according to the specialties of each case, the febrile heat may undergo. In fact, the thermal history of a case of fever has become capable of accurate study, and can be even graphically represented as in the temperature charts with which we are now so familiar. The march of each one of the principal varieties of fever has been found to be definitely characterized in respect of its pathognomic feature, its pyrexia; and thus the thermometer comes to confirm or correct a diagnosis otherwise made, or may itself alone render any diagnosis possible. But to expatiate, as it would be easy to do, upon the advantages of the clinical thermometer, surely were a work of supererogation, when probably nearly every gentleman whom I have the honor to address is carrying one in his pocket.

We can readily understand that at a period when erroneous views prevailed respecting animal heat in general and its sources, correct ones could hardly exist as to the origin of the preternatural heat of fever. A false physiology could scarcely lead to a true pathology. But as the heat of the body is now known to depend mainly upon chemical processes—oxidation processes—continually taking place in its tissues, the preternatural heat, which was at once assumed to be due to increased production as its principal cause, was taken in conjunction with another fact, also well known to the ancients, viz., that in fever the body wastes, or, as subsequently more accurately determined, fever patients lose more in body weight than non-febrile persons under otherwise equal circumstances, and the conclusion was arrived at, that in febrile diseases an increased consumption of the tissues of the body constantly takes place. This doctrine, although partly anticipated by others, was first definitely stated by Virchow in his classical essay on fever in 1854, and with an important addition was embodied in the following formula, which formed the basis of the Goulstonian Lectures, delivered the following year by that great and good man, for the loss of whom to science and humanity the tear has hardly ceased to flow, Dr. Parkes, of Netley. "Fever," says Virchow, "consists essentially in elevation of temperature, which must arise from an increased tissue-change, and have its immediate cause in alterations of

the nervous system." Forthwith the appeal was to facts, and the new theory was submitted to the test of strict clinical and experimental investigation. The results we shall soon come to consider. The temperature of the human body being the resultant of an equilibrium between production of heat and loss of heat, it is obvious that the same effect may be brought about in opposite ways. Accordingly, the late Professor Traube, of Berlin, maintained that the elevated temperature of fever was the effect not of increased production of heat, but of diminished loss of heat. The diminished loss itself he attributed to irritation of the vaso-motor nerves, under the influence of the fever-exciting cause, producing spasmodic contraction of the small arteries of the periphery, and consequent anæmia. In regard to the well pronounced and rapidly developed cold stage of intermittent fever, with all the phenomena indicating that the supply of heat from the interior to the periphery is for the time being restrained, there can be no doubt that the aggregate discharge by radiation and conduction of the heat of the body is diminished. But clearly Traube was too exclusive. His theory was found to be inapplicable to fever in general, as we shall see further on; and even in respect to the cold stage, thermometric observations have shown that the temperature rises before the shivering and the vascular spasm and cutaneous anæmia have at all occurred. Yet Traube did good service in drawing attention to diminished heat-loss as concerned in the elevation of temperature of fever, and thereby checking a corresponding exclusiveness that seemed likely to arise on behalf of the other factor, heat-production.

An event which marks an epoch in the history of physiological science, for with it is connected the great discovery of the vaso-motor nervous system, is scarcely less notable in the history of fever doctrine. It is needless to say that I refer to Claude Bernard's famous experiment twenty years ago, of dividing the sympathetic nerve in the neck of the rabbit. We have just seen that Traube invoked vaso-motor nerve agency to help him out with his theory; but in regard to this experiment, we know that one of the most striking phenomena observed to follow upon the operation is a rapid rise of temperature in the corresponding ear and half of the head of the animal. Now, this has been very differently interpreted. By the distinguished French physiologist it has always been maintained, and in his recently published "Leçons sur la Chaleur animale" he vigorously defends the point, appealing to the latest researches of himself and others in proof, that there is absolutely increased production of heat, created heat, within the sphere of the divided sympathetic, and that this increase, at first local, becomes general—"la température du sang, avec la fièvre d'abord locale finit cependant par se généraliser." It was but a short step for those who shared this view to propound concerning fever, as in fact was soon done, that it consisted essentially in a paralytic condition of the sympathetic nervous system. On the other hand, there have been, and still

are, numerous authorities, and among them, too, those who hold neuro-pathological views of fever, who deny that any heat is produced in this experiment, and attribute the rise of temperature observed to the local afflux of blood consequent upon paralytic dilatation of the vessels, in fact, to the simple importation of heat by the circulation. They contend, moreover, that so far from the temperature of the whole body being raised as a consequence, a slight but distinct lowering of it is detectable. Thus, while with the one party this experiment is of supreme value as elucidatory of the pathogenesis of fever, with the other it is of no such value at all.

The discovery in physics, within the last few years, of the law of conservation of force (as it is termed), since it has thrown important light upon the mechanism of production of heat within the body, has contributed in no inconsiderable degree to the progress of fever-pathology.

[Dr. Goodridge then passed in review the clinical and experimental investigations undertaken in connection with the doctrines of increased production of heat, and of increased tissue-change, in fever, and proceeded]—

We come now, in the last place, to the dependence of fever upon alterations of the nervous system; and this is just the most debatable portion of our subject. We anticipated it somewhat in our notice of Claude Bernard's discovery of the vaso motor nerves. We then remarked that a theory of fever had originated directly from that discovery; and although but one of several theories that assign to the nervous system an important *rôle* in the production of that disorder, it would appear to be the simplest and most definite of them, and perhaps, on this account, has very much concentrated upon itself the attention of experimental inquirers. According to this theory, fever is due to vaso-motor paralysis. The appeal has been to the experiment of dividing, in animals, the spinal cord at the level of the fifth or sixth cervical vertebra, to which proceeding, of course, closely correspond severe accidental lesions to the cord in this situation in the human subject. It was found, then, as the result of this experiment, that in animals of some size a rapid rise of temperature often occurred, exceeding that of fever; but in small animals, cooling was the rule, unless the surrounding air was warmed or they were artificially clothed, in which case the temperature rose, as in the former instance, and might attain to even a fatal elevation. By the advocates of the vaso-motor paralysis theory, these results were at once attributed to the disconnection of the vaso-motor nerves from their intracranial centre by the section of the cord, and the consequent withdrawal of their inhibitory influence upon the combustion processes of the body—in short, they regarded the condition thus brought about as very much identical with fever in the clinical sense. The cooling which occurred in small animals, they explained by excessive radiation of heat from the surface, itself the conse-

quence of paralytic dilatation of the cutaneous vessels. In *man*, since Sir Benjamin Brodie's historical case, several similar ones have been recorded, in which inordinate elevation of temperature has ensued upon crushing injury to the cervical cord; and there are those here present, I doubt not, who have seen such. On the other hand, there have been as notable cases of depression of temperature after the same injury. Mr. Hutchinson, in his excellent lecture on the subject, as regarded from a physiological stand-point, gives it as his opinion, that the condition of the heart makes the difference. "It certainly never happens," says he, "that the temperature rises in these cases unless the heart's action is vigorous. If the pulse is only of moderate strength, the patient cools." But to apprehend more distinctly, in reference to the claims of the vaso-motor paralysis theory, what are the essential effects of section of the cervical cord, let us briefly note what alike *a priori* reasoning, physiological experience and clinical observation combine to teach respecting them. Of course, in a transverse section, not alone the bands of vaso-motor fibres, but all the other constituents of the cord, at the same time, will be divided. First, then, there occurs a sudden and great diminution of arterial tension, the direct result of vaso-motor paralysis—arterial tonus, as it is called, is abolished—more or less venous stasis arises from the quiescence of the muscles, and the heart's action, by its own partial paralysis, is retarded; in fine, the power of the heart and the efficiency of the circulation are greatly reduced. Secondly, there is paralysis of the muscles, to the extent of about five-sixths of the body; the muscles and the liver we know to be the most heat-producing organs of any; and while non-paralyzed muscles, even though at rest, produce some heat, paralyzed muscles produce next to none. And thirdly, the respiration is impaired; the breathing is diaphragmatic; duskiness of complexion is, I believe I am correct in saying, a common feature in accidental cases in man; and, as a consequence also of the disturbance of the circulation, oxygen is imperfectly supplied to the organism. Hence, to sum up, allow what may be for the withdrawal of inhibitory influence, the result is a very serious curtailment of those processes upon the maintenance of which the production of animal heat depends. The real condition brought about, indeed, is one of particular interest; and the discovery of it affords, I think, one of the most telling instances of the value of animal experimentation, that method of research against which of late so much agitation has arisen. The one great characteristic difference, then, between an animal whose cervical cord is divided, and a normal one, is, that the former has lost all power of regulating its heat according to external conditions. Let us hear the description given by our distinguished pathologist, Dr. Burdon Sanderson. "A healthy dog, accustomed to the temperature of summer, may be exposed to that of a winter's day without the slightest variation. After the cord is divided the same animal must be clothed,

even when in a warm room, else it cools too much; while, if the room is only a very little too warm, it passes into a state of intense pyrexia. To prevent either result, depression on the one hand or collapse on the other, the surface-loss has to be accurately adjusted to the thermogenesis by artificial means; for the animal has lost its powers of making any adjustment for itself." The warm-blooded mammal has been reduced, in fact, to the condition of a cold-blooded animal. Thus, the man with his spinal cord crushed (supposing it to be completely crushed) at the level of the fifth or sixth cervical vertebra, has lost his power of regulating his heat; his temperature is no longer stable, but labile, dependent upon that of the surrounding medium. But is this the condition of the fever-patient? Far from it. The latter still regulates his heat, nearly as efficiently, indeed, as a healthy person does, only for a higher temperature; the one regulates for 98·6 deg. Fahr., the other for say 104 deg. Fahr., more or less, as the case may be. The smallest experience of the treatment of fever by the cold bath, the true antipyretic method, will satisfy any one on this point; for to the overpowering of the regulation force of the patient our utmost efforts have to be directed. As to the supposed increased discharge of heat from the surface of animals with divided cord, Dr. Murri, of Florence, alleges that he has proved the direct contrary. Whilst the temperature in the rectum was normal or excessive, he found that of the skin unnaturally low. For the reasons that have been given, this is quite conceivable; at all events, it is clear that the result of section of the spinal cord cannot be used to uphold the vaso-motor paralysis theory of fever. Not a few pathologists, however, have adopted this theory. A reference to Dr. Murchison's grand work will show that he ranks among them. Claude Bernard, notwithstanding that he contends, as we have seen, for the thermogenetic effects, general as well as local, of division of the sympathetic in the neck, finds that section of the cord presents difficulties; and so he falls back upon the hypothesis of vaso-dilator excitation to explain the phenomena of fever, the existence of vaso-dilator nerves not having yet been demonstrated. Billroth, Liebermeister, and others, trace the essence of fever to some alteration of the nervous centres which preside over the regulation of the heat of the body, the nature of this alteration being obscure, but its effect being to disorder the regulation, so that it ceases to be for the normal degree of temperature, and comes to be for an abnormally high one. But it would seem to be no longer the question, whether this theory or that of the participation of the nervous system in the genesis of fever be correct, but rather whether the nervous system has anything at all to do with it. "It is no longer necessary," writes Dr. Sanderson, "to occupy space in discussing the theory, according to which there is a direct physiological relation between the nervous system and the chemical processes on which the production of heat depends; for it has now been shown experi-

mentally by Dr. Murri that, after severance of the cord, the temperature rises even when the thermogenetic function may undergo a great diminution." Dr. Sanderson does not give any details, nor does he say that he has himself experimentally verified Dr. Murri's observations; but I think that, while wishing to pay all honor to the Italian physician, we may take the liberty of asking for some confirmation at the hands of a German, French, or English authority, before conclusions deliberately arrived at by many eminent men are thus summarily set aside. In an abstract of Dr. Murri's publication, I find it stated that he first divided the cervical cord of dogs (which produced a cooling), and then injected fœtid pus under their skin, whereupon their temperature rose quite as much as after injection of the same in animals not operated on. Surely this would be something like an *experimentum crucis*, and would be additionally interesting from the fact, repeatedly ascertained, that in cold-blooded animals fever cannot be produced. In certain small mammalia, Dr. Sanderson seems to imply, the effect, as regards thermogenesis, of increased tissue-change in fever is balanced, or even more than balanced, by that of arrested food-supply. If that be so, it may be the explanation here also; otherwise, upon the view of this pathologist, that fever originates in the living tissues, and is from first to last a disorder of protoplasm, it is difficult to understand why in the frog, which of course has protoplasm in its tissues, and is quite able to produce heat, nothing, in however low a degree, answering thermally to fever in the higher animals, can be artificially produced. How successfully the process of inflammation has been studied in the batrachian's tissues, we are all aware.

And now, gentlemen, I must bring to a close this very imperfect sketch of the progress of fever-pathology. It was part of my original intention to include some notice of the causes—that is, remote causes—and of the effects of fever; but it soon became evident that, in doing so, I should exceed my limits. In respect of the latter, the effects of fever, I rather regret the omission, for very considerable advances in our knowledge have been made here; we stand on securer ground, and the subject is of the highest practical importance.

To sum up, then: we have seen that the characteristic elevation of the temperature of the body in fever is mainly due to increased production of heat; that, besides the increased production of heat, there is a disorder of nutrition, an abnormal disintegration of the tissues of the body, and particularly of the *muscular* tissue, evinced on the one hand by increased excretion of urea and of potash salts, of carbonic acid, and perhaps also of water, and on the other by progressive lost of body-weight; that the increased production of heat, occurring at a time when a principal source of normal heat-production—viz., the food ingested—is all but completely cut off, must have its chief origin in the abnormal disintegration of tissue; but that the converse

may also hold good to a greater or less extent, there being thus action and reaction; that, however probable may be the hypothesis of the intervention of the nervous system, the connecting link between the entrance into the organism of the fever-excitant, the pyrogenic matter (be this *contagium vivum* or what it may), and the onset of the characteristic phenomena, has not yet been demonstrated; in other words, the proximate cause of fever remains undetermined. Several minor *lacunæ* and unsettled questions we have had occasion to notice.

The work we have passed in review, as before observed, is almost entirely that of the last five-and-twenty years. Can we doubt, if we may venture upon a forecast of the future, that the final quarter we have just entered of the enlightened nineteenth century will witness a vast accession to this work, if not its completion? Can we doubt that voids will be filled up, that dubious or weak points will be corrected or confirmed, that difficult problems will be solved, that obscurities will be cleared away, and that the present *disjecta membra* will be united and consolidated into a true theory of fever? Can we doubt this, when, to say nothing of the advanced cultivation of science abroad, its claims have now come to the front at home, and original research is being stimulated and encouraged (if we except the measure before Parliament) to an extent utterly unknown at any previous period? Can we doubt it, when we look upon the beautiful pieces of mechanism, the elaborate appliances and apparatus, now in the hands of the biologist, and designed for the service of his laboratory, which are being exhibited at South Kensington? Can we doubt it, when the fraternity of science is no longer limited to local societies, the gathering of a few kindred spirits in the place of their abode, or to provincial associations, such as our own body at one time was, or even to national associations, such as our own body is now proud to be, but has come to extend to international congresses; men of science of different race and language speeding along the iron way from capital to capital, or traversing the wide ocean, in order to confer on the subject of their common pursuit and to aid its advancement? Can we doubt it, when the ancient prophecy of Inspiration would seem to be literally receiving its fulfilment: "Many shall run to and fro, and knowledge shall be increased."—*British Medical Journal.*

EU-CATHARSIA, OR HINTS IN REGARD TO THE MECHANICS OF DEFECATION.

Read before the Philadelphia County Medical Society, March 22, 1876,

By Benjamin Lee, A.M., M.D.

I find my apology for presenting the topic which I have chosen for this evening's conversation, in the well-worn and universally

admitted adage that "whatever is worth doing at all is worth doing well." It may be safely assumed that an act which every individual of the human race must perform frequently, and should perform daily, *is* worth doing well. It is not the less a matter of personal knowledge on the part of every one present, that this act is in too many instances, in fact in one sex almost universally, very badly done. Indeed, it is one of the unhappy results of civilization that it converts so many of our physiological into pathological acts, rendering that which should be an experience of unalloyed pleasure too often a constantly recurring source of misery.

While it is true that General Grose, who did valiant service for the Dutch under the Duke of Cumberland in the Flanders war, went for thirty years without an evacuation of the bowels, and that M. Poteau tells us of a young lady who, though she ate abundantly of fruit and liquid food, supplemented the urinary secretion only by copious greasy sweats, and that cases are not excessively uncommon where persons have gone frequently, or even habitually, for periods of weeks, without fecal discharges, yet the vast majority of the sons of Adam can hope for no such immunity from the daily demand of nature for self-purification.

One of the wisest and wittiest of modern British medical writers recommends that the tourist, in certain parts of Europe which are characterized by extreme filthiness in the latrines connected with their hotels, should, unless he can so far ingratiate himself into the favor of the landlady as to obtain the key to her private shrine, perform his duties *sub Jove*, in the open air. The objection to this primitive mode consists in the constrained position, which to the civilized man is very painful and fatiguing. A smooth sapling, upheld by two forked sticks, however, affords at once support, freedom, and ventilation, and with a little practice becomes extremely comfortable, as those of us who served in the field during the late war can testify. But such happiness is not for the slave of civilization. We must make the best of our bondage, and, by a careful consideration of the requirements of the case, strive to settle upon a rational basis for the construction of our support at this critical moment of our daily life.

The shape of the aperture in the seat of the stool or closet through which defecation is to be performed, is a matter of more moment than might at first sight appear. The ideal seat should give complete and easy support to the body without offering any obstacle to the passage of the fæces. But this is exactly what the old-fashioned seat, fashioned after the model of a *pót-de-chambre*, considerably exaggerated (which is indeed still the prevailing type), fails, in both respects, to accomplish. We can probably all of us remember how, as children, we braced ourselves with both elbows in reasonable dread of falling through the yawning mouth into the horrible pit below. The writer recalls one instance at least in which a child several years old

perished miserably from such an accident. Even in adult age an opening is occasionally found which gives one a sense of insecurity. Allowing the entire hemisphere of the fundament to enter its capacious jaws, it produces a painful constriction, and forcing the thighs together, actually diminishes the anal aperture and seriously interferes with the escape of the fecal mass. Especially is this the case with females, whose buttocks are fat and flabby. A properly constructed seat not only will not thus force the soft parts together, but will assist in holding them apart. Its sides should be parallel, its edges smoothly rounded but not bevelled, and its length sufficient to admit the male organ without risk of defilement or contamination from touching the front edge. This would give us a longitudinal diameter of from twelve to fourteen inches, and a transverse diameter of from five to seven. The most complete separation of the nates is produced when the tuberosities of the ischium just slip within the margin of the aperture, as the soft parts are then retracted over these points by the weight of the body. This in a majority of adults, is about seven inches. A less distance, however, probably affords more complete and comfortable support, say about five and a half inches. The ideal seat would be made adjustable to the breadth of the occupant by means of a small lever, like the jaws of a patent boot-jack. The height of the seat should be somewhat less than that of an ordinary chair, say about seventeen inches, so that a portion of the weight of the leg shall be borne by the foot. Having thus made rational provision for the objective requirements of the act, we are now prepared to consider the function itself from a subjective point of view.

Defecation constitutes the process by which the "dregs," the unavailable portions of the materials introduced into the alimentary canal as food, and certain of the effete products of nutrition, are gotten rid of by the economy. It may therefore be said to commence from the moment that the chyle ceases to be absorbed by the lacteals, that is, from the entrance of the alvine contents into the large intestine. The whole colon then—if we possibly except the cæcal pouch—from the valve of Tulpius to the end of the sigmoid flexure, may justly be looked upon as the organ of defecation, not less than the small portion of intestinal tube which terminates it. Our first difficulty is therefore likely to be met at the commencement of the large intestine. This is the more to be anticipated as the bowel is here compelled to lift its contents directly against the force of gravity during all the time that the upright posture is maintained. The frequency with which large fecal accumulations are found here in the right iliac fossa is well known. Our remedy for sluggish and ineffective peristaltic action at this point is simple, and, if persistently followed up, usually successful. It consists in firm and frequently repeated pressure, made either with the ends of the fingers or the closed hand, commencing at the caput cæci, and

gradually working up the right lumbar region to the hypochondrium, then following the arch of the colon around to the left side and so descending to the left iliac fossa. The pressure should be always in the direction of normal peristaltic action. This operation, which is known as *massage* or kneading of the abdomen, should be performed by another than the patient, and if by a trained manipulator, all the better. The proper position for the patient during its performance is lying flat upon the back, with the abdominal muscles relaxed.

Another mechanical therapeutic means which is of very great value in stimulating peristaltic action and in relieving passive congestion of all the abdominal viscera, is vibration. This is accomplished by means of a treadle and fly-wheel, similar to that of the ordinary sewing-machine or turning lathe. By means of various attachments, through eccentrics and levers, the rotation of the wheel is converted into vibrations, either vertical, horizontal, or curvilinear in their direction, of any desired rapidity, and applicable to the abdominal walls, the surface overlying the liver, or any other organ on which we wish to act, or to the extremities. The immediate effect of this rapid vibratile motion is to increase the surface-temperature of the part, promote nervous sensibility, and stimulate the capillaries to increased action. Its ultimate effect is to promote absorption of effete and effused material, hasten molecular change, invigorate the nutritive processes, and restore muscular tone. Applied to the liver it acts as a cholagogue, superseding the time-honored *massa hydrargyri;* to the intestines, it arouses peristaltic action and provokes increased secretion from the mucous surfaces; to the extremities, it warms cold hands and feet, overcoming venous stasis, and filling the muscles and integuments with freshly-aerated blood. In this way it acts as an efficient derivative from the overloaded portal and mesenteric system of vessels.

We have now conducted the fecal mass into the upper part of the rectum; but this much abused *viscus* has so often had its admonitions disregarded, has so often been compelled to retain an unwelcome guest, which it had done its best to expel, that it has become sulky and even insensible. It fails to respond to the internal stimulus. Without resorting to the cumbersome apparatus of the enema, is there any mechanical process by which we can arouse this slumbering guardian of the health and purity of the body to a sense of its responsibility and the performance of its function? Happily there is. It is described in works on the "movement cure" as percussion of the sacrum, and consists in striking the middle of that bone repeated hard blows with the heel of the hand. This procedure will generally be found, where there is any susceptibility of the rectum left, to be soon followed by the dawning of that not unpleasant expulsive sense to which common consent gives the euphemistic name of the "Morning Call."

The result is evidently produced by the agitation and vibration of the sacral ganglia.

The same result may, however, be often obtained by continued pressure on the same region, and with less effort. Let the patient, while enjoying his morning paper after breakfast, sit on the edge of a firmly-upholstered chair, and throw his body well back, so that the entire weight is borne upon the lower part of the sacrum and upper part of the coccyx, and he will not have more than time to wade through a long-winded editorial, before the pleasing summons will come.

Let us consider for a moment the forces at his command for accomplishing the act to which his sensations prompt him, and the mode in which they may be employed to the best advantage.

The natural impulse is, first, to incline the body forward, thus crowding together the abdominal viscera, throwing the descending colon and rectum as nearly as possible into a right line (I allude to this especially, as I shall hereafter mention an exception which is important in a diagnostic point of view), and affording a complete point of support for the muscles of respiration. The second step consists in inflating the lungs, closing the glottis tightly, and then throwing all the muscles of expiration into sudden, simultaneous, and persistent contraction, thus forcing the tense diaphragm strongly down upon the intestines, while the abdominal muscles, both straight and oblique, are making firm antagonistic pressure anteriorly and laterally.

This supporting pressure of the abdominal muscles is an essential to the perfect performance of the function. Hence, in those in whom these muscles have become weakened and wasted by improper compression from clothing and disuse, as is the case to some exent with most of our women, the result of the action of the other respiratory muscles is simply to bulge out the flabby abdominal wall, and to spend itself in that useless performance. In this condition, what mechanical contrivances can we resort to for the purpose of restoring tone and activity to these unserviceable muscles? If the abdomen is excessively pendulous, and heavily loaded with fat, it will be decidedly advisable to sustain it by means of an abdominal supporter of some kind. I rather give the preference to those which act by means of a steel spring, like a truss. But the essential remedy is, of course, exercise, graduated to the strength of the patient, and directed principally to the muscles in fault. In healthy, robust persons, horseback exercise is admirable; but many an invalid would be killed by it. For such as are unable to take this or other vigorous open-air exercise, I find an admirable means of restoration in the swinging couch. This consists of a stout frame, not less than four feet high, three feet long, and about two feet broad, supporting a flat, upholstered table, to the end of which is hinged a second table or leaf, of the same dimensions. The two together form a couch on which an ordinary person can lie at full length.

To the side of the second leaf is attached a strong lever, which runs the whole length of the couch, and carries a heavy iron weight. Now, when a patient lies stretched upon this couch, the body resting upon the fixed portion and the hip-joint being on a line with the hinges, the limbs lying upon the movable portion are supported by the weight on the lever. By shifting this weight, we can either just equilibriate them, or force them upward so that the thighs shall be flexed on the trunk, or allow them to drop, producing a forced extension. In this way we can bring into action either the lumbar or the abdominal muscles, or both, and with just such an amount of force as we consider the patient able to bear. At the same time (and this is an essential feature of all intelligent therapeutic exercise), all the other muscles of the body are in a state of rest. So that we act upon the muscles which we are anxious to develop, with the least possible expenditure of nerve-force. This exercise may be taken for from twenty minutes to half an hour, with intervals of rest. It is generally very much enjoyed by the patient, after the first feeling of awkardness is overcome.

We will suppose, then, that by a proper course of mechanical therapeutics the torpor of the colon has been relieved, and the abdominal muscles have been restored to a good healthy tone, and that, by their action in connection with that of the expiratory muscles, the offending mass has been forced fairly down into the pouch of the rectum. The critical moment has now arrived. The patient is conscious of the pressure of a solid against the more or less resistant sphincter, but that is all. Renewed muscular efforts are made, but all to no purpose. The anxiously-sought relief is denied, and the unfortunate at length becomes aware that the mass is retreating again into the upper part of the rectum. What is the cause of this defeat, just at the moment of anticipated success? That we may fully appreciate it, let us for a moment refresh our knowledge of the muscular anatomy of this viscus and region. As the intestine, having passed obliquely over the promontory of the sacrum, assumes the direct downward course to which it owes its name, it is amply supported posteriorly by the broad concave surface of that bone. As soon, however, as it arrives at the termination of the sacro-iliac symphysis, this osseous backing ceases, except for the middle portion, the gut falling back at its sides into the interspaces between the coccyx and the descending rami of the ischium, until, about an inch back of the anus, it fails altogether. These interspaces are known as the ischio-rectal fossæ, but, as the rectum itself often occupies them, it might be more exact to call them the ischio-coccygeal or ischio-anal fossæ.

The levator ani muscle, or lifter of the anus—arising from the posterior surface of the symphysis pubis, and the edge of the pelvic fascia, all the way back to the spinous process of the

ischium on either side—swings under the interior third of the rectum like an elastic hammock, its lower edge coming directly down to the thickened reduplicated band of circular fibres which we call the internal sphincter ani. Unlike these fibres, however, it is composed of striated fibrillæ, and is entirely under the influence of the will. Its function is to elevate, not so much the anus, which it does incidentally, as the posterior wall of the rectum, and it would more appropriately be called *levator parietis posterioris recti.* When in a state of strong contraction, it obliterates the concavities of the ischio-rectal fossæ, and causes all the planes of the intestinal receptacle to converge downward to the orifice of evacuation. Now, the largest portion of the rectal cavity is that just within the sphincter. Frequent distention and compulsory retention enlarge this pouch to an enormous extent, stretching the circular muscular fibres until they are almost completely paralyzed, and at the same time obtunding the nervous irritability and destroying the expulsive sense of the part. We know how constantly, in making vaginal examinations, the finger will detect a large fecal mass low down in the rectum, of the presence of which the patient herself is quite unconscious; and he is a happy man who has not at some time during his professional life been compelled to assist in the parturition of such an ill-odored birth. Into this great flaccid pouch, then, up through the floor of which the cylindrical mass of the sphincters penetrates like a perforated cork in an india-rubber bag, the fecal mass is forced until it distends the tissues lying around the anus and between it and the tuberosities of the ischium. The muscles whose function it is to maintain the integrity of the inclined plane which should lead down on all sides to the internal sphincter, have been so long tampered with that they cannot or will not perform their office. What is to be done? Evidently we must borrow a "hint" from "the obstetric procedure," and *support the perineum.*

Direct your patient, when he finds himself unable to extrude the mass of whose presence he is conscious, to pass the fingers down along the coccyx. Either just in front of it, or on one side of the verge of the anus, he will find a round, hard tumor covered by distended integument. Let him make firm pressure with the fingers on this tumor. In so doing he accomplishes two results. First, he converts the concavity into an inclined plane; secondly, he reinforces the exhausted muscles, giving them a new point of origin from which they can contract towards both extremities. They gladly acknowledge the assistance, contract with new hope, and in a twinkling the difficult labor is accomplished.

The essentials for Eu-catharsia, therefore, are—first, objectively, a support of the proper height, with an aperture of the proper shape and dimensions. Second, subjectively: 1st, a healthy vigorous tone of all the muscles of the trunk, but espe-

cially of the abdominal muscles; 2d, activity in the peristaltic action of the colon, and a normal condition of its secretions; 3d, a sensitive condition of the mucous membrane of the rectum just within the sphincter; 4th, a rectal cavity of normal size; and 5th, a stout *levator ani.*

These conditions may be promoted by such exercises as will tend to develop the abdominal and expiratory muscles without making a drain upon the nervous forces, by manipulations with a view to directly assisting the peristaltic labors of the colon, by pressure and percussion directed to arousing the sacral plexus to activity, and by direct support to the distended rectum and the paralyzed *levator ani.* The judicious and persistent use of these means, combined with hygienic means directed to the improvement of the general tone of the system, would go far towards breaking up the pernicious use of medicinal cathartics.

I have referred to the position of anterior inclination of the trunk as favoring expulsion, and have alluded to an exception to this general law. This exception is as follows. The physician is occasionally informed by a female patient that it is very difficult for her to expel a mass of the presence of which in the lower bowel she is conscious, unless she holds herself very erect or even bends backwards. She desires, first, a reason for this singular fact, and, secondly, relief from it. My own experience has been that the obstacle to a free passage in these cases is usually a retroverted or retroflexed uterus, which effectually blocks up the lower portion of the rectum and prevents the descent of the contents of the upper portion unless they are almost fluid. When the trunk is strongly inclined forward, the abdominal viscera are crowded down on top of the pelvic viscera, and the malposition of the womb is exaggerated. The force which should assist in emptying the rectum is therefore exerted to bring its walls into complete contact at one point and effectually obliterate its bore. But when the trunk is brought up to a right angle, or still better an obtuse angle, with the thighs, the superincumbent weight is lifted off by the mesentery, the uterus is allowed to ride forward, and at the same time the rectum is drawn slightly upwards and backwards away from it, once more regaining its permeability. A permanent restoration of the uterus to its normal position is followed by an almost immediate and permanent removal of the embarrassment; but nothing else will give complete relief.

Closely associated with the subject of the extrusion of the solid contents of the bowel is that of the expulsion of its gases. These, when present in any considerable volume, are always abnormal and usually the origin of conscious suffering or uneasiness. Apart from the condition which we call colic, in which they are somewhat suddenly set free in such quantities as to distend the bowel until it resents by spasm, their presence constantly, in less amount, but sufficient to produce pressure upon

the abdominal viscera, embarrass the circulation through the aorta, and compress the abdominal nerve-centres, is one efficient cause of that collocation of symptoms of depressed nerve-force and mental wretchedness which we designate by the non-committal name of *hypochondria.* Any one who has suffered even to a very moderate extent from flatulent dyspepsia, with torpor of the colon, knows what a load is removed from the burdened conscience, how the whole face of nature brightens up, when, after an hour of morbid dissatisfaction with himself and the world, he succeeds in getting rid of a rectum-full of sulphuretted or carburetted hydrogen. A simple mode of enabling such sufferers to accomplish this at will occurred to me many years ago, when assisting at one of Dr. Marion Sims's operations in his private hospital for diseases of women, in the city of New York. The patient was placed upon a table, in that admirable position for inspecting the vagina which has so properly received his name, and I was soon forcibly impressed with the fact that she was, to use the expressive phrase of the colored attendant of one of my patients who suffers habitually from this cause, "changing the air of the room." This frequent escape of gas continued during all the earlier part of the operation, until the entire large intestine had probably been evacuated, its solid contents having been already removed by a preparatory enema. The next case of colic which occurred in my practice afforded me an opportunity of testing whether the fact thus observed could be utilized in cases of acute distension. The patient was a stout man, by occupation a merchant, aged about thirty years. I placed him on his knees, with the forehead resting on the crossed hands, the elbows being outstretched; but the pain was so excruciating that after a few moments' ineffective trial he resumed his former position. I was obliged to resort to opiates and chloroform. When these agents had considerably reduced the violence of the spasm, he again took the position on the elbows and knees, and this time with the desired result, large volumes of wind escaping freely. The next case in which I tried the plan was one of irritable nervous dyspepsia, accompanied by distressing flatulent distention, in a young professional man of rather sedentary habits and feeble peristaltic action. Dining late, he was often greatly disturbed by the accumulation of intestinal gases about bedtime, sometimes interfering with sleep. In this instance the postural treatment was most successful. Almost immediately on assuming it, the sphincter would be felt to be relaxing under the stimulus of the ascending gas, which soon flowed out in an almost constant jet until all uncomfortable pressure had ceased. In cases of this nature, I can unhesitatingly recommend it as almost certain to afford relief at the time, and, by frequent repetition, to allow the intestinal muscles to regain their tone and thus permanently diminish the distention of the canal.—*Philadelphia Medical Times.*

SURGERY.

[Compiled by SAMUEL LOGAN, M.D., Professor of Anatomy and Clinical Surgery Medical Department, University of Louisiana.]

SIMULATED SYPHILIS.

A case was reported at a recent session of the Medico-chirurgical Society of Edinburgh, by Dr. F. Cadell, of much interest, on account of the extreme difficulty of determining its syphilitic or non-syphilitic character. In June, 1875, three weeks after a suspicious connection, the patient, a healthy man, aged 33, noticed a small nodule on the prepuce, like a corn. Five weeks later, when first seen by Dr. Cadell, a small nodule, secreting a little pus, but not ulcerated, was seen on the preputial orifice. The lymphatic vessels of the dorsum of the penis were indurated, as also were the inguinal glands. By the tenth week, a second lump had formed in the line of the lymphatic vessels, which was itself as thick as a crow-quill. Free suppuration continued from the original aperture up till the fifth month of the disease, and the patient's health suffered from it. No syphilitic symptoms appeared, and now at the eighth month induration had nearly disappeared. Mr. Joseph Bell thought that cases like this one, accurately described and with exact dates, were the means by which the scientific study of syphilis and allied diseases could be prosecuted. Had this case been treated in an empirical fashion, by one who believed that mercury could prevent syphilitic symptoms, it would have been quoted as triumphant evidence on that point, whereas it was simple lymphatic inflammation.—*Medical and Surgical Reporter.*

DIAPHRAGMATIC HERNIA.

By L. M. WHITING, M.D., of CANTON, OHIO.

Read before the Union Medical Association of North Eastern Ohio, at Akron, Ohio, August 1, 1876.

On the 11th day of July, 1876, was called at 7 o'clock, P. M., to visit Frederick Greaves, resident about four miles from this city. Found a young, athletic looking man of twenty-two years, six feet two inches in height, muscular development fine, but rather scant in fat. He was continually moaning with distress, which was referred to the region of the umbilicus. Temperature was nearly normal, though his hands were inclined to be cool; skin generally soft and moist; pulse 75; respiration 18. There was no tympanites or tenderness on pressure over any part of the abdomen, and no indurated or other unnatural tumefaction was dis-

covered. Learned that on Sunday, the 9th, after a week of vigorous, but cheerful labor in the harvest field, with the mercury varying from 90° to 96° in the shade, he had indulged, with some companions, in some hours of bathing in a stream in the neighborhood, during which he was attacked with "pain in the left side, extending up into the shoulder." This, however, soon left that locality, and became steady in the central portion of the abdomen—under, and immediately surrounding, the navel. Pain described as distressing to an intolerable degree, but not acute like that of peritonitis. For relief a messenger was dispatched for Dr. Pecker, who did not visit him, but sent some medicine to stop the pain. No relief being obtained, the sufferer was taken in a buggy to the residence of the doctor, who examined, and again gave him medicine, but only with the same result as before, viz: vomiting of everything put into the stomach, and steady continuation of the agonizing pain.

On Monday he was again taken to the residence of Dr. P., where he remained under his special supervision until Tuesday evening, when he was sent home in no way improved, and a messenger was sent for me. I was not able to learn what form of medication had been adopted except that as no movement of the bowels had occurred, and everything had been vomited, one "cold injection" had been used. As nothing was retained by the stomach, it was thought proper to place some remedy where it would not be lost in that way. One-third of a grain of morph. sulph. was accordingly administered hypodermically. In fifteen or twenty minutes he was free from vomiting and pain. A little later hydrarg. chlor. mite 20 grs. was given, and he was left to rest.

On the morning of the 12th he was found to have passed a night of sleep, and comparative comfort in every way, but after the lapse of about ten hours from the subcutaneous injection, he began to feel the same pain in the same place, and without any feeling of desire to evacuate the bowels. He was immediately put well under the influence of chloroform, and for a considerable time plied with a large enemata of warm water, which were invariably returned in a short time without a trace of fecal matter. The pain returning on subsidence of the anæthesia, he was given another dose of morphia as before, when directly he became quiet and comfortable. After another careful search throughout the whole economy of my patient for the special cause of this remarkable condition, I prescribed calomel, comp. ext colocynth, etc., with the application constantly of hot water compresses to the painful region, and left him till evening, with the conviction that I had a grave affair on my hands.

At evening of this day he was found with no special change. There was some decline of vitality, the pulse being less voluminous and somewhat more frequent, and some tendency to a cooler state of the extremities, but no marked indications of a crisis. Everything was retained by the stomach, and his respi-

ration was not disturbed. The return of our old enemy admonished us that the panacea was fast losing its control, and another injection of morphia was given, and the night of comparative comfort was looked for.

13th. Before leaving for a visit to my patient this morning, I persuaded my friend Dr. Scott, of this city, to accompany me. We found the pain had returned at an earlier period than usual, but mainly the phenomena were the same. The pulse was but little hurried, and the respiration unembarrassed. There were no indication of any discharge from the bowels, no tympanites, and no increase of pain on pressure. Again he was subjected to a very searching investigation. In my record of the 12th I neglected to state that the urine was normal, reaction acid, no albumen, sp. grav. 1020.

The result of our combined study was barren of any new light on the pathology of the case. Neither of us could see the evidence of acute inflammation, either peritoneal or mucous, nor could we believe in intussusception. All the forms of hernia or spasm were discussed, but to watch and wait seemed to us our resource for knowledge. It was, however, deemed proper by Dr. S., to give ol. terebinth, and ol. ricini, after some two or three doses of ol. tiglii, and to keep up the hot fomentations to the abdomen. Of course the repitition of the hypodermic dose of morphine was essential. The evening of this day found the general condition less favorable; extremities disposed to grow cold, pulse increased in frequency, and losing volume, more restless, vomited often; second dose of ol. tereb. and ol. ric. Gave injection of morphia, ordered brandy, and brushed the painful region with liquid vesicant, covered it with oiled silk, and continued hot fomentations.

14th. Unequivocal signs of approaching fatal issue. Pulse rapid and small, hands livid, distress great but no dyspnœa, no distention of abdominal walls, no tenderness on pressure, mind clear, agony still referred to umbilical region, no discharge from bowels in which there is evidently permanent obstruction from some cause. Gave hypodermic injection as usual with relief in twenty minutes. Left patient easy, with prognosis of death in twenty-four hours, but with request to be notified at once if either improved indications should occur, or dissolution take place; until receipt of which do not intend to return.

15. Message received at 7 A. M. from patient, most imploringly urging my return. Found on arrival he had passed a wretched night, being out of bed much of the time, moaning and tossing to and fro in the arms of his friends and vomiting almost continually. Mind clear, extremities cold and livid, no pulse at wrist, felt he was dying and called for morphia injection vehemently. Gave ordinary dose. In a few minutes he was comfortable and quiet, and within the next two or three hours, often expressed his gratitude for the relief afforded.—From the time

of my arrival this morning, I adopted a resolution not to leave until the mystery in the case was solved.

Death occurred at 2 P. M., and so soon as a decent regard for the opinions and prejudices of the somewhat numerous group of friends would permit, and in their presence, a careful exposure of the region of suffering was made, and the viscera inspected with no small degree of curiosity, but with entirely negative results. Nothing abnormal was seen or felt under or about the umbilicus. But on passing the finger along the internal portion of the external surface of the right colon, a peculiar tension was perceived along the mesenteric attachment, which in a moment led to the observation that quite a large part of the transverse section was missing, and in fact nearly all the arch of the colon had crept through the opening in the diaphragm for the œsophagus! Not only had the hollow tube become dislocated, but the entire mesentery with which that portion of intestine is associated, was dragged after it into the thoracic cavity! At once the idea of the possibility of relief by a surgical operation occurred; and a careful but determined effort at reduction by taxis was commenced; but after the application of force, and all the skill I could bring to bear, with all the advantage of handling insensible tissues with a good hold, the reduction was not effected. The edge of the stricture was then nicked with a sharp knife and another effort at reduction made without success; this was followed by several unsuccessful essays of the same sort, until at length a slit of several inches laterly to the left having been made, a decided pull upon the imprisoned bowel was followed by the rolling out, into our astonished view, of this enormous mass, including, as already stated, nearly the entire transverse colon with its mesocolon.

It should be stated that during the last day or two of my attendance, it was learned from the history of this man, that he had some years ago been crushed in a lime kiln by a falling in of its walls, or something of the kind, and further, that four years since, he suffered from an attack which he regarded the same as this; was then attended for some time by the same physician to whom he first applied during this illness, and then called upon Dr. A. W. Whiting, of Canton, who on visiting him inserted morphia hypodermically, gave him a dose of colomel, and ordered a dose of castor oil to be taken in a few hours, all being done his bowels moved freely, and recovery ensued at once.

The great rarity of this case is sufficient warrant for its report; but the special interest, it appears to me, consists in the great obscurity in which its true character was involved. No apparent interference with the functions of the thoracic viscera was at any time exhibited under such a crowding as we must suppose to have been very great, and for a long time. No difficulty was shown in swallowing either solids or liquids, and repeated examination of the heart and lungs gave no sign of their implication. —*Ohio Medical Recorder.*

CASES OF YELLOW FEVER IN NEW ORLEANS IN 1876. REPORTED TO THE BOARD OF HEALTH.

BY JOSEPH HOLT, M.D.,

Sanitary Inspector for the Fourth District, New Orleans.

Continued from page 357.

the night of September 29th. Dr. Layton attending. Reported September 30th. Has been visiting the sick in the infected district. After a high fever of several days' duration, and presenting the special signs of that stage of yellow fever, she became yellow, tongue and gums very red; urine loaded with albumen; copious black vomit and delirium on fourth day.

Died, October 4th, at 11 a. m.

Disinfection.—This asylum was thoroughly carbolized with the pure acid solution October 2d. Four gallons of the acid, one to forty, were used: the floors of rooms and halls, yard, drains, and walks, as heretofore described of St. Joseph's Asylum; two gallons of crude acid thrown in the privies.

This convent is occupied by forty-three Sisters of Mercy, nineteen employees, and seventy orphans = 122 persons, all white. Of these, there were seven Sisters and three employees who had had yellow fever. On the same premises, five hundred and ninety-six children, white, attend day school.

Made requisition and received of Administrator of Police, September 29th, twelve barrels crude carbolic acid.

Because of the immense space comprising the infected area, and for the reasons stated concerning the effect of wind and heat upon the pure acid, I determined to subdivide this area into sections with the crude acid. Beginning at ten p. m., with the sprinkling carts, in the same manner described for the night of the 28th, the infected locality was divided equally into six parts. Great stress was laid on the assumed limiting power of the disinfectant. The area infected was too immense to admit of an actual and complete disinfection of its entire surface with anything less than an unlimited supply of the acid. The most that could reasonably be hoped was to disinfect, in the imperfect and unsatisfactory manner in which alone it could be done, as many premises as we were able, but to throw the main effort and supply, as in the case of a great fire, upon hedging it in.

October 1st. Mean temperature 60.5° Fahr. Wind N. Dry.

Case 54. Julia Mitchell, age 3 years, native of New Orleans;

in New Orleans 3 years. Residence, No. 92 Laurel street, between Josephine and Jackson streets. Taken sick October 1st. Dr. Greenleaf attending. Reported October 9th. Died October 8th.

October 1st.

Case 55. Mrs. Moore, age 57 years, native of Virginia; in New Orleans 3 years. Residence, No. 343 Chippewa street, lake side, between Soraparu and First streets. Was taken ill early in the morning, October 1st. Dr. Bickham attending. Reported October 4th. Light chill, followed by fever of seventy-two hours duration, accompanied with great pain in the head, back and limbs, dusky red skin, gums swollen and red, eyes red and watery. Fever declined abruptly, and pulse fell to 60; circulation extremely languid; general yellowness decided; had ceased menstruating nine years before, but during the second or hemorrhagic stage of her attack she menstruated freely (*simply uterine or vaginal hemorrhage*). Recovered.

October 2d. Mean temperature 61.5° F. Wind N. Dry.

Case 56. Mrs. Mary Moore, age 40 years, native of New York; in New Orleans 4 years. Residence, No. 73 Sixth street, lower side, between Chippewa and Annunciation streets. Was seized about twelve o'clock, mid-day, with nausea, soon accompanied by fever. Dr. George N. Monette saw her at 8 o'clock p. m.: pulse ninety-six; temperature 101°. Fever continued ninety hours—at no time higher than 102°, p. m., and falling to 100°, a. m. Her general appearance was that of a mild case of yellow fever: mucous membrane of mouth, tongue and gums red; tongue moist and fissured; albumen in the urine on the second day, and continued until convalescence; untimely appearance of catamenia, copiously on the third day. Recovered.

Two children of this lady, aged respectively about six and eleven years, passed through an attack closely resembling that of the mother, but milder, during the time of her illness.

October 2d.

Case 57. Mrs. Margaret Ann Manson, age 30 years, native of England; in New Orleans 2 months. Residence, on board the British sailing ship Evangeline, lying at the foot of Second street. Was taken ill Monday, October 2d, at one o'clock a. m. Dr. T. M. D. Davieson attending; in consultation Dr. Fisher. The attack began with a chill and severe pain in head, back and limbs.

She was first seen by her physician Tuesday, at 9 a. m.; he found her with fever; pulse 120. The fever continued forty-eight hours. The general symptoms were those common to yellow fever. At 10 a. m. on the third day of illness, she threw up black vomit; albumen in the urine; pregnant, but did not abort. Died October 6th.

The morning before her attack she attended church, far up town, and then went to the house of a friend living on Annunciation street, near First, in the centre of infection. Here she took dinner, and remained until late in the evening, when she returned to the ship.

The vessel was disinfected immediately after her death, in the same manner as the Belgravia.

October 3d. Mean temperature 58° F. Wind E. Dry.

Case 58. Miss Laura Moore, age 13 years, native of Virginia; in New Orleans 3 years. Residence, No. 343 Chippewa street, same as case 55. Was taken with chill at 4 a. m., October 3d. Dr. Bickham attending. Reported October 4th.

Had chill, followed by fever attaining 104°, and of seventy-two hours' duration; exanthematous redness of skin; suffused eyes; red gums, lips and tongue; defervescence abrupt, pulse dropping to seventy on the fourth day; her condition during this stage one of languor and feeble circulation. Recovered.

October 3d.

Case 59. Miss Annie Garrett, age 22 years, native of Tennessee; in New Orleans 10 years. Residence, 130 Philip street, same as cases 23 and 37. Was taken sick at 5 p. m., October 3d, with a light chill, accompanied by intense pain in head, back and limbs. Dr. S. M. Bemiss the attending physician. The chill was succeeded by a fever of sixty hours' duration, and at no time intense. During a period of eighty-six hours she suffered greatly from retching. Accompanying the fever were exanthematous redness of skin, suffused eyes and red conjunctiva; mucous membrane of mouth and gums red. This stage was followed by a well-marked state of depression, with capil lary stasis, slow pulse, some yellowness of skin and eyes. Recovered.

This young lady reached her home, from Mobile, at 11 a. m. September 26th, and nursed her mother and sister until the time of her attack.

October 3d.

Case 60. Brother Frederick Wm. Roeder, age 30 years, Native of Germany; in New Orleans 2 years and 6 months. Residence, House of the Redemptorists, Constance street, river side, between St. Andrew and Josephine streets. Was attacked Tuesday night, October 3d. Dr. Thomas Layton attending. Reported October 4th. Fever of several days' duration, marked by all of the symptoms characteristic of a violent case of yellow fever: partial suppression of urine early in the disease, and later became complete; urine loaded with albumen; black vomiting and purging frequent in the closing stage; delirium; coma. Died, 8 a. m., October 8th.

There were living on the premises of the Redemptorists at this time, eight Brothers and one employee, all of whom were acclimated. Those not having had yellow fever had been sent from the city.

The patient lay in an out-house, about one hundred feet from the main building.

Three rooms and the gallery of this house, the bedding, and everything that had been about the sick, were liberally carbolized with the pure solution. The entire premises including yard, privies, drains and walks, were treated likewise. All of the premises on the square, and on the square opposite were also disinfected. Through the boundary streets of these a cordon of the crude acid was laid in the manner already described. This was done late in the night.

October 4th. Mean temperature 61° F. Wind N. W. Dry.

Case 61. Dominique Launes, age 2 years, native of New Orleans. Residence, No. 475 Anunnciation street, lake side, between Philip and First streets. Was taken sick October 4th. Dr. Greenleaf attending; Dr. A. C. Gaudet in consultation. Died October 10th. Reported October 10th.

On requisition made upon the Administrator of Police, October 4th, received ten barrels crude carbolic acid.

October 5th. Mean temperature 62.5° F. Wind S. Dry.

Case 62. Nathan Kuhn, age 28 years, native of Germany; in New Orleans 3 years. Residence, St. Andrew street, upper side, between Laurel and Constance streets. Was taken ill at 2 a. m. October 5th. Dr. J. A. G. Fisher attending. Fever of

one paroxysm of sixty-five hours; skin dusky and dark red; eyes greatly injected; temperature during this stage reached 107°; mucous membrane of tongue, gums and mouth intensely red, becoming dry in twenty-four hours and remaining so; albumen in urine on the third day, coinciding with defervescence.

Immediately following the primary febrile stage were great prostration and restlessness, profound capillary stasis, and dark yellow discoloration of skin and eyes; copious black vomit on the fourth day.

Died October 9th at 11 p. m.

Disinfection—October 10th. With the pure acid solution, four rooms and the gallery, the bed, bedding and all articles used about the deceased; also the yard, privy, gutter and banquette of the premises; the premises of the square. A cordon of crude carbolic acid was drawn around the square.

October 5th. Mean temperature 62.5° F. Wind S. Dry.

Case 63. William Foss, age 21 years, native of New Orleans; in New Orleans 21 years. Residence, Dryades street, between Washington and Sixth streets. Dr. Pettit attending. The attack began with a light chill, pain severe in head, back and limbs. The chill was followed by a fever of seventy hours' duration. Morning and evening range of temperature 102° and 103°; fever not amenable to large doses of quinine; erythematous thickening and dusky redness of skin; much epigastric tenderness, nausea and vomiting; defervescence on the fourth day, abrupt. The temperature steadily declined to 97°, the pulse to fifty-two, on the sixth day. Recovered. Had been frequently in the infected area.

October 6th. Mean temperature 67° F. Wind S. Dry.

Case 64. Frederick Weis, age 40 years, native of Germany. Residence, No. 200 Josephine street, upper side, between Laurel and Constance streets; in New Orleans 12 years. Was taken ill October 6th with chill, pain in back and limbs, headache. Fever continued five days. General surface erythematous, dry and hot; face flushed; eyes suffused, tongue very thick and broad, red around the edges, and coated with heavy white fur. Temperature maintained many hours at 105°; urine scanty and albuminous on the fourth day; defervescence gradual. Temperature on the fifth day 99°, pulse fifty. Recovered. Reported October 8th. Dr. Poelman attending.

October 6th.

Case 65. Francis Wingart, age 14 years, native of New Orleans; in New Orleans 14 years. Residence, St. Mary street, upper side, between Magazine and Constance streets. Was seized Friday evening, October 6th, with severe headache and pains in back and limbs, accompanying a light chill; fever following of one paroxysm and of fifty hours' duration. Albumen appeared in the urine on the third day, and continued in large quantity until beginning convalescence. From 4 p. m. Monday, to 6 p. m. Sunday, suppression of urine almost complete; secretion was then gradually reëstablished. Tongue, gums and mucous membrane of mouth very red; sudden defervescence the beginning of the third day; pulse fell to sixty, and the temperature from a range of 103° to 103½, fell to 100°. In this stage, the skin and eyes yellow, marked capillary stasis. With beginning convalescence the temperature fell a degree below, while the pulse gradually regained the normal standard. This conduct of temperature and pulse was observed in many of the reported cases. Recovered.

October 6th.

Case 66. Fred. Kiefer, age 29 years, native of Germany; in New Orleans 5 years. Residence, No. 26 Sixth street, between Tchoupitoulas and Fulton streets. Was taken ill October 6th. Dr. A. C. Gaudet attending. Reported October 10th. Fever of eighty hours, accompanied by all of the symptoms common to this stage of yellow fever. On the third day great tenderness of epigastrium; intense redness of gums and tongue; epistaxis on the third and fourth days; albumen in urine one half; suppression of urine partial, but marked on the second, third and fourth days of attack. Recovered.

October 6th.

Case 67. Mary Charbonnet, age 23 years, native of Alabama; in New Orleans 12 months. Residence, 405 Annunciation street, river side, between Jackson and Josephine streets. Was taken ill October 6th. Seen by Dr. Bayley. Sent to Charity Hospital. Recovered.

October 6th. Made a requisition and received from the Administrator of Police, October 6th, ten barrels of crude carbolic acid.

During the day, the disinfection accomplished consisted in

throwing into each privy carefully two quarts of crude carbolic acid, on the premises of sixteen squares, bounded by Chippewa and Magazine, Washington and Ninth streets. (From the very beginning it has been an established rule to pay special attention to the thorough carbolizing of the privies; even in cases where admittance to premises has been refused, this much has been insisted upon.

(It has been shown that yellow fever in its origin is essentially a disease of large towns and cities. It follows, therefore, that there must exist, as a result of the congregation of large numbers of human beings, some special conditions of sanitary disobedience favoring, in combination with other requisite factors, the first appearance and the spread of the pestilence. There is no sanitary violation so prominent as the accumulation in foul privies of the excreta of all these beings. In reply to the question, why yellow fever originates in dense communities of people, we are supported by abundant testimony in asserting as among the essential factors, accumulated human excreta and foul street gutters.)

October 7th. Mean temperature, 68.5° Fahr. Wind N. E. Dry.

Case 68. Mrs Rosanna Jacobs, age 33 years, native of Ireland; in New Orleans 11 years. Residence, No. 38 Philip street, upper side, between Tchoupitoulas and Rousseau streets. Dr. Mainegra was called to see this lady during the evening of October 7th. Reported October 9th. On the 23d September she was attacked with a sharp neuralgic pain in the head; no other symptom of illness. This continued with irregular intermissions, to the time of the doctor's visit; not interrupting her seriously in the performance of her household duties until the day previous to his visit. She attended to out-door business on the 5th inst. The physician was called for no other reason than the severity of the cephalalgia. He found her with a little febrile excitement; such as might be expected with the pain. There was nothing so decided in the appearance of skin, tongue or eyes, as to occasion suspicion. The following morning he found her relieved of her sick headache. This was ascribed to the remedies. The case was discontinued as relieved. At 7 o'clock Monday morning the physician was called in great haste. He found his patient ejecting violently from mouth and nostrils

large quantities of black vomit. She was unconcious and sinking. Pulse rapid and feeble. Two hours later, she was dead.

Disinfection.—The following day all the rooms, the bedding, and everything used about the patient, were carbolized with the pure solution; also the premises adjoining, two on either side. A cordon of crude carbolic acid was thrown around this space.

October 7th.

Case 69. Catherine Weber, age 21 years, native of Germany; in New Orleans 2 years. Residencé, corner Annunciation and Second street. Was taken with a slight chill and severe pain in head, back and limbs, late in the evening of October 7th. Fever soon followed, and continued seventy hours. Highest temperature 103.5°. Was delivered on the third day of a living eight-months child. Recovered. Dr. Poelman attending. Reported October 10th.

The occurrence of several cases—*recorded*—about the intersection of Eighth and Constance streets, gave reason to fear the development in this locality of a new centre of infection. Although the most of these were directly traceable to the original area ot infection, three cases appeared having no such history, but had evidently contracted the distemper on the spot. These persons had been in proximity to the sick.

Accordingly, on the night of October 7th, the sixteen squares bounded by Chippewa, Magazine, Washington and Ninth streets, were cordonned, and the intersecting streets treated with the crude carbolic acid. The privies of these squares had been carbolized the day previous. Because of a limited supply of acid, six barrels for this work, an improved plan of distributing the material was adopted. Instead of the ordinary street sprinkler, two one inch hose of thirty feet each were attached to the reservoir. On the end of each hose was an ordinary garden-sprinkler eight inches in diameter. Thus arranged, the cart was driven down the middle of each street, while the gutters and edges of the banquettes on both sides were effectually drenched with the acid. By this means we were enabled to extend a perfect double cordon around each square, with the least expenditure of acid.

October 8th. Mean temperature 63° F. Wind N. Dry.

Case 70. John Mills, age 28 years, native ot Louisiana; in New Orleans 2 months. Residence, Jackson street, lower side, corner

Annunciation street. Was taken ill October 8th; seen by Dr. Bayley; sent to the Charity Hospital. Died October 13th.

October 8th.

Case 71. Ella Carron, age 3 years, native of New Orleans. Residence, No. 478 Annunciation street, lake side, between Philip and First streets. Was taken sick October 8th. Dr. Fisher attending. Fever of one paroxysm of fifty hours, attended with great pain in head, back and limbs; skin dark red; eyes injected; great nausea. Recovered.

October 8th.

Case 72. Andrew Cogle, age 19 years, native of Scotland; in New Orleans since August 29th. Residence, sailing ship Belgravia. Was taken sick October 9th, at 5 a. m.; admitted to the Touro Infirmary at 10 o'clock the next day. Dr. Loeber attending. Fever of one paroxysm, observed during sixty hours. Temperature when admitted, 103°; at 9 p. m., 106.5°, and continued at this seven hours, when it began to decline and reached 100° on the fourth day. Epistaxis on the second day, black vomit and purging on the fourth, and general hemorrhages from gums, nose, ears and anus; in the closing stage, violent delirium, convulsions, and coma. Died October 14th, at 12 m.

October 8th.

Case 73. John Redland, age 20 years, native of Scotland. Residence, ship Belgravia; in New Orleans since August 29th. Was taken ill at daybreak, October 8th; conveyed to the Touro Infirmary the following morning. Dr. Lœber attending. Temperature when admitted 100°; at 9 p. m. 107¼°; at 10.30 p. m. it began to decline; at 9.30 a. m. 106°, and at 5 p. m. 104.5°; at 9 p. m. 102°; at 6 a, m., October 11th, 99°. As the temperature approached the latter degree, symptoms of collapse began and rapidly became profound. The case was in every respect the counterpart of the one preceding: black vomit and purging; hemorrhage from nose, gums, ears and anus; urine albuminous; convulsions; coma. Died October 12th.

The ship Belgravia had been repeatedly carbolized and thoroughly cleaned since the occurrence of case 26, September 17th. The ten days following the death of this case the crew remained closely about the ship; after that time some of them became reckless, and frequented the places in the infected area where John Reese caught the disease. From this fact the commanding

officer predicted the illness of the last two men, in a conversation with me a few days prior to their attack.

October 13. Mean temperature, 62.5° Fahr. Wind S. W. Dry.

Case 74. Mrs. Katie Kienle, age 19 years, native of Ohio; in New Orleans 5 weeks. Residence, No. 126 Seventh street, same as case 40. Was taken ill October 13th. Dr. Schmittle attending. Reported October 16th. The attack was ushered with chill, excruciating headache, and aching in back and limbs. Fever shortly ensued, and was of one paroxysm of ninety-six hours. The temperature night and morning ranged between 104° and 103.5°; face flushed; general erythematous redness of skin; eyes injected, watery, and painful to light; tongue and gums red, the latter swollen and spongy. On the third day great tenderness of the epigastrium; the urine became albuminous, eventually to one-third its bulk, and the catamenia appeared freely, being fourteen days after the regular term. On the fifth day defervescence gradual, and imperfect, her condition drifting into one of an irritative type, with a temperature of 101° to 102.5°. On the 6th day the adynamia became distinctly typhoid, with suppression of urine complete; skin dark bronze yellow, and eyes dark yellow; wandering delirium during the last two days of life, terminating in convulsions, coma and death, on the ninth day of illness and 20th October. This lady was the constant attendant of her husband during his illness.

Disinfection.—October 21st, the premises and adjoining premises were carefully disinfected. It was impossible to obtain access to the house, the occupant having gone away.

This completes the record of cases.

Résumé.

Total number of cases	white 71, colored 3	74
" Natives of New Orleans		17
" " " Louisiana		4
" Number of deaths		35

Total amount of disinfectants used—Pure carbolic acid, Calvert's No. 5, nineteen barrels, ranging from 46 to 50 gallons each = about 912 gallons; crude carbolic acid compound, forty barrels, containing 45 gallons each = 1800 gallons.

One sprinkling cart in service six nights.

Two sprinkling carts in service six nights.

Areas disinfected—streets and premises of sixty-four squares.

Areas re-disinfected a second and third time—streets and premises of twenty-four squares.

Census of the thirty-nine inhabited squares, bounded by Magazine street and the river front, St Andrew and Second streets, *not including asylums :*

Number of premises					1143
" " persons on premises			white 5869		6407
			color'd 538		
" " "	born in New Orleans				3713
" " "	" " Louisiana				211
" " "	arrived in New Orleans since 1867*				467
" " "	born " " " " "				1760
No. persons who have already had yellow fever—			white 1162		1196
			color'd 34		

In closing this report, Mr. President, I would most respectfully commend to your kindest consideration the sanitary officers who have executed the immense work of the Board of Health, during this time of public danger. These officers have been employed, and at times without ceasing, by day and by night. Every demand upon them has been complied with promptly and with cheerfulness, however disagreeable the task. The successful issue of the designs of the Board has been mainly due to the perfect education in the business and to the energy of these men. It is my conviction from observation, that no great sanitary measure can be brought to a practical issue except through skilled employees. For this reason, it is my belief that chosen men should be first trained to the business and then retained. Under an enlightened system of municipal hygiene, their importance is second to the officials of no other department.

The sanitary officers spoken of are Messrs. Charles Curtis, Henry Kohlhaase, N. Woodey, A. J. Barrett, F. R. Williams, Louis Icks, A. L. LeBlanc, and L. G. Allain.

I remain, sir, very respectfully,

Your obedient servant,

JOSEPH HOLT, M.D.,

Sanitary Inspector Fourth District.

* The date of the last great epidemic.

CORRESPONDENCE.

DANVILLE, KY., October, 1876.

To the Editor of the New Orleans Medical and Surgical Journal:

Dear Sir—Some three years since it was our privilege to be present at a meeting of one of our best medical societies when the subject of *syphilis* was introduced for discussion. The society enrolled among its membership the most active and energetic men in the profession of one of the great cities of this country—men of ability, culture, and extensive experience both at home and abroad. The discussion waxed warm, and the remarks at first positive, became finally so dogmatic and contradictory, that for the welfare of the society it was deemed best to indefinitely postpone the further discussion of the subject.

The diversity of opinion upon this subject exhibited on the occasion referred to, is scarcely out of proportion to that which pervades the mind of the profession at large. There seems to be something in the nature of this mysterious disease which attracts investigation, and makes it one of the most interesting conditions scientifically to which a physician's attention can be directed; but the testimony of practitioners, teachers, and specialists, is so diverse, and at the same time, dogmatic, as to leave many points for individual judgment and determination.

While we are aware that the disease to which we allude occupies a large space in our literature, with numerous special treatises, and has received the profound consideration of the greatest medical organizations in this country and in Europe; yet there remain many important features of the disease relating to its symptomatology, history, pathology, treatment, and transmission, upon which opinion is divided.

Just here it occurs to me to mention some of the claims which the investigation and study of this affection have upon us from time to time. We have heard practitioners observe in this connection, that in such a practice as their own they seldom have occasion to treat this affection. Such members of our calling have the good fortune to possess a most virtuous *clientelle*, or have the bad fortune of inability to detect the varied and insidious manifestations of a disease which pervades every circle of society and condition of life, as well as every fluid and tissue of the body.

We have no doubt that many cases of obscure visceral disease slip through the fingers of some practitioners, when the prompt application of certain specific remedies might produce a wonderful revolution in the symptoms in a very short time. We have in mind at the present time several instances in which we know that a consulting physician rescued patients from perilous and extreme conditions by recognizing the disease under consideration when the attending physician was groping in the dark.

In view of these and numerous unmentioned facts, it is evident that it becomes the duty of medical men not only to acquaint themselves thoroughly with this malady, but to familiarize themselves with all its manifestations, and doubtless light will be thrown on the pathology of numerous cases which pass as obscure nervous and visceral diseases. The careful, deliberate, thinking practitioner, is constantly on the watch for the manifestations of this subtle poison.

It is not the purpose of this communication to treat of syphilis *in extenso*, but simply to give some impressions made upon the writer by his observation during the past few years.

In the first place, as regards the diagnosis of this disease much care and skill are requisite. It is quite a serious misfortune to the human family that some practitioners, who have not taken the time and trouble necessary to acquaint themselves with the positive symptoms of syphilis, make it a rule to pronounce every external venereal lesion, from *herpes preputialis* down to the most severe and destructive of venereal sores, to be syphilis. It is very easy for the physician, and in the end pleasing to the patient, to express a diagnosis of syphilis, canterize the lesion whatever it may be, prescribe mercury, and assure the patient that he will be cured to a certainty. In most instances the sequel verifies the prognosis, but this does not justify the conduct of the physician in leaving his patient under the impression that he had been infected with such a malady as syphilis. The protean type of the disease, and the obscurity attending the accurate diagnosis of late manifestations, may justify the action of many practitioners who, in the face of an obscure disease and at a loss what to do, treat the patient for syphilis; but the primary lesions giving indubitable evidence of constitutional infection, are sufficiently well-marked to demand recognition. Syphilitic infection is a matter of such vital im-

portance to the welfare of the patient and his progeny, and so much depends upon the treatment pursued during the three years subsequent to infection, that the conscientious physician cannot but feel an urgent responsibility when such patients are consigned to his care.

Investigation in this department of special pathology has received quite an impetus during the present year by the great debate on syphilis at the Pathological Society of London, in the course of which four sessions of the society were occupied, and among the speakers were several of the most distinguished pathologists in the world. The council of the society demonstrated its superior judgment in selecting that accomplished surgeon and indefatigable worker, Mr. Jonathan Hutchinson, to introduce the debate. Mr. Hutchinson's researches upon syphilis are so well known to the profession as to exclude any necessity of citing his claims to the high position occupied by him among syphilographers. He was followed in the discussion by a number of eminent pathologists, whose names are familiar. Among others were Sir James Paget, Mr. Henry Lee, Sir Wm. Jenner, Sir William Gull, Dr. Moxon, and Mr. Simon. I regret that limited space will prevent an outline of the positions assumed by these eminent gentlemen as to the nature of the malady. Mr. Hutchinson places the disease among the exanthematous fevers. Dr. Moxon made use of a happy and apposite expression in saying that syphilis is "a fever diluted by time," and Sir Wm. Gull, with equal felicity of expression, pronounced it a "flesh and blood disease."

In connection with the transmission of the disease, several allusions were made during the discussion to the mooted point upon which opinion remains so diverse, viz., can a syphilitic father transmit the disease without contaminating the mother; or, more particularly, does the spermatic cell possess the power of infection? Sir Wm. Jenner was quite positive in his statement that the spermatic cell contains the infecting element of the disease, and has the "potentiality of development." If I mistake not, in our own country opinion is quite opposed to that expressed by Sir William.

In connection with the prognosis of this malady, a matter of the most vital importance, it seems that eminent opinion is at last verging toward one point, viz., that instead of the disease invariably tending to progressive destruction, its natural course

is toward recovery; and that, while the disease is exceedingly deceptive and insidious, in good subjects with good habits, careful attention to hygiene, and approved treatment, complete recovery is the rule. The most reliable testimony in the determination of prognosis is not that of the hospital physician and specialist, but that of the general practitioner who retains the patient and his family under observation for a long period of time. The writer recently enjoyed the pleasure of a long conversation with a very intelligent gentleman, a well-qualified physician and faithful observer, who for twenty years past has been uninterruptedly engaged in practice in a neighboring community. Our conversation turned upon spyhilis, its nature, prognosis and treatment, when he assured me that upon his ease-books were recorded more than a dozen ease of undoubted syphilis, the subjects of which had married and become fathers of healthy children, all remaining under his immediate observation to the present time, and no evidence of the disease has been seen for ten years. While the period of lateney has been known to continue over more than ten years, and new manifestations spring up, yet surely it can be said that a large number who have suffered with the disease go on through life without any recurrence in themselves or their children. Our friend certainly has the support of the majority of the syphilographers in concluding that a complete eure is established when, after a lapse of ten years from the last manifestation, the subjects, wife and children, are in a state of apparently perfect health.

The value of mercury in the treatment of syphilis has long been very generally recognized by the profession, and the accumulation of experience seems to approve of its reliability. The most varied views are held as to the best method of employing the remedy. The old method, still advocated by some, is to induce salivation by a prompt, brilliant course of mercury, with the vain hope of strangulating the disease. Many practitioners maintain a superiority for numerous interrupted short courses of mercury, not pushed to salivation; while a third class declare that the best course to protect the patient from serious trouble early or late in the disease, is to pursue the course of giving mercury continuously for at least two years, the doses being small, and not even large enough to make the patient physically conscious that he is taking any medicine.

It is very generally conceded that the greatest difficulty is

encountered in impressing patients with the necessity of attention during the intervals between outbreaks of the disease, and with the importance of pursuing the enemy during the periods of repose as well as of activity. It was in view of this fact that M. Ricord, in some remarks before the British Medical Association a few years since, stated that he would not undertake the treatment of a patient afflicted with the disease unless he would promise to pursue the treatment unremittingly for two years, adding that when perseveringly pursued for this length of time under favorable circumstances, he considered a good recovery almost a certainty.

During the past three years the writer has treated several cases of syphilis after the method last referred to, and in each instance with satisfaction. Five cases are under observation at the present time, some eight months having elapsed since infection in two instances, and fully a year in the other cases. The patients are all situated under favorable hygienic circumstances, and have at no time been unfitted for social life or attendance upon business. A slight roseola upon the abdomen, chest, and arms, preceded by slight febrile action, a few superficial mucous patches upon the lips and tonsils, make up the sum total of the lesions which have been observed. The treatment has consisted in small doses of the protiodide of mercury, one-third of a grain, thrice daily, with inunctions thrice weekly with the 10 per cent. oleate of mercury, and the most scrupulous preservation of the general health by means of tonics and attention to hygienic measures. This plan of treatment, known as the *eliminative*, has recently been ably presented to the profession in this country by Drs. Van Buren and Keyes, of New York, and seems worthy of the highest favor. From our very limited experience quite an abiding faith has been established in the statement of these gentlemen that a patient of good general health and temperate habits, under favorable hygienic surroundings, and treated from the begining for a period of two years in this manner with mercury, followed up by a year's use of mercury and iodide of potassium in combination, will have no serious lesion, and will continue to enjoy as good health afterward as before the attack.

With much respect,

I am, Sir, yours &c.,

ALUMNUS OF THE UNIVERSITY OF LA.

A highly respected correspondent in Arkansas asks republication of the following letter, from *St. Louis Clinical Record.*

LITTLE ROCK, ARK., July 8, 1876.

Editor Clinical Record:

Dear Sir—Some two years ago an issue arose in one of our county medical societies which, being decided against one of the contesting parties, was appealed to the State Association, and there the decision of the county society was sustained. The professed aggrieved parties then appealed to the American Medical Association, and that body referred the matter back to the State Society without action. These aggrieved parties then became rebellious and, with their friends, bolted the State Association, and in a revolutionary manner organized a new State association, and in 1875 sent delegates to the American Medical Association, but were properly refused admission, and the delegates from the old State Association were as usual recognized. However, this bolting party continues its organization, and sends delegates again to the American Medical Association at its meeting just ended, and to the perfect astonishment of all the honest medical men of this State they were admitted, and the delegates from the old Association refused the privilege of representing the only legitimate organization in the State of Arkansas—an association that has an unbroken history, and up to this time had equal rank with other State Associations in its relations with the American Medical Association. The Judicial Council adopted this unprecedented measure hastily and without giving our delegates a hearing, and, so far as they have been able to ascertain, no charge has been preferred against the old State Society.

Two-thirds of the regular practitioners of Arkansas have been outraged by this extraordinary decision, and we feel that some combination of circumstances, independent of right and justice, has caused the enmity, and we furthermore believe that the American Medical Association will, if urged to do so, give the matter thorough investigation and accord a decision more becoming the dignity of that body—if not in effect to our benefit, at least render a judgment legitimate and explanatory. We therefore purpose to sustain our organization, and in a mild and dispassionate manner present our cause to the profession at large, and endeavor to get a more deliberate consideration at the next meeting of the American Medical Association. We do not propose to give offence to any one, and shall conduct our fight upon principles of men honestly seeking justice, and I therefore plead with you to give us the privilege of a hearing through your columns, as we also solicit the same courtesy from all journals friendly to honest *investigation.* Will you grant it?

Respectfully, X. X. X.

NOTICES OF NEW BOOKS.

Compendium of Histology. Twenty-four Lectures by Heinrich Frey, Professor. Translated from the German by permission of the author, by George N. Cutter, M.D., Assistant Surgeon New York Eye and Ear Infirmary, etc. Illustrated by 208 engravings on wood. New York: G. P. Putnam's Sons, 182 Fifth Avenue. 1876.

We do not make any hazardous statement, when we assure our readers that this is the best compend of Histology which has been placed before the medical profession. It is an octavo volume of 274 pages, printed upon excellent paper and well illustrated. We are indebted for its reception to R. G. Eyrich, Bookseller and Stationer, Canal street, New Orleans, from whom it may be ordered.

Chemistry: General, Medical, and Pharmaceutical, including the Chemestry of the U. S. Pharmacopœia. A Manual of the General Principles of the Science, and their Applications in Medicine and Pharmacy. By John Attfield, Ph.D., F.C.S., etc. Seventh Edition, revised from the Sixth (English) Edition by the author. Philadelphia: Henry C. Lea. 1876.

The best proof of merit on the part of this work is found in the fact, that seven editions have appeared within a period of nine years. Our thanks are due the publisher, and A. P. Harrington, Bookseller, Canal street, New Orleans.

Yellow Fever and Malarial Diseases, embracing a history of the Epidemics of Yellow Fever in Texas; new views on its Diagnosis, Treatment, Propagation and Control; description of Dengue, Malarial Fevers, Jaundice, the Spleen and its diseases, and Diarrhœa, Hemorrhagica; with Practical Remarks on their successful treatment, etc. By Greenville Dowell, M.D., Professor of Surgery in Texas Medical College, etc. Philadelphia: Medical Publication Office, 115 South Seventh Street. 1876.

The reader of this book will suffer much disappointment if he enters upon its perusal expecting to find either the polished diction, or the scientific elaboration of subjects common to medical writers at the present day. The author does not seem to have

cared to cultivate either the one or the other attainment, but he must be undeniably credited with the merit of having accumulated a great amount of practical knowledge which will richly reward a search for truth.

Pamphlets Received.

Micro-Photographs in Histology, Normal and Pathological. By Carl Seiler, M.D., in conjunction with J. Gibbons Hunt, and Joseph G. Richardson, M.D. Philadelphia: J. H. Coates & Co., Publishers, 822 Chestnut Street. London: Macmillan & Co. Vol. I., No. 5, August, 1876.

An Address on some of the leading Public Health Questions; with Remarks on the Extent of Swamp Lands in the United States, and their Reclamation as a Sanitary and Economic Measure. Delivered at the opening of the Third Anual Meeting of the American Public Health Association, Baltimore, Md., November 9, 1875. By J. M. Toner, M.D., President of the Association; reprinted from Vol. II., Public Health Papers, of the American Public Health Association, Cambridge. Printed at the Riverside Press. 1876.

A Surgical Study; Gastrotomy and Gastrostomy. By J. H. Pooley, M. D., Professor of Surgery, Starling Medical College, Columbus, Ohio. Columbus: Amoens & Myers, Book Printers, 1876.

The Forceps in Breech Deliveries, with a description of a new instrument. By A. J. Miles, M.D., Professor of Diseases of Women and Children in the Cincinnati College of Medicine and Surgery; Fellow of the Obstetrical Society of London. From Transactions of the Ohio State Medical Society, 1876. Cincinnati: A. H. Pounsford & Co., Printers and Binders, 1876.

On the Reciprocal Relations of an Efficient Public Health Service, and the Highest Educational Qualifications of the Medical Profession. By Stephen Smith, M.D. Reprinted from Vol. II., Public Health Papers of the American Public Health Association, Cambridge. Printed at the Riverside Press, 1876.

The Treatment of Anteflexions of the Uterus. By Ely Van De Warker, M.D., Syracuse, N. Y. Reprinted from the New York Medical Journal, June, 1876. New York: D. Appleton & Co., 549 and 551 Broadway. 1876.

Arguments in favor of a Contagious Diseases Act; its present state. By E. T. Easley, A.M., M.D., Little Rock, Arkansas.

From the October No. Richmond and Louisville Medical Journal. Louisville, Ky. 1876.

Pathology, Etiology and Treatment of Pneumonia. By J. P. Thomas, M.D., Pembroke, Ky. From the April No. Richmond and Louisville Medical Journal.

Blood-letting in Puerperal Eclampsia; Pathology and Therapentics, the old and the new. By Henry Frazer Campbell, M.D., of Augusta, Georgia; Fellow of the American Synæcological Society, etc. Reprinted from the August No. of American Journal of Obstetrics. New York: William Wood & Co., 27 Great Jones street. 1876.

A Series of American Clinical Lectures, edited by E. C. Seguin, M.D., Vol. II., No. viii.: The Hypertrophied Prostate, by Robert F. Weir, M.D., Lecturer on Genito-Urinary Diseases in the College of Physicians and Surgeons, etc. New York: G. P. Putnam's Sons, 182 Fifth Avenue. 1876.

Hæmorrhagic Malarial Fever. By R. D. Webb, M.D., Livingston, Alabama—A most excellent paper.

The Physician's Visiting List for 1877—26th year of its publication. Philadelphia: Lindsay & Blakiston. Sold by all booksellers and druggists.

EDITORIAL.

Disinfecting Yellow Fever Localities.

We have received several letters asking for an account of the mode of applying disinfectants for arresting the spread of yellow fever when it appears in this city. It is therefore a source of felicitation to ourselves, and no doubt also to our readers, that Dr. Holt's paper in the present number supplies with circumstantial exactness the means and modes employed in limiting the recent outbreak of yellow fever in our population. We are able to assure our readers that the facts have been collected with a degree of carefulness and impartiality not often attained in sanitary reports. The experiment has been one highly favorable to the use of carbolic acid as a disinfectant of yellow fever, and a very few repetitions in the hands of operators as painstaking and zealous as Dr. Holt, will suffice to determine the questions—1st, of its potentiality as a disinfectant; 2nd, of the best mode of applying it for this purpose.

The International Medical Congress

This convocation of our profession has been a complete success. Every American physician, every lover of progress and improvement in medicine, should find ample cause for self-gratulation in the results it has afforded. We have given a very large space in our Journal to extracts from the proceedings. The reader will find them cosmopolitan in scope and spirit, and with only one or two exceptions, abstracted from all personal matters or personal considerations. But even after we had excluded several quite important subjects for publication, in order to make room for the abstract referred to, we were obliged to pass without notice much that transpired at this great congress of our brethren. One of the most interesting papers read, is by that sterling member of our profession, John S. Billings, Assistant Surgeon U. S. Army, entitled "A Century of American Medicine." This is a dignified and spirited paper, and is intended to present an impartial conspectus of American Medicine for the past century. Our object in calling attention to this paper in the editorial columns instead of those set apart for noticing new literature, is that we may seize the opportunity to place ourselves "on record," at least in regard to certain faults of American journalism which Dr. Billings has reviewed in a most scathing, but in the main, proper manner. In his references to American journals, when writing of Southern journals, he says, "The most important is the 'NEW ORLEANS MEDICAL AND SURGICAL JOURNAL,' which with two suspensions, has continued from 1844 to the present time." Upon another page he writes as follows:

Our medical journals vary so much in character, style, and purpose, that it is hardly possible to make any assertion with regard to the mass which shall be at the same time broad and true. They may be divided into three classes: first, those not connected with any medical school, and which draw their contributions from a wide field, including such as the "American Journal," "The New York Journal," "The Medical Record," "The Medical Times," and "The Boston Medical and Surgical Journal;" second, those which rely for contributions and material mainly on the professors of a medical school and the hospital clinics connected with it, but which are not specially devoted to its interests; third, those which are mainly devoted to advocating the interests of a school, and the attacking of rival institutions, and which are, to use Carlisle's phrase "Windmills put out to catch or take advantage of the wind of popular favour." These

journals sometimes contain valuable reports of cases obtained from college clinics, but the personal editorial element in them is usually in excess, and they are of interest to but a small local circle. To them applies the untranslatable French criticism, "Il y a trop de tintamarre la dedans, trop de brouillamini."

Of the first class, some compare favorably with the best of the journals of other countries: of the last class, some are as bad as, but not worse than, the worst. Comparatively few persons are acquainted with the poorer class of foreign medical journals, published in the smaller towns of the provinces, which have most of the defects which are so strongly condemned in some of our own publications as if they were unique.

It is certainly a difficult matter for us, situated in the barbaric province of Louisiana, to determine the predicates upon which Dr. Billings excluded our Journal from that class which, as he asserts, are "not connected with any medical school." What has he read or heard in regard to this Journal which in the least degree taints it with partizanship? Or has he left it out of his count of medical journals not connected with medical schools because its editor holds a chair in a medical school? If so, why did he place the *Medical Times* in the list of those not connected with schools?

The editor of the *Medical Times*, like the editor of the NEW ORLEANS MEDICAL AND SURGICAL JOURNAL, has the good or bad fortune, as the case may be, to hold a professorship in a medical college; yet we are all forced to admit that his paper is edited with ability, fearlessness, and perfect independence. As to ourselves, we are free to confess that we have not pursued as bold a course in assailing error as that journal has. It is nevertheless true, that the most successful missionary is not always he who exhibits the most militant spirit. We have labored quietly for the benefit of our profession at large; we have not lugged into our editorials, or elsewhere, notices of the school with which we are connected. There was no call for them. That institution has not been guilty of any irregular practices, and needs no knight errant to defend its good fame. Its reputation stands on a firmer basis than that of any medical journal in this country, and therefore, it would be ridiculous for the NEW ORLEANS MEDICAL AND SURGICAL JOURNAL to profess to be either the patron or the ward of the University of Louisiana.

Now the self-extorted confession which appears above, is probably debited to the fact, that a fear of accusations of partizanship, or more strictly perhaps, of cultivating personal interests,

has kept us in a condition of truce when it may be that public duty called for an aggressive course. This is particularly true in regard to certain medical schools which annually flood this country with what they term "scholarships," or beneficiary certificates, or some kind of positively irregular solicitations, or as the students, in their letters to other Deans, term them, "inducements," to students to attend their lectures. This college, or, according to a most apposite editorial in the *Southern Medical Record*, it would be just as correct in fact, if not in grammar, to use a plural pronoun and say *those* college, has sent circulars to our Janitor for distribution among our class while in actual attendance upon lectures, and "scholarships," or "beneficiary tickets," to others of our students.

Hitherto we have kept our silence, lest we might be liable to the imputation of being a school organ. This Journal is independent of schools, or cliques, and is conducted in the interest of the whole profession.

Collaborators.

The January number will contain a full list of our collaborators, comprising the names of representative men of our profession in various parts of the United States.

Cosmoline.

A considerable experience in the use of cosmoline in practice justifies the opinion that it is a valuable addition to our pharmacopœia.

Sugar-coated Pills.

The Centennial Commissioners awarded a commemorative prize to W. N. Warner & Co., 1228 Market street, Philadelphia. They seem able to boast that this is the third great occasion upon which they have received such awards.

To Contributors.

The January, 1877, issue of this Journal, has space left for 30 to 40 pages of original matter. Contributors are requested to forward their papers at their earliest convenience.

METEOROLOGICAL REPORT FOR NEW ORLEANS.

Table I---September.

Day of Month.	Temperature.			Mean Barometer Daily.	Relative Humidity—Daily.	Rain fall—inches
	Maximum.	Minimum.	Range.			
1	88	75	13	30.000	71	.00
2	87	75	12	30.005	73	.00
3	88	72	16	29.982	72	.00
4	88	74	14	29.975	69	.00
5	86	75	11	29.915	69	.00
6	87	75	12	29.905	68	.00
7	87	75	12	29 945	72	.00
8	86	75	11	29 965	76	.00
9	86	75	11	29.932	65	.00
10	87	75	12	29.913	76	.00
11	85	73	12	29.870	62	.00
12	84	68	16	29.935	62	.00
13	79	66	13	30.000	63	.00
14	80	68	12	30.000	62	.00
15	81	65	16	30.000	49	.00
16	77	61	16	29.965	57	.00
17	75	62	13	29.987	59	.00
18	76	62	14	30.008	69	.00
19	77	65	12	29.955	72	.00
20	78	68	10	29.815	75	.30
21	79	68	11	29.812	79	.00
22	80	66	14	29.925	70	.00
23	79	67	12	29.947	66	.00
24	81	68	13	29.973	62	.00
25	82	68	14	30.000	66	.00
26	84	71	13	29.970	67	.00
27	86	66	10	30.005	51	.00
28	79	66	13	30.037	54	.00
29	76	62	14	29.985	47	.00
30	70	59	11	30.120	51	.00
Mean..	81.93	68.80	13.1	29.961	65.1	Total. .30

Table II---October.

Day of Month.	Temperature.			Mean Barometer Daily.	Relative Humidity—Daily.	Rain fall—inches
	Maximum.	Minimum.	Range.			
1	71	50	21	30.270	54	.00
2	72	51	21	30.235	60	.00
3	64	52	12	30.130	60	.00
4	68	54	14	30.040	64	.00
5	73	52	21	29.985	74	.00
6	73	61	12	30.005	74	.00
7	74	63	11	30.000	60	.00
8	74	52	22	30.045	49	.00
9	74	54	20	30.005	56	.00
10	70	56	14	29.932	60	.00
11	70	57	13	30.005	57	.00
12	71	54	17	30.078	58	.00
13	68	57	11	30.075	62	.00
14	70	58	12	30.000	63	.00
15	71	50	21	29.950	62	.00
16	71	50	21	30.095	64	.00
17	71	54	17	30.071	71	.00
18	72	58	14	29.978	69	.00
19	73	59	14	29.770	87	.00
20	75	62	13	29.752	83	.00
21	76	60	11	29.835	78	.00
22	72	57	15	29.835	74	.50
23	77	57	20	29 990	67	.00
24	69	57	12	30.047	73	.00
25	70	58	12	30.163	58	.00
26	71	58	13	30 250	61	.00
27	71	60	11	30.290	69	.00
28	72	60	12	30.225	70	.00
29	72	60	12	30.132	64	.00
30	73	60	13	30.105	71	.00
31	72	60	12	30.130	68	.00
Mean..	71.61	56.64	14.8	30.046	65.8	Total. .50

Mortality in New Orleans from September 4th, 1876, to October 29th, 1876, inclusive.

Week Ending	Yellow Fever.	Malarial Fevers.	Consumption.	Small-Pox.	Pneumonia.	Total Mortality.
Sept. 10.....	1	20	19	1	7	129
Sept. 17.....	2	14	16	0	5	104
Sept. 24.....	11	15	13	1	4	134
Oct. 1.....	6	12	23	1	3	130
Oct. 8.....	9	18	14	0	3	93
Oct. 15.....	4	10	16	1	3	99
Oct. 22.....	1	13	25	0	5	131
Oct. 29.....	1	15	11	4	4	116
Totals.....	35	117	137	8	34	936

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ORIGINAL COMMUNICATIONS.

OCCLUSION AND DILATATION OF LYMPH CHANNELS.

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Continued from November No.

CHAPTER II.

Anomalies and Lesions of the Thoracic Duct. Rupture of the Lacteals and of the Receptaculum Chyli. Chylous Effusions into Serous Cavities. Movement of the Lymph and Chyle, and Forces Concerned in their Locomotion. Pathological Considerations.

The thoracic duct is subject to many vices of formation. It may commence higher or lower in the abdomen, consist of one or more branches, divide at one or at several points between its origin and terminus, which divisions may again unite into a single trunk, or each branch may empty separately either in the left or right subclavian vein, or it may empty at some unusual point. Instances of very many and very remarkable deviations in structure, form, course, size and termination are to be found in the literature of the subject.* Bartholinus in 1686, and

* Otto, Compendium of Human Anatomy, translated by South, pp. 355, 356. Soemmerring, De Morbis Vasorum, Absorb. Corp. Hum., pp. 22, 24. Cruikskank, Anat. of the Absorb. Vessels; Mascagni, Vasor Lymphat. Corp. Hum.; Baillie, Morbid Anatomy; Breschet, Systeme Lymphatique, p. 255; Haller, Disputationes ad Morborum, vol. iii,, p, 537, and Elem. Physiol., p. 224.

Walther in 1731, recorded cases of bipartite ducts; Haller saw two instances; and Soemmerring twice found it completely double, in one case both terminating on the left side, one emptying into the jugular and the other into the subclavian vein, in the other case a duct terminated on each side in the subclavian vein. Hewson* describes a case where each branch possessed a separate entrance into the subclavian veins, and in the Monro anatomical collection is a specimen showing a division of the duct into the large branches, one ascending on each side of the aorta and again uniting into a common trunk near the opening into the vein. Cruikshank (loc. cit. p. 175) refers to a similar case and to instances of double and triple ducts, of transposition to the opposite side, and various other irregularities in the course and connections of the main trunk. Wium, Heuermann, Velse, Pequet, and Rolfink, have seen the duct terminate on the left side by two or three branches, and Otto refers to a wax model of a similar case in the Anatomical Museum at Upsal. Albinus and Wutzer† saw it terminate entirely in the vena azygos, and others have recorded cases in which branches were seen emptying into that vein. Otto has seen it thrust out of its place by exostosis, and, in a single case, by the inferior cava passing behind it and the aorta. Others have recorded instances of its displacement, and occlusion by aneurysmal and glandular tumors. Turner‡ has reported two cases of complete obliteration of the duct, caused by the pressure of aneurism of the aorta: in one case the duct was wanting from the 2d to the 5th dorsal vertebra, and in the other case it was obliterated opposite the 8th dorsal vertebra. In neither case could an injection be forced past the points indicated. Morgagni§ quotes a case from Valsalva and another from Santorinio, in both of which the duct was occluded by an aortic aneurism. In Valsalva's case the aorta "from the heart to the diaphragm" was dilated into an enormous aneurism. Bennett|| and Laennec¶ each report a case. Narrowing or occlusion has also been caused by tuberculous

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* Syd, Soc. Ed,, p, 136.

† Muller's Archiv., 1834, p. 311.

‡ Edinb. Med. Jour , 1859, p. 1003.

§ De Cedibus, et Causis Morborum, Venice, 1761, Liber ii., p. 152; also Cook's Morgagni, vol. i., pp. 418, 420. 1824.

|| Clinical Lectures on Principles and Practice of Med., 1858, p. 570.

¶ Jour. de Med. Chir. Phar. etc., vol xii., 1806, p. 159.

and cancerous growths, by thrombi, by the pressure of tumors* and by cicatrices. Turner refers to a case communicated to him by Mr. Edwards, in which the latter found in the "usual position of the thoracic duct a mere thread of cellular tissue, whilst on the left side of the aorta a duct passed upwards to the great veins on the left side." Sometimes the duct is greatly enlarged at its termination. Todd has observed several instances in which it was so considerable as to present the appearance of an aneurysmal enlargement.

Nuhn† observed two instances where lymphatics opened into the renal veins, and a third where two large branches communicated with the vena cava inferior. Paget‡ saw a case of cartilaginous growth in the reté of the testicle and lymphatics of the gland. The lymphatics of the cord were so "dilated and elongated" by a similar growth that they presented a series of tumors, and cysts filled with a fluid which proved, on microscopic examination, to be lymph. From the internal inguinal ring two dilated and tortuous lymphatics, filled with cartilaginous growths, passed upwards and connected with a swelling divided by numerous partitions into cavities containing lymph. The lymphatics connected with this tumor adhered to the vena cava inferior, and from one of them a cartilaginous growth projected into the vein. Petrel§ has reported a case in which he traced lymphatics filled with pus, opening into the portal vein, and another in which he found similarly pus-filled vessels communicating with the renal veins and the vena azygos.

Case 1. Matthew Baillie‖ refers to an instance in which the thoracic duct was nearly as large as the subclavian vein, "but nothing could be detected in the neighboring parts capable of accounting for it. There was no obstruction at the entrance of the duct into the venal system;" and, in a letter to John Hunter,¶ communicating an "account of a remarkable transposition of the viscera, he says, "the thoracic duct was seen in the middle between the descending aorta and vena azygos, in some places

* Virchow reports a case of complete obliteration of the duct, caused by the pressure of a cancerous growth,

† Muller's Archiv., 1834, p. 311.

‡ Medico Chir. Trans., vol, xxxviii., p. 347.

§ Gazette de Paris, 1845, p. 512, cited by Turner,

‖ Morbid Anatomy of some of the Most Important Parts of the Human Body, p. 116, 1833, London Ed.

¶ Philosophical Transactions, 1798, p. 354.

forming a plexus of several branches, in another dividing itself into two branches, which afterwards reunited in a common trunk, and at length climbing up to terminate in the angle behind the jugular and subclavian veins on the right side of the body." Cruikshank (loc. cit. p. 171) reports a case in which he had seen a trunk of the absorbents of the lungs convoluted (as is imperfectly represented in cut below) at least a thousand times before it entered the duct, and adds, that he had seen similar convolutions in parts of the duct itself.

[Figure 12,]

Case 2. [Fig. 12.] "h, Trunk of the absorbent rising out of the lung.

"c, The thoracic duct going up towards the left subclavian vein.

"d, Thoracic duct continued, emerging from under the convolutions."

(If the figure is examined through a magnifying glass, the convolutions will appear very distinct.

Nelaton* remarks that the thoracic duct, more frequently than any part of the lymphatic system, is the seat of varicose dilatation, but Andral† fils in 300 dissections found it affected in only five cases. A number of such cases have been reported, but comparatively few in which the dilatation was unconnected with vices of texture. The very remarkable case of Amussat,‡ in which the ectasis involved the thoracic duct even to its termination was regarded by Carswell as a congenital malformation. Such was, probably, the nature of the following case of extraordinary enlargement of the thoracic duct reported by Cruikshank.§

Case 3. [Fig. 13.] "The large duct will almost exceed belief. It is exactly, however, as found in the human body."

"It is seen in situ, with the more immediately surrounding parts."

"The spine is cleaned by dissection, and dried, in consequence

* Elemens de Path. Chi. T. I., chap. xviii., p. 556, Paris, 1844.

† Archiv. Gen. de Medicine, T. vi., p. 502, Paris, 1824.

‡ Case 59, Amer. Jour. of Obts., vol x.

§ Loc. Cit., Ed. 2, p. 207, London, 1790.

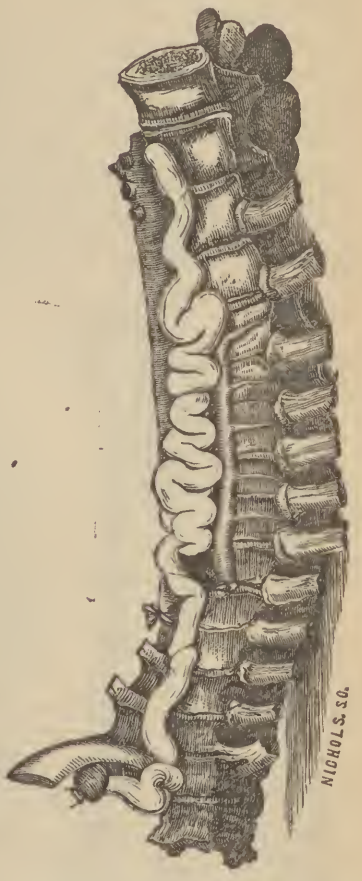
of which the intervertebral substances are shrunk, perhaps to one-twelfth of their original thickness.

"The aorta, vena azygos, and lower portion of the left internal jugular vein, with that portion of the left subclavian vein which forms a right angle with it, are seen as half distended with coarse injection and dried."

"The thoracic duct is seen under the same circumstances as the last mentioned vessels, as little more than half distended with the injection."

"The man appeared to be about 40 years old. We know nothing of his history. There was no obstruction in the left jugular or subclavian veins, neither were they enlarged; there was no obstruction in the heart or lungs; no uncommon swelling in any of the neighboring parts compressed the duct. The great trunks of the absorbents accompanying the large arteries in the extremities were in proportion large, but the cutaneous absorbents were not larger than usual." * *

[Figure 13.]



In a foot-note on page 208, Cruikshank states that he had previously seen the thoracic duct "as large as the carotid artery of an adult, or the barrel of an ordinary writing pen," and also refers to a preparation (p. 175) in the collection in Windmill street, "in which an injection thrown into the umbilical vein of a child passed directly into the thoracic duct."

Vices of texture, in the lymphatic system, are not unlike those found in the veins, and a number of cases have been recorded in which the thoracic duct was found diseased.

Case 4. During the winter of 1789, Mr. Astley Cooper,* failing to inject the thoracic duct of a subject which he was dissecting, opened the duct to discover the cause of the impediment. The first obstruction was occasioned by "two valves placed near to the receptaculum chyli, which were much thicker than natural, and projected into the duct, so that their superior edges (see A, figure 14) were pressed firmly together. An inch from these (B), and higher in the duct, two other valves appeared, diseased in a similar manner, only in a greater degree. These were also so much thickened as to fill the canal, and they formed a barrier beyond which no fluid could pass." At a point opposite (C) the curvature of the aorta, the duct was obliterated by disease which seemed to have originated in the valves. Beyond this point the duct was healthy, and opened in its usual manner into the vein. Mr. Cooper supposed the disease was of a scrofulous nature, as between the laminæ of the valves was discovered a substance "having the same curd-like appearance with that found in scrofulous abscesses." * * * "The absorbent glands of the neck were enlarged, and many of them imperfectly suppurated, and the person appeared to have died of phthisis pulmonalis, the lungs being loaded with ulcerated tubercles."

[Fig. 14. Fig. 16. Fig. 15.]

Case 5. During 1790, Mr. Cooper was requested by Mr. Waterworth to assist him in making a preparation of the thoracic duct and the large vessels which accompany it. The injection passed about an inch and ceased to flow. Greater pressure being applied, the injection penetrated as far as the "left crus of the

* Medical Records and Researches, p. 86, London, 1798.

diaphragm and there escaped from a divided absorbent". When the injection was forced into the divided vessel (see D, fig. 15), it passed up on the left side of the aorta, crossed the spine behind that vessel and terminated in the thoracic duct proper", which became filled with the injection above the part diseased. The first obstruction was occasioned by a "small fungus" (E), and the second, at the point of rupture (F) by "another fungus, larger than the former, which completely occluded the vessel. "Wherever absorbents entered the duct, the valves at their termination were thickened and opaque," but there was no obstruction above the fifth dorsal vertebra, so that above that point, "the duct was still capable of performing its natural functions." The appearance of the diseased parts was similar to those in the preceding case. "The mesenteric glands were enlarged and the peritoneum was studded with tubercles."

Mr. Cooper maintained that the obstruction did not cause death because the anastomosing branch (D) communicating with the lacteals conveyed the chyle to the healthy portion of the duct, and thus it reached the blood.

The following case, the third reported by Cooper, is peculiarly instructive, illustrating, as it does, the relation between pathological changes occurring in the duct with disease originating in remote parts of the lymphatic system, and the conservative efforts of nature to avert the immediate danger, to life, of such morbid changes, by the establishment of anastomosing connections with the venous system.

Case 6. "Enlarged testicle, abdominal tumor, and enlarged absorbent vessels and glands."

"John Hammett, a laboring man, aged 22, was admitted into St. Thomas' Hospital, January, 1795. * * About five months before he had been attacked with pain in the right testis, which soon after swelled and had continued to enlarge to the present time. Seven weeks previous to admission he had observed a tumor in the abdomen, to the right of the navel. At the time of admission the testis had attained considerable size, but preserved its natural figure, being flattened on its sides, and round on its fore part; it felt pulpy, yet not fluctuating; the spermatic cord was somewhat enlarged. The tumor in the abdomen, small when first observed, was now four inches in diameter and occasioned very considerable pain. General health was good."

"Two weeks after admission he had lost the healthy and florid aspect, complained of great pain in the abdomen, extending in a line from the testis to the tumor, and lost strength very rapidly. His pulse became quick, and feeble; had continued thirst, a great degree of restlessness, his appetite failed and his bowels became irregular, sometimes costive, at others very loose. Suffered from distention in the upper part of the abdomen, after taking a small quantity of food, which continued for several hours."

"The patient continued to grow worse, the pain increased in intensity, extended from the tumor to the testis, along the spermatic cord and down the thigh. Exhausted by vomiting and diarrhœa, he died February 14th, 1795."

Autopsy. The testis was a "pulpy mass, composed of broken coagulable lymph, and of a blood-colored serum."

"The absorbents of the spermatic cord were considerably enlarged, their coats thickened, valves diseased, impervious, and containing matter similar to that found in the testis, which adhered firmly to their internal coats."

"The small glands in the loins, which receive the absorbants of the testis and cord, by their enlargement and union, formed a tumor on the lumbar vertebra, weighing nine and a half pounds." This tumor forced the duodenum and pancreas forward and compressed them between it and the abdominal parietes. The tumor exhibited a similar appearance to the testis.

"The thoracic duct was much altered; its coats were thickened and opaque, and it was much rounder than usual, bearing more resemblance to a nerve than to the principal trunk of the absorbent system." "The receptaculum chyli was filled with matter of the same kind as that found in the tumor, in the absorbents of the spermatic cord, and in the body of the testis. * * The thoracic duct had undergone a similar change and was impervious (see K, fig. 16). Opposite the curvature of the aorta the duct was lost in a large swelling (L), which differed only in bulk from the abdominal tumor." (Figure 16, J, receptaculum chyli; K, thoracic duct; M, the duct emerging from the tumor; N, aorta.)

Cooper expresses the opinion* that the disease was cancerous,

* Otto (loc. cit. p. 361) says: "In medullary sarcoma of the testicle we very frequently observe a similar sympathetic affection of the lymphatic glands on the spermatic cord, pelvis and spine, or less high up, in which case also the

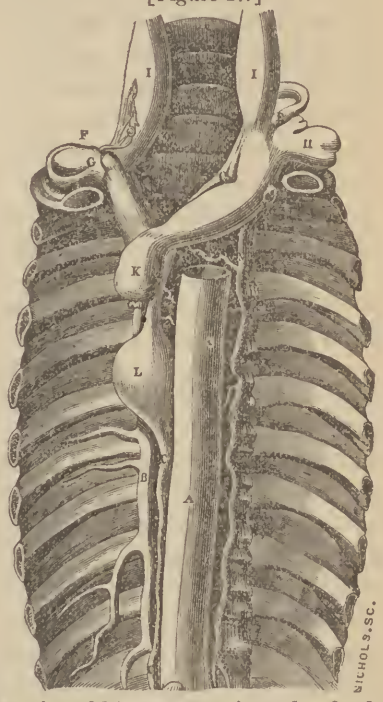
in the testis, tumor and duct. To ascertain the course of the chyle he injected mercury into an absorbent of the loins, which passed as far as the receptaculum, then "ran through several vessels behind the aorta into a large trunk which passed the whole length of the chest on the left side of the spine," to the first dorsal vertebra and there entered the thoracic duct above the tumor K.

At page 117 (loc. cit.) Cooper supplies the following illustration, showing an obstruction of the thoracic duct by disease (L), and the formation of a new duct (N), which communicated with the duct proper at O, thus restoring the connection between the receptaculum and the subclavian vein.

[Figure 17.]

Case 7.

A, Aorta.
B, Vena azygos.
C, Thoracic duct.
F, Right absorbent trunk.
G, Right subclavian vein.
H, Left subclavian vein.
K, Superior cava.
I I, Jugular veins.
L, Tumor on duct.
N, New thoracic duct.
O, Entrance of new duct into the duct proper.



No history accompanies this brief report. The case is analagous to the preceding one in exhibiting the provision of nature to prolong life, so imminently threatened by the occlusion of the duct by the adventitious growth at L.

Case 8. Obliteration of the thoracic canal. M. Andral, fils,* "in 1821, on opening the body of a phthisical patient found the thoracic duct, for several inches above the diaphragm, filled with a notable quantity of lymph.

ductus thoracicus frequently becomes at the same time affected." He refers to a number of illustrative cases, but after an examination of the cases I do not find this opinion corroborated.

* Archiv. Gen. de Med., T. vi., Sept. 1824, Paris, p. 502.

It suddenly diminished and lost its transparency at a portion corresponding to the bodies of the 3d, 4th and 5th dorsal vertebræ; but from the 3d vertebra to its termination in the vein, the canal regained its former size, its transparency, and seemed to be filled with lymph. A stylet introduced immediately above the diaphragm penetrated its cavity easily to the level of the 5th vertebra, but here encountered a sort of cul-de-sac which was impenetrable. In the whole of its length, where the canal seemed to have shrunk, it was impossible to discover the slightest trace of a cavity, this portion being transformed into a fibrous cord. By careful dissection Andral found a large lymphatic vessel—a second thoracic duct which, arising from the principal duct a little below the point at which it was obliterated, passed obliquely upward and outward behind the azygos vein, and opened into the proper conduit above the point of obliteration, forming at this point a sort of anse similar to that which the thoracic duct forms before entering the vein."

The same author gives the details of two other cases (loc. cit.)—in one (case 9) after death from chronic nephritis, he found the thoracic portion of the duct filled with pus, with marked inflammation of its coats. The right kidney was "transformed into many pouches filled with pus." but nothing peculiar was found in the glands or vessels of other parts. In the second case (No. 10), a boy of 11, who had died of croup, with pleuro-pneumonia and gastritis, he found the walls of the duct thickened and more friable than normal; the lumen contained but little transparent serum—its lining membrane was markedly inflamed. The glands along the duct and those about the receptaculum were in their centres tuberculous. He has also reported the case of a woman* (No. 11), who died of abscess in the broad ligament, and peritonitis, in which he found several vessels communicating with the duct, filled with pus, and in (case 12) another instance† he found the canal distended with a "white, friable, concrete substance, resembling tuberculous matter." In a sixth case‡ he observed the duct enlarged to the size of a "writing pen" from the pillars of the diaphragm to its outlet, and distended with a purulent fluid. In the latter case (No. 13 of this series) the intima of the duct was red, thickened

* Precis de Anatomie Pathologique.

† Ibid.

‡ Archiv. General.

and easily detached. Abscesses in the broad ligament and iliac fossæ were also present.

Gendrin* saw (case 14) in a woman who had died of peritonitis, the receptaculum chyli distended "with white consistent pus." Its walls were red and friable. The thoracic canal throughout its entire course contained pus, and its internal surface was studded with plastic concretions adherent to its wall.

Velpeau† (case 15) found pus in the duct of a woman who had died of puerperal fever, with abscess in the ovary and broad ligament.

Quincke refers (Ziemssen's Cyclo., vol. vi., p. 522) to cases reported by Cruveilhier and Andral, in which cancerous matter and pus were found in the thoracic canal in cases of uterine sarcoma. Tonelè records (Prac. Treat. on Dis. of the Uterus, Boivin and Duges, p. 330) a case of puerperal metritis, in which the lymphatics of the abdomen were distended and of a milky color; the thoracic duct was enlarged and filled with pus.

Case 16. "Joseph Lieutard‡ reports the case of a young man, aged 22, suffering from a certain malignant epidemic fever, who complained of cardialgia, difficulty of breathing, pain in the side, with bloody and viscid sputa, nausea and vomiting, epigastric swelling and diarrhœa. These symptoms were followed about the 6th day by convulsions which quickly terminated life.

"On opening the abdomen, he found an obstructed mesentery covered with various livid and gangrenous spots. The thoracic duct and the receptaculum were in a state of gangrene and turgid with a grayish brown fluid. The stomach, intestines and lungs were in a somewhat similar condition."

Case 17. "Anne Norris,§ aged 40, healthy, fat, and well made, was admitted, December, 1828, to the Dublin Hospital, laboring under feverish symptoms of a few days' duration, which had commenced with a rigor.

"A painful swelling, mistaken for fecal accumulation, was discovered in the left iliac fossa. On the seventh day a sweat apparently critical supervened," the fever subsided, and she returned to her usual laborious occupation. On the 5th of Jan-

* Historia Anatomique des Inflammations.

† Archiv. General, vol. vi., p. 220.

‡ Historia Anatomica Medica, Lib. ii., p. 93; 1767. Paris. Edited by Anthony Portal, M.D.

§ Graves and Stokes, Dublin Hospital Reports, vol. v., p. 43; 1830.

uary she had a decided rigor, and returned to the hospital on the 7th, complaining of pains in the trunk and extremities, most acute in the lumbar region, and accompanied with heat of the skin. The tumor was painful; had enlarged. Death took place suddenly on the 9th.

"*Autopsy.* Not emaciated. Sigmoid flexure displaced by the tumor, which was caused by an abscess in the psoas muscle, extending from below Poupart's ligament to the last dorsal vertebra. The abscess contained healthy pus; when emptied, its parietes seemed formed of the envelop of the muscle, much thickened and stronger. The internal sac was quite smooth, and exhibited toward its inferior-posterior portion five or six orifices of the diameter of peas, funnel-shaped, and having their surface continuous with that of the sac. They terminated in organized tubes, which led to a mass of diseased glands that lay on the brim of the pelvis. * * The vessels between the glands and the abscess were filled with pus, and the glands were distended with matter, in some still fluid but thicker than pus; in many it was converted into a soft cheesy mass. From these glands ascended a chain of lymphatics communicating with the thoracic duct, and containing solid matter resembling tubercles. The thoracic duct was distended to the size of the middle finger, felt hard and nodulated, and contained similar matter, harder and mixed with a large proportion of a calcareous substance. The uterus was filled with caseous matter; the other abdominal and thoracic viscera healthy."

Case 18. De Inflammation du Canal Thoracique.* "A man aged 48, large, lank, with health broken by arduous military service. After a chill, with sore throat and fever, he was seized with violent pain deep in the belly, which radiated to the sides, accompanied with malaise, sleeplessness and high fever. These symptoms moderated and were followed by acute pains in the muscles of the left forearm, thighs and calves. Power was completely lost in the left arm. The abdominal pains recurred with augmented intensity, his face denoted great suffering, complexion became icteric, tongue coated, and sordes collected about the teeth. Skin was dry, pulse hard, not above 80, sclerotic æ became yellow, belly tense and tympanitic, but painless on pressure. Intelligence remained unimpaired. Circumscribed swellings formed on the posterior surface of the left arm and on

* Jules Worms, Gaz. Hebdomad., vol. vi., 1859, p. 279.

the forearm, and the superficial veins became distended, painful, felt like cords; the blood could not be pressed out of them toward the heart. The left subclavian vein, in its axillary extremity, became hard and rolled under the finger like a cord.

"*Autopsy.* Whole body, except left arm, intensely yellow. Veins of the left arm distended, surface ecchymotic, skin thickened, aponeurosis thickened but no pus in its meshes. All the tissues of the arm stained deeply yellow. Blood in the veins viscid, decolorized, looking like bile. The lumen of the cephalic and basilic veins irregularly filled, at some places empty. The left subclavian was doubled in size, and completely obstructed at its junction with the internal jugular, with a yellow, hard, slightly adherent, organized mass, which extended 6 centms. toward the axilla, and sent a prolongation into the jugular. The veins from the junction to the heart were filled with partially clotted blood, and a fibrinous clot occupied the cavities of the right auricle and ventricle, which also extended for some distance into the pulmonary artery. Heart normal; lung congested inferiorly and posteriorly. Solitary intestinal glands deeply ulcerated; spleen enlarged, softened; liver normal; portal vein filled with blood. Thoracic duct obliterated at its outlet by a mass pressing upon its descending portion. The remaining portion was dilated to the size of a crow's quill and gorged with pus. Its walls were thickened and opaque; the internal surface softened, velvety, ecchymotic and without epithelium. Receptaculum enlarged, filled with pus; its walls were in a condition similar to those of the duct. Mesenteric glands enlarged. Supra-renal capsules disorganized and seeming to be connected with the reservoir of Pecquet by lymphatics, filled with a purulent fluid."

Case 19. (Lientard Obs. 771). "In the body of a boy 12 years of age, who died of a scrofulous affection, was found, in addition to the usual lesions of the mesentery, pancreas and other abdominal viscera, the receptaculum of extraordinary size and studded with tuberculous tumors."

In reviewing the cases presenting morbid alterations of the tissues composing the thoracic duct, the first inquiry suggested, relates to the connection which these changes bear to the diseased conditions found in other parts of the lymphatic system. Which was primary? We find these pathological changes, somewhat

analogous in character, associated with tuberculous degeneration of the lungs and mesenteric glands, with gangrene of the lungs and abdominal viscera, with suppuration of a chain of cervical glands, with abscess in the kidneys and lumbar glands, and with cancer of the testis. These morbid conditions, whether malignant or benign, were not only the results of alteration of nutrition, but of degenerative processes which, if they did infect the general system directly, necessarily involved, either immediately or remotely, the entire economy through its nutritive processes, and the invasion of remote parts might eventually ensue either as the inevitable consequence of systemic infection or of the nutritive actions of morbid life. In all the cases the lymphatic system was chiefly involved; in some the extension from one to another part was by direct continuity of vessels, in others it was propagated by conveyance of infective or morbid material through anastomosing and connecting lymph channels, or was derived from infected and degenerated glands in near proximity. In one case (No. 5) in which the duct was occluded by an adventitious growth, it is impossible to determine its primary or secondary character, and the case (No. 9) of nephritic abscess, in which the thoracic portion of the duct was filled with pus, with a markedly inflamed intima, it is only possible to connect these phenomena upon the hypothesis, not wholly improbable, that pus from the abscess found its way through the renal lymphatics into the duct, and there either accumulated or set up an inflammatory process which supplied the occluding accumulation of pus. But it is inexplicable how such a quantity of pus could have been conveyed through the intervening channels, interrupted by one or more tiers of glands, without setting up a similar inflammatory process along its course; and equally inexplicable is it that such a collection of pus should have found lodgment in the precise section of the duct, except upon the additional supposition that there existed previously some cause of obstruction, perhaps diseased valves, which, as in one of Cooper's cases, may have been the preliminary seat of the morbid changes found in the duct. So far, then, it is impossible to accept any exclusive view in regard to the primary or secondary nature of the pathological phenomena found in the diseased ducts. It is obvious that disease may originate in the tissues of the duct, but not probable, indeed impossible, that the product of such disease could be transmited to parts anatomically

behind the original seat, except by regurgitation of the contents of the duct, or through the blood-current, in the latter event becoming disseminated throughout the system. The similarity of the morbid products found in the duct to the associated degenerative changes recognized in other parts, strongly supports the view that, in such cases, the lesions of the former were secondary, because they were in the line of the onward course of the lymph toward the venous system; and, as in the case of Graves and Stokes, in which the greatly dilated duct was filled with morbid material identical in character with that found in ectatic vessels directly connecting it with the original focus of disease, it must be conceded that lesions of the duct may and do succeed to diseases of remote parts of the lymphatic system.* The case of cancer of the testicle more fully illustrates this conclusion.

The case of Anne Norris (No. 17) suggests another interesting consideration. In comparative good health, and sufficiently nourished, though suffering moderately from localized pain, two days after venesection to 10 oz. and an enema, which relieved all subjective symptoms, she suddenly expired. The duration of the psoas abscess cannot be determined, though it is probable that it had commenced long anterior to her first admission to the hospital, as it was very large, though the formation of pus had not produced any emaciation, hectic or marked constitutional suffering. That the abscess communicated directly with lymphatic channels cannot be doubted, and the probability is that this communication had been effected gradually, but that suddenly a copious discharge of pus had taken place into these channels, completely filling the lumen of the thoracic duct and producing death. The extraordinary dilatation of the duct, and its knotted and nodulated condition, indicate a gradual process of disease, but the remarkable exemption from the usual subjective phenomena attending such large collections of pus is but another illustration of the fact that accumulations of pus may exist in closed sacs, (Graves,) involving distention of soft tissues, but

* "From the narrowness," says Quincke, "of the vascular lumen, only fluids, or very minute bodies suspended in them, can be conveyed along the lymph stream: very rarely are thrombi swept along with the current. Such solid particles seem not to pass beyond the nearest lymphatic gland; yet the inflammation of the lymphatics may be propagated beyond these glands, the irritating matter being conveyed beyond them, either in solution or in the interior of lymph cells."—Ziemssen's Cyclop., vol. vi., p. 515.

unaccompanied with any hectic or constitutional symptoms and without any evidence of any preceding inflammation, and especially is this true when the sac of pus is confined to lymphatic structures. the sacs found in my own case (No 1 Amer. Jour. Obsts.), filled with debris and disintegrated material, illustrate the innocuousness of such collections, and, occasionally, little collections of pus form in the glands, and this fluid is, according to Gendrin, very different from that found in the cellular tissue, "in its clearness, transparency, and colorlessness."

These cases exhibit the same marked tendency of the diseases of the lymphatic apparatus to morbid processes of a destructive nature, enfeebling the constitution and promoting rapid waste, which is so distinctly expressed in a number of the congenital cases. Occasionally, however, inflammation of an adhesive character is set up. In Andral's case (No. 8), a portion of the thoracic duct "was transformed into a sort of fibrous cord," and this condition was observed in a patient who had died of phthisis. The ductus thoracicus has also been several times observed obstructed or adherent from coagulated and exuded lymph.* In one of Cooper's cases the valves were ulcerated and adherent.

As a rule, diseases involving the texture of the thoracic duct are secondary, and the result of infection by morbid products transmitted through the lymph stream. Even in the case reported by Worms (18), the idiopathic nature of the inflammatory changes which took place in the walls of the duct is rendered doubtful by the condition of several afferent vessels, which appeared to have been connected with the disorganized suprarenal capsules. The reporter maintains that the duct was the seat of the primary affection, and attaches special significance to the deep-seated pain in the abdomen, which radiating towards the sides, quickly followed a chill with sore throat, and preceded the graver phenomena which ensued and increased in intensity until death took place, as denoting the locality of the disease which was so manifest in the tissues of the duct. The character and locality of the pains are, however, insufficient to establish such a conclusion; indeed, it is not improbable that the degenerative process taking place in the suprarenal capsules may have been the *fons et origo* of the pain, and the more serious and ominous symptoms which followed may

* Otto refers to a number of such cases, which I have not had the opportunity of examining, some of the references being inaccessible and others inaccurate.

have been due to the invasion of the tissues of the duct and its extension in continuity. The morbid condition of the left arm and forearm were certainly sequent to the occlusion of the subclavian vein, but there was no necessary connection between the affections of the left upper extremity and thoracic duct, unless the occluding thrombus was in some way the result of the admixture of the purulent contents of the duct with the blood. The descending portion of the duct was obliterated by the pressure of a mass located in and about the angle formed by the junction of the left subclavian and internal jugular veins, and the organized mass which so completely occupied the lumen of the subclavian may have originated from the same cause. The current of lymph and chyle through the duct was certainly arrested before death, but how long before cannot be determined, and hence the causative relation which the infecting and purulent contents of the duct bore to the formation of the thrombus at the locality of its outlet cannot be positively ascertained. It is not improbable, however, that the occluding mass, as suggested by Worms, had its beginning in changes produced in the blood by admixture with the pus, and that the localized affection of the left upper extremity, and general phenomena manifestly due to blood-poisoning, were secondary, at least, to the structural changes in the tissues of the duct. The thrombus was yellow, and all the soft tissues were "intensely yellow." To this circumstance Worms directs especial attention, though not the first to observe the presence of icterus in connection with diseases in which pus was found in the lymphatics. He insists that the yellow discoloration was due entirely to blood changes caused by the presence of the puriform matter from the thoracic duct. The observation is suggestive. Whatever connection, if any, there may exist between diseases of the thoracic duct and icterus, when it is not obviously dependent upon hepatic derangements, can only be determined by careful examination of the duct in such cases. Lebert attributes (Ziemssen's Cyclo., vol. i. p. 291) the icterus of the typhoid variety of relapsing fever to a peculiar element of septic infection, and all who recognize the lymphatic tissues as blood-producing organs must accept the conclusion that morbid conditions of these structures must exert deleterious influences upon the composition of the blood, and, consequently, upon the nutrition of the body. It is quite certain that some poisons gain access to the system through the lym-

phatic apparatus, and it is not improbable that the special poisons of the infectious fevers may enter through the same channels. The prevalent belief is that the infection of typhoid fever finds its entrance through the lymphatic follicles of the intestines. The jaundice was most probably attributable to solution of the red blood corpuscles and transformation of the hæmatine into yellow pigment, and it is not impossible that the admixture of pus with the blood was an important factor in producing this condition of the blood.

In this connection the case of mitral and tricuspid insufficiency, with granular liver, ascites, anasarca and thrombosis, reported by Oppolzer,* deserves consideration. Both the inferior and superior venæ cavæ were occupied at their outlets with pale yellow, rather soft coagula. From the superior the clot extended with a jagged end into the auricle, and continued into the right subclavian, as well as into the internal jugular of the same side as far as the foramen lacerum. Left innominate and terminus of left subclavian were obliterated. The thoracic duct was plugged at its termination by a pale red, fibrous coagulum; its walls were thickened, and the lumen from the receptaculum to the occluding thrombus was much enlarged. The occluding thrombi, both in the veins and duct, were probably blood coagula, the difference in color, one being "pale yellow" and the other "pale red," being due to the difference in time of formation, and not to the admixture of the blood with morbid contents from the thoracic duct; nevertheless thrombi formed in inflamed lymph vessels may be white, red, pale or yellowish, but are less firm than blood clots, and under the microscope will exhibit lymph corpuscles more or less thickly scattered through the mass. In this case the thrombus in the duct was not only pale red, but "fibrous." If it was a blood thrombus, regurgitation of blood into the thoracic duct occurred in consequence of the interruption to its entrance into the right heart, and not as in some cases of rupture of the duct, from absence or diminution of pressure in the lymph trunk. The walls of the duct, as well as the coats of the veins, were thickened, and the thrombi were adherent to their inner surfaces, but no mention is made of pus formation in either system of vessels. Thickening of the coats and enlargement of the canal may result from obstruction to the current. In Virchow's case (see case 58 Amer. Jour. Obsts.), the duct was occluded

* Allgemeine Weiner Medinisch. Zeitung, 1861, p. 149.

by a thrombus projecting from the jugular vein, and nearly all the internal organs were enlarged by the dilatation of the lymph vessels.

Other vices of contents have been observed. Besides blood, pus, bile, ichor and other extraneous substances,* calcareous material has been found in quantities sufficient to completely fill the duct.

Case 20. Lieutard (loc. cit. Obs. 771), "on opening the body of a scrofulous subject who died of consumption, found the mesenteric glands enlarged to the size of a nutmeg and *turgid* with a chalky material. The lymphatics were enlarged, especially the thoracic duct, was more than three times its normal size and full of the same material."

Case 21. Ossification of the thoracic duct.† "James Jones, aged 22, was admitted into the Gloucester Infirmary, June 5th, 1779, for rheumatism. The right hip was enlarged, but the thigh was but little altered. Soon after he was seized with pain in the knee, and the thigh increased in bulk and became œdematous, and he was confined to his bed. The enlargement of the thigh advanced very fast, difficult and painful micturition ensued and increased, and, finally, the urine could not be drawn off, but 'dribbled away involuntarily.' A tumor was discovered on the left side, filled with fluid and feeling like a distended bladder. His fever increased, strength failed very fast, he gradually drooped into a state of insensibility, and died October 10th."

"*Dissection.* The integuments of the abdomen felt harsh and dry; the veins were enlarged, could be distinctly traced over the surface; on the left side there remained an evident fullness, which pushed the parietes forward. The thigh continued œdematous. The intestines were inflated, bladder distended with urine, slightly adherent to the peritoneum; and this, together with the colon, filled the iliac fossa on the left, while the right and more than half the pelvis was occupied by a confused mass composed of scirrhus, cartilage, bone and stone. Arising from this mass, extending above the kidneys and covering the bodies of the vertebræ, was found a bony tumor. The cartilages of the ribs were as white as writing paper, but retained their natural firmness and texture. The lungs were distended,

† In a single case worms have been found in the absorbent vessels of the neck: Otto, loc. cit. p. 362.

* Cheston, Phil. Trans., vol. lxx, p. 323: Lond., 1780.

and studded in many places with bony concretions. The heart was very flaccid, empty, small, but sound in other respects; the valves were normal, the aorta healthy, though entirely surrounded by this singular substance from the cœliac artery to its bifurcation. The thoracic duct was firm like a piece of packthread, and was entirely plugged up with ossific matter; from immediately above the receptaculum chyli, nothing could be forced through it; its coats did not appear diseased. In some places the adventitious product was not strongly attached to its internal surface, at other places it could not be separated, owing to the thinness of the coats and their partial ossification. The receptaculum contained a membranous laminated substance, between which and its walls air could be forced, and possibly a small quantity of fluid, but the duct was totally impervious, rendered so by the ossification of the material, presumably of the same nature as that found in the receptaculum."

[Figure 18.]

a, Receptaculum chyli laid open to show substance within.

b, Opening into thoracic duct to show the manner it was blocked up.

c, Lymphatic gland containing a similar substance to that found in receptaculum.

d, Coats of duct separated from the bony matter.

e, Vena azygos.

"The vena azygos was perfectly sound, but the vena cava was half filled with a firm, inelastic substance, which originated from its internal surface near the entrance of the emulgent veins, attached to it here and there by small points till about the projection of the sacrum, where the cavity was almost entirely filled.

"The spleen, pancreas and liver, were perfectly healthy, gall bladder small and empty; the kidneys were enlarged, livid and inflamed; right ureter distended with urine; the coats of the bladder were thickened, and the organ was extended upwards, oblong and contracted, its neck was compressed by the tumor."

"The tumor which occupied the right iliac region extended

irregularly in all directions, and had by pressure produced absorption of the principal part of os innominatum."

Dr. Cheston concludes the history of this case with the statement that the appearance of the patient was similar to those who had "lingered under and been destroyed by slow inflammations of the viscera."

The affections of the bladder, ureter and the kidneys, were probably secondary, and found their cause in the mechanical impediment to micturition, produced by the pressure of the mass found in the right iliac region, and represented to have consisted of "scirrhus, cartilage, bone and stone;" and whether or not this "confused mass" originated in disease of the lymphatic apparatus of that region, which seems very probable, it is manifest that absorption of bony material took place and was conveyed through the lymph channels to the receptaculum and thoracic duct, and thence into the lungs, forming the concretions which studded the latter organs. Todd refers to a case reported by Andral somewhat analogous to this: "In a woman, æt. 33, who had died of acute pleuritis supervening upon a chronic pulmonary affection, the bodies of six vertebræ, the last dorsal and five lumbar, were found destroyed, and calcareous concretions were found in the cervical, thoracic, bronchial, abdominal, pelvic, axillary, and inguinal glands." And in another, a boy æt. 16,* in whom an abscess was found in one of the iliac fossæ, with erosion and destruction of the os ilii, calcareous concretions were found in the bronchial, pelvic and mesenteric glands, and in his lungs. Quincke (loc. cit. p. 520) refers to the cases of Wrisberg† and Mascagni,‡ of calcification of the wall of the duct, but these reports I have not had the opportunity of examining.

These calcareous deposits most frequently occur in old people, and consist generally of phosphate of lime. The cases cited suggest its derivation from the earthy matter of the bones. Soemmering§ has observed a tartar-like substance in obstructed glands, and absorbents in cases of rickets, and Freis‖ gives an example, in which he found calcareous concretions in the lymphatic vessels about the vertebræ and in various other parts of the body. Some of the older authors maintained that rickets

* Cyclo. Anat. and Physiol., vol. iii. p. 234.

† De syst. vas. abs. morbus. excit. et san. comment. soc. reg. Gotting., 1789. Bd. iv.

‡ Gesch. und Beschreibung d. Saugadern, 1789.

§ Loc. cit. p. 45.

‖ Soemmering, p. 96. De emollitione ossium.

was the result of increased action of the absorbents, due to a peculiar irritability, existing as a diathetic quality of certain constitutions, which specially directed their action to the absorption of osseous material.

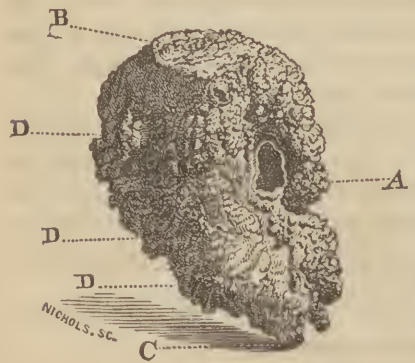
In several of the preceding cases calcareous material was observed in the receptaculum, but always in connection with similar depositions in other parts of the lymphatic apparatus. In the following case, reported by Joan Georgii Scherb (17th August, 1729), the deposit was only found in the receptaculum.

Case 22. De calculo receptaculi chyli; hydrops causa.* "A man 39 years old, suffering from dropsy, had exhausted the entire armamentum of the pharmacopœa without relief. Paracentesis abdominis was resorted to, but 16 hours after the last tapping the man died."

P. M. Examination. "The omentum was found almost entirely decayed and the other viscera in a gangrenous condition." A certain preternatural body (corpus quoddam præternaturale), surrounded by a peculiar membrane, was observed in the lumbar region. In order that a good view of it might be obtained, the mesentery was removed. An incision being made, and the membrane, which surrounded the tumor, being cut, a large quantity of lymph poured out and a calculus, whose shape is given in the following wood cut, was extracted.

"The place where the calculus was found, and where the presence of the chyle was noticed, was satisfactorily proven to be the receptaculum chyli."

[Figure 19.]



"A, Large foramen in calculus.

"B, Several openings permitting the passage of a bristle.

"C, Centre of calculus.

"D, Various prominences obstructing the lymphatic vessels."

"In order that a fuller explanation might be had, the thorax was opened, and not the smallest trace of a thoracic

*Haller, Dissertatio Abnorborum, vol. iii., p. 537.

duct could be found. It was apparent, however, on examining the stone, that a foramen or cavity, indicated by the letter A, permitted the escape of the thinner portions of the chyle through a fixed passage, and did not impede entirely the flow of the chyle, by means of which the life of the man was prolonged."

This case is not entirely unique; in several of the preceding cases small depositions of calcareous and other extraneous substances were found in the reservoir of Pecquet. Scherb ascribed the dropsy to the presence of the calculus, which interrupted the flow of chyle, asserting, at the same time, that no communication with the venous system could be discovered. the history of this case and details of the post mortem are too imperfect to determine the causal connection of the calculus with the ascites; there are, however, cases which establish the fact that chyle and lymph may be effused into the thoracic and abdominal cavities, and into the latter through rupture of the lacteals, receptaculum or thoracic duct.

Case 23. (From an essay on dropsy and its different species, by Donald Monro, p. 22, 3d ed., London, 1765.)

"In the body of a man who died after a large quantity of chylous liquor had been let out of his thorax, Bassius* discovered, about the third or fourth vertebra, an orifice from which the chylous matter flowed as from a fountain. When the lower part of the thoracic duct, where it rises out of the receptaculum chyli, was blowed into, the air unexpectedly came out at the orifice above mentioned. This white liquor coagulated with salt of tartar, but not with spirit of vitriol."

Case 24.† (ibid, p. 22). A girl made too great an effort to raise a burthen, became hydropic soon after. Being frequently tapped, there always issued from the puncture chylous matter, not unlike milk, in color, taste and consistency, which being set on a fire, rarified like milk.

Case 25. Percival‡ reports the following case of chylous ascites, which occurred in the practice of Dr Huxham, and was communicated to him by Sir William Watson.

"A girl, about eight years old, was tapped for ascites. She was anasarcous, and even her face was very much bloated and

* Observationum Decade Secunda, Observatio Septima.

† Memoir de l'Acad. des Sciences, 1790. See such another case, ibid 1710.

‡ Essays Medical, Philosophical and Experimental, vol. i., p. 171: Lond. 1788.

very pale. Four quarts of a milky-colored liquor, which would not coagulate by heat was drawn off. After standing a day or two it was covered with a kind of thin cream, and in a few days more it smelled and tasted sour. At a subsequent tapping a similar fluid, somewhat more dilute, was evacuated, the swelling of the body subsided, and she recovered her appetite and strength. Before she was attacked she was very lively and active, had a voracious appetite which she indulged." Percival suggests that she probably ruptured some lacteal by some unusual exercise, after a full meal.

Case 26. (Monro, p. 23). "In Dr. R. Morton's Phthsiologia,* there is an account of a hydrops ascites lactea in a boy 2 years of age, which, after his death, was found to have been occasioned by a number of large indurated tumors, situated behind the trachea arteria, which compressed the thoracic duct near the subclavian vein, as much as if a ligature had been made upon it, and had been the cause of a rupture of some of the lacteals."

Case 27. "Abdominal effusion, resulting from mesenteric tumors.† G. K., aged 20, a wire weaver, who had enjoyed good health until ten months previous to his admission to the Surrey Dispensary, December 31st, 1840. At the time of admission he was suffering from functional disorder of the stomach; appetite was bad; had occasional pyrosis, vomiting and pain in right side; suffered with flatulence and bitter eructations; tongue was pale and clean, with lateral indentations from the pressure of the teeth; skin was soft and clear; pulse frequent, feeble and compressible; cheeks not wanting in color; expression distressed; not deficient in flesh; complained of debility, palpitation of the heart, and excitement from slight moral and physical causes. He was addicted to venereal pleasures. * * *

"No tumor could be discovered, but a little indistinct fluctuation was supposed to exist; his bowels were confined; passed but little water. The fluctuation and distension of the abdomen increased very rapidly, and he emaciated with extraordinary rapidity. Diarrhœa supervened and he sank, exhausted, on February 17th.

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* Lib. i,, Cap. 10, Et And. R. Vieussens, Novum Vasorum corporis Humani septima; Amstelad, 1705, in Monitione ad Lectorum.

† Hughes, Guy's Hosp. Reports, voi. vi., p. 297; 1841.

"*Sectio Cadaveris*—twenty-four hours after death. Slight abrasion of the skin over sacrum, and some frothy mucus about the mouth. * * The lungs appeared healthy; the heart was thin, weak, pale and flabby. * * Not a particle of fat was to be seen either in the omentum or integuments. The peritoneal cavity contained seven or eight quarts of a thick and perfectly milky fluid like almond emulsion. The peritoneum was vascular over a portion of the ileum, and was universally sprinkled with minute white specks, a portion of which were easily removed, and consisted of capillary shreds, deposited from the milky fluid, but some were adherent and seemed produced by the membrane. * * They resembled more the ova of pediculi capitis than tubercles. In the centre of the abdomen, resting on the spine, was a rounded nodulated tumor, as large as a two-penny loaf, which consisted of several agglomerated mesenteric glands, some of which were as large as a small orange, and, when divided, presented a soft, pinkish, pultaceous mass, from which, upon very slight pressure, exuded a white cream-like fluid, which appeared to constitute a portion of the deposit: others were of a dull white color, drier and more granular—the whole exhibiting * * the general characters of cerebriform cancer. Other glands of the mesentery were enlarged to the size of marbles and pigeons' eggs. Some inguinal glands were also enlarged, but contained no heterologous deposit. Several convolutions of the intestines were adherent to the tumor, but all appeared healthy, except two white, firm, and semi-cartilaginous spots found in the colon, opposite to which the mucous membrane was entirely wanting, and their cut surfaces presented the same physical characters as the early stages of schirrous pylorus. One tubercular-looking body, about the size of a pea, was discovered in the mesentery, close to a fold of the ileum. The liver, spleen and kidneys, were healthy, * * Numerous lacteals—large, tortuous, varicose and distended, some with a milky and others with a clear fluid—were observed in all parts of the mesentery." Six ounces of the fluid were transmitted to Dr. G. Owen Rees for examination, who in a letter says:

"I have examined the effused fluid, and find that it contains chyle in considerable quantity. Owing to the chemical character of serous effusions generally, it is quite impossible to determine what quantity of chyle is in admixture with the serum.

Some idea may, however, be formed of its large proportion, when we recollect the peculiar milky appearance * * When the effusion was agitated with ether, it separated into three distinct parts—the upper being a solution of fatty matter in ether, the lower a clear serum, and the intermediate layer a floating mass of chylous matter."

Case 28. "A particular dropsy."* On the 2d of July, 1699, Poncy, jun., drew from the abdomen of a girl, who had been attacked with dropsy 15 months previously, "13 quarts of a white thickish liquor resembling milk, not offensive to the nose, but smelling like milk, between sweet and sour, a little insipid and saltish to the taste." Upon standing for some hours, cream rose upon the top of the fluid a finger's breadth in thickness, which remained unaltered after standing five days. Subsequently, "a very thick, greasy substance, like butter, but white, appeared upon it." From the date of the first operation to March 4th, 1700, the date of the death of the patient, paracentesis was performed 22 times, the aggregate amount of chylous fluid drawn off reaching the extraordinary quantity of 289 French pints.

Autopsy, a few hours after death, in the presence of Du Vernage, Leaulté, and Du Chéne.

"The body was lean, abdominal integuments about one-third normal thickness.

"The epiploon was so much dissolved that there were only the vestigia of it remaining, at the place of its adhesion to the stomach and pancreas. Upon the surface of the intestines and in their anfractuosities were found a quantity of white creamy filaments, sufficiently compact to bear pulling, and tenacious enough to have a slender adhesion to the parts. These lacteous concretions were most abundant at the bottom of the abdomen, toward the centre of the mesentery, in the hypogastrium and toward the groins."

The peritoneal cavity contained about two quarts of a white milky fluid. "The stomach and intestinal canal were so tumefied with wind, and the preternatural bigness of the mesentery raised them so much above the other visceræ, that none were perceptible—even the liver, which was deeply lodged under the diaphragma, and so much flattened and extended in bulk that a

* Saviard, Observations in Surgery—Trans. by Surgion—p. 247. Lond., 1740.

portion of its small lobe was firmly adherent to the spleen, stomach and pancreas, and by its gibbous part to the diaphragma, that it could not be separated without tearing, and was of a blackish color." The gall bladder was withered and empty.

"Obstructed glands were perceived in the texture of the covering membrane of the liver," the largest were of the "bigness of peas." The mesenteric glands were enlarged, some as large as the thumb.

"The progress of the iliac vessels to the right and left were covered with glandular heaps, as large as pullets' eggs, others as large as pigeons' eggs. Upon opening these glands, a very white and thick matter was discharged resembling boiled cream." * * * *

"From these we proceeded to the examination of the intestinal canal, and began at the pylorus which was fixed to the liver, spleen, pancreas, mesentary and epiploon, and even to some circumlocutions of the large and small intestines. We traced it for 10 or 15 inches without finding anything extraordinary, but observed at the beginning of the jejunum, a sort of membranous bag covered with creamy filaments, which was full of a white milky liquor. * * * At the place where the jejunum is fastened to the mesentery, a round fistulous hole existed, through which a probe penetrated an inch into the glandular part, which was very hard and much tumefied." By dilating the fistulous tract the probe was pushed to the diaphragm without injuring any other part. To the right and left of the tract sinuses were found, which seemed "to have been formed in the body of the mesentery, which had become so much enlarged by the obstruction of its glands, that it seemed to have degenerated into schirre, and the matter contained in them resembled that contained in the peritoneum."

"In the thorax, at the point of the entrance of the ductus thoracicus two very large glands were found, containing a 'curdled matter;' and following the course of the duct other glands were observed, "strung together like beans and full of the same curdled matter."

Poncy concludes that the "complicated dropsy * * was owing to obstructions both in the vessels and glands serving for filtration to the chyliferous duct, and to the glands and canals

appointed for the distribution of the lymph over the whole body."

This remarkable case, so minutely and faithfully reported, presents so many post mortem appearances so closely analogous to those found in the preceding case, reported by Dr. Marshall Hughes in 1841, that the apparent vague statements and indefinite description must be attributed to the imperfect knowledge of writers of that date, rather than to the inaccuracy and fancy of the author.

(To be continued.)

ANALYSIS OF THE RECORD OF YELLOW FEVER IN NEW ORLEANS, IN 1876.

A PAPER READ BEFORE THE NEW ORLEANS MEDICAL AND SURGICAL ASSOCIATION, SATURDAY EVENING, NOVEMBER 11TH. 1876.

BY JOSEPH HOLT, M.D.,

Sanitary Inspector for the Fourth District, New Orleans.

Mr. President and Gentlemen: It has been my official duty, as Sanitary Inspector, to prepare for the Board of Health a special report concerning the recent outbreak of yellow fever in the Fourth District of this city. In the performance of this task, nothing has been attempted beyond the recording of cases and of relative events. The report is simply a statement of facts as they occurred, without comment. Nothing has been incorporated without the evidence of its truth having been critically examined.

The only incentive to the performance of this work has been the hope of accumulating a mass of reliable data, whence possibly may be drawn some conclusions of practical value; or that this, with other records of its kind, may ultimately furnish the basis for generalizations improving to our knowledge of this pestilence, and giving precision to our methods of dealing with it.

Being the record of seventy-four cases, to each of which is appended a summary of symptoms determining diagnosis, the report itself is too voluminous to be presented for our consideration this evening. In its stead, I respectfully submit the following analysis and résumé, adding a few general remarks suggested by observation and reflection.

ORIGIN OF THE PESTILENCE.

Permit me to direct your attention to the probable *local* origin of the disease in two foci.

The first case occurred, August 11th, on Tchoupitoulas street, lake side, between First and Second streets. The patient was a German servant girl, who had been in New Orleans eighteen months. On the second day of her illness she was removed to No 24 Eighth street, between Tchoupitoulas and Fulton, where she died on the 18th inst. Careful and repeated investigation by the President of the Board of Health, by the sanitary officers and myself, failed to discover the slightest clue to foreign infection from any ship, person or material. This applies with equal force to the following series of cases.

The next case occurred at No. 125½ Philip street, corner of Annunciation, in a child seven years of age, and resident in New Orleans 3 years.

Besides the difference of twenty-three days in the appearance of these cases, there had been no communication, and between them were five squares, measured diagonally. These squares were compactly built, and many of the inhabitants were ascertained to be wholly unacclimated. It is not likely, therefore, that the disease could have spread from the first to the second case without infecting others on its way. It is more reasonable to believe that the causes of infection in the first case operated independently to produce it in the second.

SPREAD OF THE DISEASE FROM ITS SECOND FOCUS.

The next point of interest to be observed is, the rapid appearance of cases in the second focus of infection and the extension of the disease.

From September 3d to September 7th, inclusive, five cases occurred—three of them on the 5th, and all within a radius of two hundred feet. In this immediate neighborhood the disease spread with great rapidity. Many of the cases occurring about this time were suspected, but recovering, were not pronounced yellow fever, because of their lacking some of the unquestionable diagnostic features found only in cases usually fatal.

It was not until the 13th of the month that we had alarming evidence of the epidemic tendency of the disease, shown in its

advance towards the heart of the city. By this time it had passed Constance street, and appeared in St. Joseph's Asylum.

The invasion was west and northwest, directly in the face of a strong and constantly-prevailing northwest wind. This seems to strengthen the observations in respect to the method of propagation, set forth in a paper on the origin, spread, and the power of controlling the yellow fever infection, read before this Association by Dr. C. B. White: "Reasoning from the method and range of action, and mode of propogation of yellow fever, its poisonous cause is evidently not gaseous in its nature. It evidently attaches itself to surfaces, the soil, probably to walls and surfaces in general. If it be a germ, either vegetable or animal, it seems to be low-lying, propagating from centres along surfaces equally in all directions, against the wind as freely as with air currents."

Within a period of eighteen days from the 3d of September, it had spread over an area of thirty-nine squares, densely inhabited. This area was bounded by Magazine street and the river front, St. Andrew and Second streets. Of the seventy-four cases recorded, sixty were within these limits. Those who were stricken elsewhere in the Fourth District had been much exposed within this area. This rule prevailed, with three exceptions only, to the end of the season.

CHARACTER OR TYPE OF THE DISEASE.

As a matter for investigation, it has been suggested that yellow fever of local origin is apt to assume a type more in keeping with our ordinary indigenous fevers, and is therefore milder or in some other way differs from the infection imported directly from tropical ports. However natural this suggestion, it has never been my good fortune to discover a manifest difference in type between different invasions of yellow fever; at least, in no such degree as to permit the term malignant as if in contradistinction to a non-malignant variety. The word malignant is painfully applicable to all the yellow fever I have ever seen; having been associated with the disease to observe it since 1853. The sameness of the disease at different times and in different places, accepting the testimony of others, has impressed itself upon me. While admitting that, under aggravating circumstances there may exist an exceptional intensity of virulence,

I object to any expression implying, even by inference, its non-malignancy. All yellow fever is dangerous, and should be feared; the most favorable case may eventuate fatally. As for this recent visitation, when recording the eighteenth case I also recorded the thirteenth death, and out of seventy-four cases, thirty-five were fatal. The most of those who recovered manifested dangerous symptoms, many of them escaping so narrowly as to occasion special wonder.

After the labors of the medical profession, in this city and elsewhere, during the last sixty years, this rate of mortality would seem to indicate how little is to be hoped from an improved treatment of those attacked. It would seem to show that, in this particular we have made no step in the general advancement of applied medical science.

Even granting that all practitioners possess a consummate skill in the treatment of yellow fever, there are so many requisites to recovery other than the administration of drugs, (frequently the most hazardous and least important of all) such as skillful and constant nursing, the avoidance of every imprudence in exposure and dieting, a favorable state of the weather, no dangerous and unaccountable change in the symptoms demanding instant attention, that when many are attacked, these requirements cannot be complied with, and therefore failure must often result.

No amount of medical skill can neutralize the mischievous effects of poverty and ignorance in determining the death-rate of this disease. The larger the number of cases, the more forcibly does this apply.

The history of yellow fever teaches that the mortality is great, even under the most favorable circumstances. This would seem to indicate a necessity of turning our attention from the vain endeavor to combat the disease by an improved treatment of the sick, to the other alternative, its actual prevention.

THE PERIODS OF ACCESSION, ACME AND DECLINE OF THE RECENT INVASION.

From the time of its appearance, on the 3d of September, to the last case on the record, October 13th, the visitation continued forty days.

It reached its heighth in twenty days, continued, without spreading, fifteen days, and declined in five days.

METEOROLOGICAL RECORD.

When the infection was developed in the first case, August 11th, the mean temperature was 77° F.; weather very dry; wind south When developed in its second focus, September 3d, the mean temperature was 80° F. Eight days later it began to fall, and on the 17th had declined to 68° F.; it then rose steadily to 77.5° on the 26th. On the 28th it declined to 72° F.; and continued falling until it touched its lowest point, 58°, on the 3d of October. From this time to the 13th, it varied between 62° and 68° F The weather continued excessively dry, and high winds prevailed from the north and northwest.

It is interesting to compare with this the meteorological records of some of the famous yellow fever epidemics—the epidemic of Memphis in 1873, for example.

The first case appeared on the 14th of September; diurnal mean temperature 59.5° F. The temperature gradually rose to 76.5° on the 18th inst., and fell the next day to 62.5°, and the following day to 58° F. It again rose until it reached its highest point, 77°, on the 26th, and fell to 58.5° on the 30th of the month. While the epidemic was rapidly spreading, and had not reached its height, the mean temperature fell as low as 49.5°, October 6th. It rose gradually to 72.33° on the 16th inst., and declined to 48.33° on the 20th inst., and to 38.5° on the 23d inst.

Frost during the nights of October 6th, 7th and 31st.

The pestilence terminated November 9th, having lasted fifty-six days. Mortality 1244. The weather prevailing, very dry.

This is not an exceptional instance in the meteorological record of yellow fever epidemics in the United States.

Although a long continued high range of temperature is required to originate the infection, when once started it seems to extend itself without being especially influenced by a temperature varying between 55° and 80° F.

It is the popular belief, endorsed by some of our closest observers, that no decline short of a decided frost will abruptly terminate an epidemic. Besides the one just mentioned, many of the epidemics which have prevailed in Woodville, Natchez, Vicksburg, New Orleans, and elsewhere, confirm this opinion.

The power of cold in checking yellow fever is to be looked for in its retarding effect upon decomposition, rather than to its immediate killing of hypothetic germs. The rapid decomposition of organic matter, especially such as is found in privies and sewers, is undoubtedly an essential factor in the origin, and furnishes the pabulum for the extension, of the yellow fever infection. To appreciate this is of far more importance than to project theories concerning its essential nature. With this we can deal practically, whether the infection be a living germ, or a catalytic state induced in the products of decomposition by the combined action of heat with unknown telluric agents.

Rain storms and hurricanes have been said to cut short an epidemic. Although unable to cite an instance in this country, I can clearly comprehend the effect, seeing that one heavy fall of rain may accomplish the work of a thousand scavenger carts. We may say that nature is sometimes doubly merciful: in one instance she prevents decomposition by cold; in another by removing our filth. But oftener she is just; and with pestilential stripes compels us to know her laws, when we disobey them. In her schooling we pay dearly for ignorance and sloth.

Many epidemics have commenced and have prevailed during dry weather.

The recent invasion was originated at a time when the soil was parched by a long drought, and vegetation was suffering for rain; the roads were deep in dust, and every gust of wind raised clouds of it. Commencing in a drought, increasing and running its course during a drought, it is hardly reasonable to suppose that dry weather exercised any influence upon the infection to destroy it.

EFFORTS OF THE BOARD OF HEALTH TO CONTROL THE DISEASE BY THE LIMITATION AND ACTUAL DESTRUCTION OF ITS CAUSE. DISINFECTION.

In case 1, the disinfection with carbolic acid was pushed vigorously and made complete. On the square where this patient fell ill, all of the premises were thoroughly sprinkled with Calvert's acid, No. 5, diluted, one part with fifty of water.

To be explicit, the yard, avoiding flowers and shrubbery, a space under the edges of all raised houses, the walks, drains, and privy vault of each residence, were made thoroughly wet with

the solution, and a continuous line of it formed around the entire premises. The streets bounding this square were sprinkled with crude carbolic acid, one barrel being used. The premises of the square on which she died, and of the square opposite were in like manner treated with the pure acid solution, and the boundary streets with two barrels of the crude acid. This case remained isolated, no other occurring on the infected or adjoining squares. Cases 2, 3, 4, and 5, in the second focus of infection, appearing eighteen and twenty days later, were not disinfected.

These became the recognized center of the epidemic which has furnished the cases for this record. From this focus the disease spread, and in eighteen days had invaded thirty-nine squares, besides scattering cases beyond these limits.

A general disinfection was commenced on the night of September 22d. Until this time, all efforts had been limited to the disinfection of the houses and premises of those who died. On the night of the 22d, a quadruple cordon of the pure acid solution, one part acid to forty of water, was thrown around the infected area, by a thorough sprinkling of the boundary streets and banquettes, a line for each side the street; and in the same way, of the next inner line of boundary streets. The object of this was to put a stop to the march of the pestilence by forming around the infected locality a barrier. To accomplish this required 235 gallons of the pure acid.

On the night of the 23d, the sixteen streets of the infected area were similarly disinfected. From this date, the daily occupation of the sanitary force consisted in disinfecting the premises of squares within this area. To complete five squares was a day's work. Whenever a case occurred outside these limits, the premises of the square and of the one opposite, together with the boundary streets, were disinfected. Every precaution was taken to avoid bringing the acid in such proximity to the patient as might do harm. For this reason the premises of the sick, and those adjoining, one on each side, were not touched. A special cordon of the pure solution was made around these.

On the night of the 28th, beginning at ten o'clock, the sprinkling carts were filled with the crude carbolic acid undiluted. They were then driven through a double line of boundary streets of the infected area, in the manner already described for

the night of the 22d. The following night, a single line of the same was extended through the sixteen intersecting streets.

This was done as a precautionary measure, inasmuch as a prevailing strong wind, together with a burning heat of sun, had been acting to dissipate the volatile combination of cresylic and carbolic acids, *here spoken of as pure acid*, distributed on the nights of the 22d and 23d. The crude acid was used in order to retain these more volatile constituents by reason of their combination with tar and the heavier coal tar products. These are no doubt of themselves powerfully disinfectant. For the work of these two nights twenty barrels of crude acid were used.

Great stress was laid upon the assumed limiting power of the disinfectant. The area infected was so immense as not to permit of an actual and complete disinfection of its entire surface with any amount less than an unlimited supply of the acid. To disinfect all houses and premises was utterly impossible. The most that could be hoped in this direction was to apply the agent, although at best in an imperfect and unsatisfactory manner, to as many premises as we were able.

Our main effort and supply were expended upon hedging in the pestilence by carbolizing the streets and gutters—just as would be done, in its own proper way, in the case of a great fire.

Except where some one had died, not a private house and only two-thirds of the premises were disinfected—many not touched, *except the privies*. It was clearly foreseen, therefore, that even after our best efforts cases would continue to occur in this locality.

From the beginning, it was an established rule to pay particular attention to the thorough carbolizing of privies. Even in cases where admittance to premises was otherwise refused, this much was insisted on; second to this, the carbolizing of street gutters.

It has been shown by our writers, that yellow fever in its origin is essentially a disease of large towns and cities. There must exist, then, as a result of the congregation of large numbers of human beings, some special conditions of sanitary disobedience which, in combination with other requisite factors, not all of them recognizable, favor the appearance and spread of the pestilence. There is no sanitary violation so prominent in all large communities as the accumulation in foul privies of

the excrement of all these beings; the whole soil becomes saturated with their excreta.

In reply to the question why yellow fever originates in large towns and cities, we are supported by abundant testimony in declaring as one of the factors absolutely essential, accumulated human excreta and the offal in foul street gutters; and in further declaring that, without these it would not originate, and would not spread when imported.

Allow an explanation. In speaking of foul accumulations incident to communities as furnishing one of the factors in the primary development of yellow fever, and also the pabulum of its growth or medium of its spread, we neither affirm nor deny the specific character of the materies morbi. The weight of evidence determines the opinion that it is specific, highly infectious, and contagious in comparatively slight degree.

The word *factor* is here used in the sense in which we would apply it in speaking of a marsh or swamp as being a factor in the production of mosquitoes. So well do we understand the requisites in the development of these insects, such as long continued high temperature, and open stagnant water, especially in marshy places, that we predict their appearance when perceiving the association of these conditions. Again, accepting the theory of a specific catalysis, the term *factor* is applied to decomposing organic matter and its emanations, as we speak of the dry grass covering a prairie furnishing one of the essential elements in the production of a conflagration. We may regard the fire as the specific catalytic agent, usually imported, but which may be originated under certain combinations of circumstances in this special prairie. Once started, it spreads so long as it finds material suited for its proper action. But at any time, even in its fiercest spread, remove a single factor, the grass for example, or change its condition by making it wet, and at once the fire ceases. Regarded from a hygienic point of view, yellow fever then is a result of sanitary negligence, not a universal consequence, and, for reasons unknown, limited geographically.

Sanitary negligence in India is punished with cholera; in the Orient, with plague and leprosy, in Europe, the British Islands and the northern United States, with typhus, typhoid, diphtheria and scarlatina, in their malignant and epidemic forms; and in the West Indies, in the tropical and semi-tropical Americas, with yellow fever.

For disobedience of sanitary law, these are among the prices paid by the human race, acording to its distribution upon the earth. The choice among these would indeed be a choice between evils, hard to determine. It is a special mission of science to teach us how to avoid them.

RELATION OF DISINFECTION TO THE SPREAD, THE LIMITING, AND FINAL CHECK OF THE DISEASE.

There were seventy-four recorded cases.

During the twenty days from September 3d to the night of the general disinfection, September 23d, there occurred thirty-five cases. During the twenty days following, to October 13th, the date of the last case, there occurred thirty-eight cases, and these we will analyze.

First, let us bear in mind the statement concerning the impossibility of disinfecting all of the premises on infected squares, and that none of the houses were disinfected except in case of death. Many people in the infected area were residing in houses and on premises never touched with disinfectants—many in houses with the sick. Next, we must allow a time for incubation in those already infected at the moment from which we date—9 o'clock p. m., September 23d. A period of incubation, varying from a few hours to eight or twelve days, has been generally conceded. In the present calculation we will allow five days only.

Seventeen of the thirty-eight fell sick during the first five days, leaving twenty-one cases for the remaining fifteen days.

Of the thirty-eight cases, eleven occurred outside of the infected limits. Eight of these had been nursing the sick or visiting socially in the infected area. The remaining three had no such history, but had evidently contracted the disease outside this locality. They occurred in persons who had been in close proximity to the sick, about the intersection of Eighth and Constance streets, who had been infected in the diseased locality. This appearance gave reason to fear the development of a new centre of infection. This new area comprised the sixteen squares bounded by Magazine and Chippewa, Washington and Ninth streets.

From September 29th to October 5th, the disinfection of this quarter was accomplished. The boundary streets and gutters

were sprinkled with the crude acid, the intersecting streets with the pure solution at first and with the crude acid a few days later. The premises of several squares were disinfected, and every privy was carbolized carefully with crude acid, two quarts to each.

Because of a limited supply of material wherewith to accomplish this work, an improved method of distributing the acid was adopted. The ordinary street-sprinkling apparatus was removed, and in its stead, two one-inch hose of thirty feet each were attached to the reservoir. On the end of each hose was an ordinary garden-sprinkler, eight inches in diameter. Thus arranged, the cart bearing the reservoir was driven down the middle of each street, while the gutters and edges of banquettes on both sides were effectually drenched with the acid. By this means, we were enabled to extend a perfect double cordon around each square with the least expenditure of acid.

It is better in effect, and far less objectionable to the inhabitants, to go over an infected area in this manner several times, a few nights intervening, than to deposit the whole supply at once.

THE DISEASE IN PUBLIC INSTITUTIONS, AND ON SHIPS.

On the 13th of September a case occurred in St. Joseph's Asylum, corner of Laurel and Josephine streets. On the 15th another; one on the 16th, and one on the 17th. Two of them were fatal.

On the 17th the building and premises were disinfected with the pure acid solution. The same was applied to all bedding and clothing removed from the patients. This was accomplished by the Sisters, guided by Dr. Layton. Again on the 20th, by the Sanitary force, the yard, sewers and privies, were thoroughly treated with the pure acid, one part to fifty of water. This was repeated on the 25th. (Other public institutions to be mentioned were disinfected in the same way.) No case after the 17th.

Living on the premises were 210 white persons, of whom 25 were cloistered nuns. Of the entire number, six were already acclimated by having had yellow fever.

In the Jewish Orphan's Home, corner Jackson and Chippewa streets, a case occurred September 21st, one on the 25th, and one on the 27th. Two of these were fatal. The interior of this

building was repeatedly disinfected by the inmates, directed by Dr. Lœber, in the manner just mentioned. The premises, including yards, drains and privies were disinfected by the sanitary force, September 26th. No other case occurred.

Residing on the premises were 110 white persons, of whom six had previously had yellow fever.

In the Convent of the Sisters of Mercy, on St. Andrew street, between Constance and Magazine, a case occurred September 29th. It terminated fatally. This institution was disinfected, October 2d. Living on the premises were 43 Sisters of Mercy, 19 employees, and 70 orphans—122 persons, all white. Ten of these had already had yellow fever.

By contrast, it is interesting to note that, in the immediate neighborhood of these institutions, the private residences invaded but never disinfected, seemed to fare differently. The disease in many instances attacked in succession every member of the family liable—frequently three, four, and as many as eight.

The sailing ship Belgravia arrived direct from Liverpool, August 29th. She landed about the foot of Second street, where she has remained to the present time.

The crew were allowed to go on shore at will. One of the sailors was taken ill aboard ship, September 17th. On the 20th, he was conveyed to the Touro Infirmary, where he died the same day.

On the 20th, the ship was thoroughly disinfected with carbolic acid and chlorinated lime. The bedding and clothes of the deceased were tied in a bundle, weighted with stones, and sunk in the river. The ship was thoroughly washed throughout. After this, she was repeatedly carbolized and cleansed. During the ten days following the death of this case, the crew remained closely about the vessel. After this time, some of them became reckless, and frequented the places in the infected area where this man caught the disease. Two of the crew fell ill of the disease on the morning of October 8th, and died at the Touro Infirmary, one on the 12th, and one on the 14th inst. The commanding officer predicted the illness of these men, in a conversation with me a few days before they were taken, because of their foolhardiness. Living on board, officers and crew, twenty men; none of whom had ever been exposed to yellow fever.

Just astern the Belgravia lay the sailing ship Evangeline. Officers and crew unacclimated. The captain's wife spent a

sabbath evening with a friend living in the infected center, October 1st. She was taken ill the following morning, and died, having thrown up black vomit freely, October 6th. The same method of disinfection was pursued as with the Belgravia. No other case occurred.

This completes the analysis of the record. The following is a

RESUMÉ.

Total number of cases.....	white, 71	}	=74
	colored, 3	}	
" " natives of New Orleans.....			17
" " " " Louisiana.....			4
" " of deaths.....			35

Total amount of disinfectants used—pure carbolic acid, Calvert's No. 5, 19 barrels, ranging from 46 to 50 gallons each = about 912 gallons.

Total crude carbolic acid compound, 40 barrels, containing 45 gallons each = 1800 gallons.

Total areas disinfected, streets and premises of sixty-four squares.

Total areas disinfected a second and third time, streets and premises of twenty-four squares.

The following is the census of the thirty-nine inhabited squares, bounded by Magazine street and the river front, St. Andrew and Second streets, *not including asylums:*

Number of premises.....			1143
" " persons on premises.....	white, 5869	}	=6407
	colored, 538	}	
" " " born in New Orleans.....			3713
" " " " " Louisiana.....			211
" " " arrived in New Orleans since 1867*...			467
" " " born " " " " " "			1760
" " " who have already had yellow fever:			
	white, 1162	}	=1196
	colored, 34	}	
" " " " never had yellow fever.....			5211

It is not the object of this paper to discuss or to venture an opinion concerning the essential nature of the yellow fever infection. There is no intention to defend any theory whatever, but

* The date of the last great epidemic.

only to make general observations, based upon such facts as have been accumulated in this city and elsewhere.

It does not affect the sanitary question an iota whether the infection of yellow fever be a germ, animal or vegetable, a catalytic state of the products of decomposition in effete animal matters, or be any other thing or condition which theory is pleased to assume. So long as it is intangible, imponderable, irrecognizable to any of the senses, we can have no positive knowledge of the essential nature of the poison. Every effort to prevent its appearance or to limit its spread, must be purely experimental.

Sanitary measures have dealt effectually with other infections equally mysterious in their nature, and may succeed with this.

The sanitary control of yellow fever in benefits resulting, would be second only to small-pox. Its effect upon the growth and commerce of this city alone, would be incalculable.

The following is a summary of observations.

1st. Yellow fever, whether preëxisting as a dormant germ or not, requires as factors of its development, a certain geographical area of the earth, a continued high temperature, and the congregation in dense community, of a large number of people, as in large towns and cities.

2d. That it is not the simple fact of people living together in large numbers which furnishes this last factor, but the violation of hygienic law likely to result from such massing of humanity, in the accumulation of their filth—*a universally acknowledged cause of disease.*

3d. That whatever the essential nature and precise origin of yellow fever may be, it can only be prevented or suppressed by removing or by neutralizing one of its factors.

4th. That foul accumulation and its decomposition is the only one of its factors over which we may exercise control. We may remove this entirely, we may check its decomposition, or we may neutralize its products; to do any one of these is tantamount to accomplishing the others. It is the same in effect to clean a privy absolutely, to freeze it, or to disinfect it. The amount of disinfection required is in direct proportion to the quantity of decomposing matter, and high range of diurnal mean temperature.

5th. That the specific cause of yellow fever is localized and is not borne about by the wind, but radiates continuously from its

point of origin or of first appearance, traversing surfaces, particularly of the soil, but not of water (as rivers or lakes). It is readily transplanted through fomites, as in the garments of the sick, as well as in the recognized methods along the highways of commerce by ships and other carriers of merchandise. In regard to the transmission of yellow fever, it is almost impossible to determine the boundary line in some instances between infection, strictly speaking, and contagion.

6th. That carbolic acid not only retards decomposition and modifies its products, but seems to destroy directly the yellow fever infection, and in order to accomplish this, it is not essential that all surfaces be subjected to the actual contact of the disinfectant. Its destructive influence seems to extend even beyond the limit of actual contact of the acid solution. Completeness of application, however, should always be aimed at.

Finally. That when the suppression of the disease is to be accomplished by disinfectants, these are to be thoroughly applied from the first moment of alarm. There must be an absolute parallel between the management of this disease and the management of fire.

The Board of Health is the central office; each physician, having at heart the welfare of his fellow citizens, constitutes himself, as it were, an alarm box. The first occasion of alarm is made known to the Board. Symptomatic evidence sufficient to establish a reasonable presumption should be communicated, or at least made the occasion for a consultation. If further observation strengthens the presumption, it is but right that the Board should be possessed of the opportunity of adopting such precautionary measures as may be deemed necessary.

Disinfection to limit the disease, may always be accomplished without offence or injury to the patient.

A frank expression of truth should always predominate over every influence, from whatever quarter it may be brought to bear. This will establish a perfect reliance in our statements, at home and abroad.

And now, a few words to the medical profession particularly. In an enlightened sanitary system, the physician is peculiarly the custodian of the public health. Of what use are all efforts to prevent the epidemic prevalence of any malignant infectious disease, unless the physicians themselves promptly report its existence in its incipiency, whether suspected or determined.

As in the case of fire, the only hope of extinguishing a pestilence is in the very earliest knowledge of its appearance. Every hour of delay lessens the ability to combat and suppress it. Thus, we perceive, one of the highest interests of the community rests directly with the physician. And in seasons of danger, he has no right to remain silent even upon a reasonable suspicion of a malignant infection. The question at issue is not a personal one, but concerns the entire people.

There is abundant reason to believe the time is not remote, when a general epidemic of yellow fever in New Orleans will be as unlikely to happen, as another visitation of plague in London, or the decimation of Paris by small-pox.

A REMARKABLE CASE OF OVARIOTOMY, WITH REMARKS UPON THE OPERATION.

BY J. F. HEUSTIS, M.D.,

Mobile, Ala.

Mrs. M., æt. 25, married five years, but never pregnant; of small stature, and emaciated; complexion sallow; general health good, except amenorrhœa or irregular menstruation since her marriage. About two years ago first noticed enlargement of her abdomen, which had become very large in the latter part of 1875. She came to Mobile for medical advice, and was seen by me for the first time on the 2d of March, 1876. Her abdomen at that time was very much enlarged, and the enlarged superficial veins ramifying over its surface told how the pressure of the tumor was interfering with the circulation of the deeper veins. The whole surface of the abdomen was smooth, and upon palpation produced the impression of containing a thin liquid. No nodules could be felt. The womb occupied its normal situation and was freely movable.

Ovariotomy was advised as the only hope of cure, but she could not make up her mind to have it done at once. So, to lighten her of her load and render her more comfortable, she was tapped with the largest tube of Tieman's Aspirator, and several gallons of a whitish gummy liquid were drawn off. After the tapping, there remained a considerable enlargement

of the abdomen, showing that the tumor was not unilocular as first supposed.

She returned to her home, about a hundred and fifty miles distant, by rail on the same day, experiencing no bad effect whatever from the tapping.

On the first of May she returned to the city to be operated on. The enlargement of the abdomen was fully as great as in March. Except a sallow complexion and an emaciated appearance, her condition was favorable for operation, particularly as she was cheerful and sanguine of a successful issue.

She took three compound cathartic pills at bed time, which not operating sufficiently next day, were followed by Seltzer Aperient—evacuating her bowels.

About eleven o'clock next day (May 3d) she was given a grain of opium in pill, the hour appointed for the operation being noon. But at the last moment she broke down from her cheerful and courageous mien, and it was half past twelve before the operation was begun. There were present Drs. Ross, Ketchum, Gaines, Owen and Scales, and Mr. Robt. Barnewall, medical student in my office. Dr. Ketchum administered chloroform. There was more than usual time spent in bringing her under its influence, and some excitement and vomiting before anesthesia was produced. The catheter was passed, but her bladder was empty.

The temperature of the room at the beginning of the operation was 76° Fahr., and it was kept at this throughout. The instruments used in the operation were a large scalpel, a tenaculum and director, a large and heavy Thompson's sound, Spencer Well's trocar and clamp, three very soft and clean sponges, a hank of soft white linen thread, two large needles, silver wire, and a Sims' self-retaining catheter. An incision about three and a half inches long was made through the skin, and the tissues were divided on a director, after being raised with the tenaculum, and a small incision made for the entrance of the director. This unusual care was taken on account of the evident thinness of the abdominal wall and the entire absence of fat. The tension of the abdomen prevented the use of forceps, which otherwise would have been preferable to the tenaculum for raising the different layers of tissue. It was well this care was taken, for the cyst was found to be adherent to the front wall of the abdomen and unrecognizable by any lustre. Adhering not only all along and around the incision, but extending far

upwards to the epigastrium. It peeled away easily, like the skin of an orange. After separating all adhesions near the incision, the hand was passed in and between any remaining portions felt adherent, and this was followed by the sound which was made to sweep over the surface of the tumor and make the separation complete. The cyst was then tapped with the trocar, with tubing attached, and about five gallons of thick, white, starchy looking fluid withdrawn. After the flow of fluid had ceased there still remained a large uneven tumor, which was discovered to be made up of a number of other tumors at the back part of the main cyst. The trocar was withdrawn and an incision made into the cyst large enough for the hand to enter; which was carried in, and the other tumors bored into with the finger, thus evacuating them through the main cyst. This effected sufficient diminution for the whole mass to be drawn through the small opening. There were seven tumors, varying in size from a child's head to an orange, besides the great one occupying the whole front part of the abdominal cavity. By evacuating them through the main cyst, the necessity of enlarging the abdominal incision was avoided. The pedicle was long and of about two fingers' breadth. It was clamped close to the cyst with the clamp, and the collapsed sac cut away close to it. A quantity of the cystic fluid had flowed into the abdominal and pelvic cavities and was rapidly sponged out with sponges squeezed out of hot water. After all oozing had ceased and all blood had been carefully sponged away, the abdominal wound was closed with silver wire; the wire was threaded on a needle at each end, which was passed from within outwards, through the peritoneum and whole thickness of the abdominal wall. One suture drawing the lower angle of the wound together, then the pedicle placed on it with the clamp outside the abdomen, and another suture close above the pedicle, but allowing a little space to prevent strangulation of it; and above this were four others, near enough together to effect perfect apposition of the whole wound. No superficial sutures were passed, the abdominal parietes being very thin, and the apposition so perfect as not to require them. No plaster or bandage was used, the abdomen being perfectly flaccid, and so deeply depressed as to seem utterly void of contents. While the sutures were being passed, a fine sponge was kept between the edges of the wound to prevent the flow of any blood into the abdominal cavity; and as the space became too

small for the sponge, a skein of soft linen thread was made to effect the same purpose.

The pedicle projected fully an inch beyond the surface of the abdomen, the clamp lying crosswise. As soon as the operation was finished, the flannel drainers which had been put on by my direction before it, and which were thoroughly soaked and wet with the fluid that had run out from the smaller cysts when they were opened, were taken off, the legs and body wiped dry, a dry blanket placed under and another on the patient, and hot bottles put to her feet. Her pulse showed but very little nervous shock. For, although the operation was tedious, on account of the necessity of waiting until all oozing of blood had ceased, the abdominal cavity was kept closed from the air by soft sponges squeezed out of hot water pressed in on each side of the pedicle, and the abdominal wall pressed closely against them. As soon as she aroused sufficiently from the chloroform to swallow, she took two grains of opium in pill and some brandy toddy, and shortly after some aromatic spirits of ammonia. Dry clothing was put on her, and she was lifted gently into bed. Her pulse soon became steady, and she expressed herself as feeling comfortable, except some nausea and depression from the chloroform, for which she was directed to suck small pieces of ice and take a little iced brandy toddy.

At 5 p. m., about two and a half hours after she was put to bed, her pulse was 96, temperature 99°. A Sims' catheter was put in her bladder. At 10 p. m., pulse 100, temperature 99°; no pain; ordered a grain pill of opium to be taken every hour if unable to sleep. Saw her at 6½ a. m. next morning, being called up early to see another patient. She had passed a good night after taking two opium pills, vomiting once from the chloroform; pulse 88, temperature 98°. She was directed to take a grain of opium every six hours (or three times a day), and an additional grain or two at night if not disposed to sleep well, and confined to a diet of beef-tea and milk. The opium acted very well throughout, keeping her in a state of tranquility and sleeping a good deal. Only on one or two occasions did it become necessary for her to take an additional pill at night. The secretion of urine was free and perfectly healthy. Her milk and beef-tea were taken with relish and agreed with her, and it was not until after her bowels were moved, on the ninth day, that she began to take solid food.

During the whole course of her treatment her pulse and temperature remained normal; pulse 88, temperature 98° and 99°. At no time did the temperature rise above 99°, or the pulse above 100. Generally it remained steadily as stated. The catheter was removed every morning and washed clean, and kept out three or four hours, to avoid too much irritation of the bladder and urethra, and then replaced. A small, deep oval dish, placed close under the discharging end of the catheter, was found most convenient as a receptacle for the urine. For, in my experience in the treatment of vesico-vaginal fistula, the fixing of an india rubber tube to the end of the catheter adds too much to its weight, and by its traction tilts the vesical end too much and irritates the bladder. It is best without. The catheter was discontinued on the 5th day, and she had no trouble in passing her urine without its assistance. By the 9th day the surface of the abdomen had changed from depression to slight prominence, indicating some fecal accumulation, and a mild aperient, followed by an enema, was administered, moving the bowels once. After this she was allowed to eat at discretion, and the opium was discontinued. On the 10th day five of the stitches were removed.

On the morning of the 11th day the clamp dropped off. During the time it was on, the part enclosed by it and adjacent was washed clean morning and evening, and kept covered with lint soaked in glycerine. Previously to the separation of the clamp, there was a profuse discharge of fetid serosity from the pedicle, which becoming serious, the pedicle was painted over with solution of perchloride of iron; much to my regret, for it brought on some pain, which ran down the left thigh and leg, and caused a shock that for a short time was alarming—the pulse becoming slow, the skin cool and the expression anxious, necessitating the administration of a stimulant and the application of heat to the feet. No bad consequences resulted, however, and reaction was soon restored. The pedicle was rendered very firm, and for a while was dry; but in a few days the hard coating peeled off, and there continued to be the same offensive exudation. The iron had stained the skin brown, and destroyed the plating of the clamp. The dressing of the pedicle, before the separation of the clamp, was effected with two pieces of lint drawn under the clamp on each side around the pedicle, and the upper portion spread out over it. On the morning after the clamp dropped off,

another suture close above the pedicle was removed, which had been hidden from view by the clamp.

The stump of the pedicle retracted considerably after the removal of the clamp. One small spot deep down on its right side looked dark, and this slough in separating caused some hemorrhage in the evening of the 12th day. Cobweb was pressed in around the stump where the oozing came from, which immediately checked it. It was removed next morning, and there was no further appearance of blood, but some unpleasant odor. Glycerine and carbolic acid (one drachm to the ounce) was dropped around the stump of the pedicle and sponged away, cleansing it completely. Lint dampened with the same was laid over it. This dressing was continued morning and evening during the remainder of the treatment, the stump of the pedicle rapidly diminishing in size, until it became a mere papilla, not larger than a pea, suppurating less and less, drawing into the abdomen like a navel. After the movement of her bowels on the 9th day they remained costive until the 14th day, when she with difficulty got them to act, after several doses of aperient medicine and an enema.

On the 14th day she felt so well she sat up at the window several hours, but for fear the recently healed wound might yield from the pressure of the bowels upon the relaxed abdominal walls, she was forbidden to sit up again until the 21st day. After she was permitted to get up, she considered herself sufficiently well to return home, and it was with difficulty she could be induced to remain three days longer. During the three days preceding her departure she was up and dressed, and on the evening of it, which was the 24th day after the operation, she walked to the street car, about a hundred yards distant from her boarding house, and rode to the railroad depot. She had been taking citrate of iron and quinine after the opium was discontinued (5 grains three times a day), and continued to take it after her return home until her strength was fully restored.

She wrote to me that she did not feel the least fatigue from her journey, "was up early next morning and walked all over the yard and garden." Since then, her husband has written that she is quite well.

The points that contributed to such remarkable success in this case deserve notice. They were these: Operating while the general health was still good; selecting a favorable season; pre-

serving a temperature of 76° during the operation, and preventing the injurious effect of prolonged exposure of the abdominal cavity to the air, by closing the wound with soft warm sponges, until all oozing of blood had ceased. Making a small incision (of not more than 3½ inches), and withdrawing the contents of the smaller cysts through the larger ones, and so reducing the size of the mass as to permit it to be drawn through the small opening—using the clamp for preventing hemorrhage, and keeping it outside the abdominal cavity. The careful removal of all cystic fluid and blood from the abdominal and pelvic cavities before closing the wound; passing the sutures for closing the incision through the peritoneum and whole thickness of abdominal wall, and not pressing with them too tightly on the pedicle. Keeping the bowels perfectly quiet with opium for eight days, having emptied them immediately before the operation, and preventing a too rapid refilling of them by restricting the patient to a liquid diet of beef-tea and milk. Keeping the urine drawn off with a Sims' self-retaining catheter for the first four or five days, which is less inconvenient than repeatedly passing the common catheter. After opening the bowels, allowing the satisfaction of the appetite for food—giving citrate of iron and quinine to restore the strength and blood, after the ninth day; preserving cleanliness, and preventing all unpleasant odor of the pedicle, by the application of glycerine and carbolic acid; retaining the sutures in situ until after the movement of the bowels.

To establish the value of these points, they will be separately considered.

It requires no argument to prove that an operation is more likely to be successful when the general health is good. This applies to all operations, and there is no reason why ovariotomy should be made an exception. The danger of the operation has deterred many from it until the health begins to break down, and the choice is made when the fear of a speedily approaching death makes it a dernier resort, when the vitality of the body is too shattered for recuperation. Besides the failure of health and vital power, the tumor is apt to become multilocular and adherent, and the contents of the cysts thicker and even semi-solid the longer they remain, thus increasing the danger of removal.

In such a disease as ovarian cystoma, it is always possible to select the most favorable season as regards healthfulness and

temperature; and in an operation of such danger it is certainly our duty to give this additional chance of success.

The preservation of a temperature of 75° or 80° during the operation is important, to prevent the shock likely to be induced by the exposure of the abdominal cavity to a low temperature; and when, as is usually the case, the operation necessarily requires an hour or more for its completion, this exposure must be prevented as much as possible. Pressing in a large, soft and warm sponge on each side of the pedicle, and pressing the edges of the wound closely against them, not only excludes the air from acting injuriously, but absorbs any oozing blood.

The statistics of the operation show that its success is materially influenced by the size of the incision. A small one, being attended by less shock and making a smaller demand upon the reparative powers of the system, is more likely to heal rapidly and kindly. This being the case, it is better not to enlarge the incision for the removal of the tumor, but after evacuating the main cyst, open it sufficiently to pass in the hand, and by boring with the finger into the others, evacuate them through it, so that they may all be drawn through the small abdominal opening.

The use of the clamp for the prevention of hemorrhage from the pedicle, and keeping it outside of the abdomen, robs the operation of its greatest danger. For in this way the injurious effect of the decomposing secretions from the pedicle is entirely prevented. If they escape into the peritoneal cavity, peritonitis and septicæmia are most likely to occur; and although the patient may be saved by washing out the abdominal cavity and preserving drainage, it is infinitely better to prevent such necessity.

If the quantity and fetor of the secretion from the pedicle are at all the same if it is dropped inside as when kept outside of the abdomen, it is a marvel that any patient should recover. In this case the clamp was narrow, and the pedicle cut close to it; but the quantity and offensiveness of the secretion were very great. It could have made but little difference if the ligature had been used; and even the separation of the eschar following the actual cautery must be attended by some discharge and inflammatory action that might spread or cause dangerous adhesions to occur.

Miner's plan of enucleation holds out the best security against septic trouble, as the vitality of the mass is retained; but even

here the apron-like covering may contract adhesions to the intestines, and produce trouble at some future time.

As the presence of any foreign substance in the peritoneal cavity is apt to cause peritonitis, or septicæmia, too great care cannot be taken to remove all cystic fluid and blood, and to prevent any blood entering the abdominal cavity during the closure of the wound. The inclusion of the peritoneal lining of the abdomen in the suture enclosing the wound is of much consequence; for being a dense tissue, it retracts considerably from the rest of the cut, and if not included in the suture, there will be a wide margin of raw tissue to heal by granulation; and as granulation is attended by suppuration, this is likely to lead to the same consequences as the presence of any other foreign substance. To guard against peritonitis, the bowels must be kept perfectly quiet for eight or nine days, by giving a grain of opium (made into a pill with an equal quantity of castile soap) three times a day. And besides its effect in this manner, it keeps the nervous system in a state of tranquility, which also conduces to recovery.

In order that the bowels may be kept from movement without injury to the patient, it is necessary that they should be emptied beforehand, and that only such food be given during the time they are locked up as makes the least fecal accumulation.

Any movement adjacent to the wounded parts must be avoided, and for that reason, the retention of a Sims' catheter in the bladder for four or five days is advisable, removing it for several hours every morning to avoid too much irritation of the urethra and bladder.

After the bowels have been opened, there is no further need for a reduced diet, and the patient will recover more rapidly if allowed to eat such wholesome food as she is accustomed to and in sufficient quantity to gratify her appetite.

The administration of five grains of citrate of iron and quinine three times a day, after the discontinuance of the opium, assists very materially in restoring flesh and blood, which generally stands much in need of building up in such cases.

The use of carbolic acid and glycerine (one part to eight), by keeping the pedicle and parts adjacent free from all unpleasant odor, must have a beneficial effect upon the part and system. And finally, to secure apposition and firm union of the incision,

it is best not to remove the sutures (which should be of pure silver wire) too soon, but leave them until the bowels have been opened, to secure against separation of the wound by the straining efforts at evacuation.

CLINICAL CASES.

BY DR. A. PETTIT.

Case 1. The following case is intended to illustrate the caution with which ergot should be administered in cases of mis carriage or abortion.

Was called to see a woman who was flooding; she denied being pregnant, and stated that she had just lost a child two and a half months old. I made a vaginal examination, and extracted from the os a small, but entire placenta; ordered a drachm of fluid extract of ergot which was to be repeated in case of further flooding; saw the patient again next day, and though there had been no more flooding, ordered a repetition of the ergot and discharged the case. I was called again in the evening and found my patient flooding violently; made a vaginal examination, and extracted from the os a fragment of another placenta; could not obtain the remainder, as the os was not sufficiently dilatable. I now tamponned the vagina, and ordered repeated doses of ergot; next day, removed the tampon, extracted other fragments of placenta, washed out the vagina, renewed tampon and continued the administration of ergot. The flooding kept up for several days, small pieces of placenta being expelled from time to time, and gave me much trouble and some anxiety.

Had I been more cautious in the administration of ergot at first, the second abortion might have been avoided. A plural pregnancy is always possible, and may sometimes be the cause of abortion or miscarriage.

Case 2. Was called by a midwife to see a negro woman who had had a miscarriage. She stated that after the passage of the fœtus the pains ceased, and she had not been able to procure the after-birth; there had been no flooding. On making a vaginal examination, I found the cord protruding from the os, which was soft and dilatable. Neither being willing to leave the

woman in this precarious condition, nor to consume much time in a case that would probably not be remunerative, I concluded, without making a more minute examination, to pass my hand into the uterus and deliver the placenta manually; I introduced my hand without difficulty, but found the placenta so firmly attached that I experienced some difficulty in separating it by sweeping my extended hand between it and the uterine wall. While grasping for the placenta to extract it, I discovered another fœtus. Thinking now that I had irritated the uterus too much to risk leaving the second fœtus, I concluded to deliver it at once, which I did without trouble; but on delivering the second placenta I discovered a *third* fœtus, which I then delivered with the placenta and membrane entire. I laid the last delivery on the floor, and the fœtus swam around in the liquor amnii quite vigorously. To insure the woman against hemorrhage, I ordered a drachm of Squibb's ergot, which was to be repeated if required. She made a good recovery and was glad to be rid of her pregnancy.

I suppose the apparent adhesion of the first placenta was due to the fact that the uterus had not contracted sufficiently to have even loosened its normal attachment. I regretted having acted so hastily in this case. Had I taken time and made a more thorough examination, I would probably have discovered, or at least suspected, a plural pregnancy, and pursued a different course; would have pinched off the cord just within the os and left the rest to nature, trusting that the retained placenta might undergo fatty degeneration and absorption, or at least be retained in utero until full term without undergoing decomposition.

This case occurred in June 1875. I have been reliably informed that during the December following she had a miscarriage of twins, and gave birth to a living seven months child the next September, thus giving birth to six children or fœtuses in fifteen months.

Case 3. Was called by a midwife, June 14th, 1876, to see a negro woman who, she stated, had had a miscarriage at a little over six months of gestation: fœtus and placenta had both been passed. She also sent me word that there was another child in utero which she had not been able to deliver, as uterine action had entirely ceased. The born child breathed and lived several

hours. On arriving I made a vaginal examination, and discovered a soft patulous os and a moderate flow of blood; there had been considerable flooding, and the midwife had administered a drachm of tincture of ergot. There had been no pains since delivery of the placenta. Ocular examination of abdomen assisted by palpation revealed a very large uterus with two distinct protuberances. I felt satisfied that there was one, and probably two more children in utero. On auscultation I heard placental souffle, but no heart sounds. I used great care in my examination, fearing that I would excite uterine action and bring on another miscarriage. I ordered patient to be kept very quiet in bed, that she should take twenty drops of Squibb's ergot, be closely watched, and that in case of a return of the flooding the ergot should be repeated in doses, the size and frequency of which should be regulated by the amount of hemorrhage. Saw patient again next day and found her in a most favorable condition; there had been only very moderate pains, no flooding of consequence, and she had taken only two twenty-drop doses of ergot. I ordered moderate diet, cooling drinks, and rest in bed for ten days. Saw her again on the 30th of August; she had had no further trouble, seemed quite large, and said she felt life very perceptibly; expected to be confined on the 3d of September or thereabouts. About the last of September I called to see her again; she met me at the door with a very significant smile on her face. I asked for the baby, and was answered that she had had none, which at first seemed incredible, but on being reassured by her that she had had none, I requested an examination, which she readily granted. I discovered two fibroid tumors of moderate size, which evidently had been the cause of the miscarriage and undergone involution *pari passu* with that of the uterus itself.

Case 4. Was called to attend Mrs. M— in her first confinement; said she was only eight months gone; had a natural labor except that there was some antepartum hemorrhage, due in all probability to the placenta being located near the internal os; was delivered of a small, delicate and evidently premature female child. On the third day I was told that the child had had no action from its bowels; ordered a teaspoonful of sweet oil, and that it be repeated in three or four hours if required. On the fourth day, its bowels not having been moved, I ordered a teaspoonful of castor oil, which was to be repeated in three or four

hours if required. On the evening of the fourth day the bowels not having responded to the oil, I ordered an enema of soap and water; this on being administered was immediately returned by the side of the nozzle of the syringe, not seeming to penetrate the bowels at all. I now instituted an examination of the rectum, and found that my finger could only penetrate about an inch and a quarter, at which point the rectum seemed occluded. On the fifth day got Dr. W. H. Watkins to see the child with me: we made a careful examination, found the rectum as described above, and a soft tumor pressing down from the right side; this we took to be the colon and punctured it, first with a small bistoury and then with a trocar; obtained a little blood but no fœcal matter; a little blood also flowed from vagina which we no doubt punctured. Skin became very much jaundiced, abdomen tympanitic, and the child so emaciated as to seem even smaller than when born. It died on the seventh day, but unfortunately no post mortem could be obtained.

Case 5. Was called to see a negro woman who was thought to be in labor, though she had only completed six months and one week of gestation: found her sitting up in bed complaining of a *most violent* headache, severe abdominal pains, and almost constant vomiting; had been suffering thus two days and nights; bowels constipated, and feet, legs, hands and arms anasarcous. I made a vaginal examination, and found the os undilated and no evidence of uterine action; ordered cathartics, warm baths and chloral mixture, but prognosticated convulsions before remedies would have time to act. In less than half an hour I was recalled and found patient having most violent convulsions; repeated my former instructions except as to baths, and ordered a warm vaginal douche to be administered every hour, each douche being kept up a half hour continuously, a rest of only a half hour being allowed between douches. In about eight hours I returned and delivered the woman of a very small, delicate looking male child, which was born asphixiated, the cord being wrapped several times very tightly around its neck. After long continued efforts I succeeded in resuscitating it, but did not expect it to live more than a few days at furthest. The mother made a good recovery, and the child is now ten months old, and though delicate looking, seems to be thriving. A remarkable thing about this woman is that being only thirty-five years of age, she has undergone the function of parturition nineteen times, giving

birth to nineteen children at full term and one four months fœtus. At one of her labors she bore twins. Of the nineteen, three were males and sixteen were females; six are living and ordinarily healthy. Of the thirteen dead ones, two were still-born, four are supposed to have died of general debility within a week of birth, two of marasmus, one of whooping cough, one of tris-nascentium, two of measles, and one of poisoning from creosote. The youngest child, of which I delivered her, had an extraordinary exfoliation of the skin, particularly of the soles of the feet, and a vesicular eruption over the body: though I could obtain no history of a syphilitic taint, inasmuch as there had been two still births and four deaths at a very early period of life, presumedly from general debility and marasmus, I ordered the last child to be rubbed with mercurial ointment twice a day for a considerable period of time When six months old it had a derangement of the bowels which lasted about a week, during which time it had every twenty-four hours from three to eight or more convulsions, clonic in form but of mild character: when the derangement of the bowels was corrected the convulsions ceased. The mother had convulsions immediately after the fourth and seventh labor, and before and after the nineteenth. Her husband is thirty-eight years of age, and claims to be the progenitor of all these children.

The most remarkable thing about this woman is that she has two distinct nipples on each breast, the supernumary ones being rudimentary, but with distinct areolæ around them. They are situated above and to the outer side of the normal ones. When the child is nursing from the perfect ones milk trickles from the rudimentary ones, so that the mother has to protect the child's face with a napkin.

Case 6. Attended a lady who, after a natural labor, was delivered of a large, healthy looking male child. There was nothing abnormal in the appearance of the cord, which I ligated as usual. About three hours after leaving the house I was called back, and found that there had been a severe hemorrhage from the cord. There was no bleeding when I arrived, but though the ligature seemed sufficiently tight, I placed another behind it. There was no more bleeding at that time, but on two occasions after the dropping of the cord there were slight hemorrhages from the umbilicus, for which I used the topical appli-

cation of the solution of perchloride of iron. The child survived and did well.

Case 7. Was called to see an infant three days old. It presented a good appearance as to health, but had just had a severe hemorrhage from the base of the undetached cord; there had been no bleeding from the distal end of the cord. I wrapped the base of the cord with linen saturated with the solution of perchloride of iron, and ordered one drop of the muriated tincture of iron and five of Squibb's ergot every two hours. There was no return of the hemorrhage then or thereafter.

Case 8. Was called to see a negro child eight or ten days old, which was having a severe hemorrhage from the umbilicus; tried the topical application of solution of perchloride of iron without success, then transfixed the umbilicus with two pins and wrapped them tightly with silk; this controlled the hemorrhage for awhile, but the child ultimately bled to death.

Case 9. Was called during the night to see a child about eighteen days old, which presented a very anæmic appearance. Father stated that at birth it seemed healthy and promising, but that on two occasions after the dropping of the cord it bled profusely from the umbilicus—afterwards from the skin on the right side of the chest, and then from the right and left temple. After this a large blood tumor made its appearance on the left wrist. The seat of hemorrhage on the right temple was covered by a little desiccated blood about the size of a pin's head, and the seat of hemorrhage from the left temple presented a little rosy spot about the same size. There was no apparent solution of continuity of the skin. The left wrist presented a large blood tumor, the skin covering of which was dark and seemed about to sphacelate. There had also been some hemorrhage from the throat, which on being examined presented a dark, apparently hemorrhagic tumor on the edge and above the right soft palate. The father now told me that his family physician was attending on the child, but that having tried unsuccessfully to get him to open the tumor on the wrist, he had sent for me. I told him the child would most probably die any how, but that the use of any cutting instrument would insure and hasten its death. He told me afterwards, that on the next day his physician yielded to his importunities and lanced the tumor, after which the child bled to death. I think the frequent administration of small

doses of iron and ergot, and the application of a compress of carbolized glycerine to the tumor, would have been a treatment worthy of trial. I made inquiries as to the health of the parents. They both looked well, and I could find no reason to attribute the bad nutrition of this child to constitutional taint. They gave healthy histories, and had had several other children who enjoyed invariable good health.

A CASE OF CEREBRO-SPINAL MENINGITIS, WITH REMARKS.

BY WILEY K. FORT, M.D.

Mrs B. is about thirty years of age, large and healthy in appearance. She is the mother of four children; the youngest is a healthy male child, who was six months old at the time she was taken sick. The child was nourished both by the bottle and mother's milk. Mrs B. had usually enjoyed good health. Six years prior to this illness, she had an attack of puerperal mania soon after a confinement, of which she quickly recovered. She is a lady of more than mediocre intelligence and cheerful disposition. Her grandfather on father's side was a man of distinguished talents. I could discover no inimical hereditary tendency. She was not afflicted with intestinal or uterine disorder. No cause for metastatic affection or tubercular diathesis could be suspected. She was not feeling quite well for a few days previous to her attack, which was attributed more to anxiety of mind on account of her mother's welfare, who was sick at that time in a distant State. Mrs. B. was taken so ill on the night of the first of January, 1876, that I was called to see her about the hour of midnight. The following diary will suggest some idea of her condition. She is quite restless; head hot; temperature, generally, is a little above normal; pulse about 72; complains of pain back of the head, neck, and down the spine. Her feet and legs are cool; bowels inactive. I prescribed a powder composed of calomel, grs. xii; sodæ bicarb., grs. vj.: take at once. A solution of bromide of potass, ʒvj.; water, pure, ℥viij., a tablespoonful, diluted sufficiently, every four hours. Warm turpentine is applied to the back of the neck and spine; warm foot-bath, with mustard in it. Feet and legs are rubbed with dry mustard; cold applications to the head.

Second day, 9 o'clock a. m., pulse 95; breathing 25, with a slight effort. Complains of feelings of heat, succeeded by cool

or chilly sensations alternately. Head is hot; conjunctiva injected. Pain of the head extends down the neck and spine, which is decidedly increased by tapping or pressing on the spinous processes of the cervical and upper dorsal vertebræ; slight moisture of the skin, with rather cool extremities. Light and noise are becoming more intolerable. Tongue is of a whitish yellow color, and swollen; difficulty of speaking and deglutition; occasional vomiting and frequent retching. Fugitive pains are located first one place and then another. Hyperesthetic condition is decided. Answers questions with effort, correctly, but is conscious of disturbed intellect. Bowels have moved but very indifferently. Four compound cathartic pills are given. The bromide of potassæ and applications are continued. Four o'clock p. m.—Bowels have moved, but not copiously. All the symptoms described in the morning more intense. Blister is applied to the base of the head, extending down to the third dorsal vertebra. Ice is continued to the forehead, and warm applications to the feet and legs. Bromide of potass. is also continued. Nurse is instructed to give a dessertspoonful of Rochelle salts early in the morning, if the bowels have not acted.

Third day, 7 o'clock a. m. Patient was restless through the night; blister drew well; bowels have not moved freely; temperature of surface slightly increased; pulse 135; respiration 34; pupils slightly contracted; light and noise very distressing; room is kept as dark and quiet as possible. Pills composed each of calomel, grs. ii., compound extract of colocynth, grs. iij.—two pills three hours apart, followed by assafœtida enemas, till the bowels are freely moved. 12 o'clock, same day.—Bowels moved quite freely; very little change in symptoms. Patient takes a little nourishment, but cares little for it. Applications and solutions of potass. are ordered to be continued. 8 o'clock p. m.—Found my patient with highly excited mind, talking wildly and irrationally; head tossing on the pillow; pulse 165; respiration 42; temperature higher; frequent efforts to vomit; can keep nothing on the stomach; hands frequently clasped over the head; calling and screaming loudly for things and persons about the room; symptoms indicative of convulsions; skin alternately dry and moist. I do not hesitate to cord the arm and bleed profusely; 40 or more ounces are taken; her pulse becomes less frequent and grows stronger as the dark stream flows copiously from the arm. Her breathing becomes less oppressed. I would

bleed to syncope were her head excitement less threatening. Pulse is reduced by bleeding down to 115. The blood coagulates firmly, with a yellowish serum on top. Patient is not so much excited and appears more rational. Order now a solution of chloral hydrate, ʒiij., bromide of potass., ʒvj., water, ℥viij.: tablespoonful, sufficiently diluted, once in three hours. Beef essence occasionally.

Fourth day, 8 o'clock a. m. Patient slept a little, and woke up with much agitation and excitement of mind a few hours after the bleeding. Temperature is lower; pulse 120; respiration 34. Vomiting has ceased. Tongue whitish and moist. No indication of ptyalism, although up to this time she has taken a large amount of calomel. Patient took more nourishment this morning with apparent relish than at any previous time. Yet, although an improved physical condition is manifest, her mental excitement now begins to assume a more aggravated form. Her perturbation is fearful to behold. Shouting, screaming, singing, calling loudly for first one person and then another, incomplete ideas, deformed ghastly fragments, the shadowy dreams of an abnormal brain, is the sad condition now presented. The active force of meningeal congestion with inflammatory excitement is arrested, but the *sequence is mania.* Patient now pays but little attention to anything said or done—added to extreme obstinacy, renders it almost impossible to any longer exhibit medicines or nourishment with any regularity or correctness.

Fifth day. All febrile excitement is absent. Respiration and pulse continue to improve. Restlessness and want of sleep are to some extent combatted by hypodermic injections of morphine; chloral hydrate, and bromide of potassæ, together in solution for the same purpose are exhibited, either by mouth or rectum, as chance permits. Lucid and more tranquil intervals gradually begin to appear with improved nutrition. This derangement of mind, with variable moods, continued for some seven or eight weeks, when her husband took her to sea. Her mind and physical condition instantly commenced to improve, and in two weeks' time she returned home almost restored to her normal state. A second trip was quite sufficient to place her on the high road to health. Eleven months have elapsed since her recovery, and she is now quite strong and appears to be quite well.

In cerebro-spinal meningitis, by whatever name described, and

however various the theories as to the nature of the disease, it appears that both the symptoms and the post mortem appearances indicate most generally lesions of the superficies of the cerebrum, cerebellum, and spinal cord, whether primary or secondary. The appearances of the investing membranes, and sometimes of the nerve-cells subjacent, where the disturbance has existed long enough, exhibit marked inflammatory characteristics. I believe sometimes, however, the overwhelming effect of the disturbed functions is so sudden and powerful, that death occurs before the legitimate results of inflammation are produced. This idea is strongly sustained by the almost total absence of inflammatory appearance of the nerve and brain substance and their superficies, as has been shown in *post mortem* examinations of cases which terminated fatally in 48 or 60 hours, as in some of the epidemic invasions which occurred years ago in Ireland. But where the patient has lived for days, weeks or months, the examinations have almost invariably revealed the impress of inflammatory action, either by deposition or change of structure, frequently both. The nerve cells subjacent to the meningeal inflammation are involved in the structural degeneration by the reflected action of the meninges, in close proximity. I think those who have apparently recovered, after much effusion has occurred by reason of meningeal inflammation, if carefully observed for a time after resuming their accustomed vocation or social relations, will often be found to manifest an abnormal and perverted nervous action, in some form or other, in a greater or less degree. It may be a good while after active excitement has subsided, but I believe sooner or later they will fall victims to nervous degeneration in some form. But should the effusion be inconsiderable, or the inflammatory excitement be cut short, the disorder will terminate favorably.

The symptoms of meningitis and encephalitis I hold (notwithstanding a contrary assertion has been made) to be variable in different persons, under differing conditions and circumstances, as to be so commingled sometimes, necessarily, that it is impossible to distinguish them apart. To determine the boundary line of inflammatory action of the superficies of the brain, and where and when the cortical substance commences participating in the excitement, would be a discrimination so fine and uncertain as to be practically useless in a therapeutical or surgical view, and such is the opinion of some of the best pathologists.

Happily it is no matter of moment in a practical sense. Meningitis, or inflammation of the brain, of an acute character, no matter where situate, demands practically the same rational treatment, varying with conditions of the person afflicted.

Causes are (or may be) predisposing and exciting. The only difference between these often consists in their degree of activity; for a predisposing cause may become exciting if its activity be sufficiently increased. Every circumstance capable of causing congestion, or of disturbing the balance between the arterial and venous circulation in the brain, becomes a predisposing cause of meningitis. How far the interconnection of mind and the physical organization react upon each other in producing physico-mental phenomena, is a subject so imperfectly understood, and is so subtile of comprehension, that up to this time it has baffled the researches of the most profound inquirers. Whether such knowledge is too vast for the grasp of mind is yet to be determined by the co-laborers of physiology. The labored researches of observers have been stimulated by the discovery that many forms of mania are directly traceable by symptoms of organic disease, the consequence of functional disturbance of reflex perverted sensibility. Impressions through the mind undoubtedly often produce physical effects. And although these impressions are to some extent to be combated by mental and moral processes, yet a fatal mistake would be made to ignore physical remedies which are in many instances most urgently demanded. I hold that the exciting cause *de novo* is to be kept steadily in view, but the result is to be taken care of by close attention to well-timed therapeutical measures. We can no more overlook therapeutically, hyperæmia of the meninges induced by mental impressions, than a hyperæmia established mechanically by a blow upon the head. Psychology and physiology are so intimately blended and connected in vital actions, that to disconnect their agencies would be destructive of the pathway which is to lead the vanguard of explorers to new fields of undiscovered knowledge. The connection of cleptomania, as a symptom of general paralysis, as pointed out by Dr. Maudsley, is certainly an important move in the direction of psychomental physiology. The opinions also very lately offered on the subject of aphasia are very suggestive in this connection. I doubt not, that hyperæmia in inflammatory excitement of the meninges and brain are frequently the result of mental impressions. Anato-

mical investigations show that insanity is usually the result of inflammation, or a state closely allied to it, as the exciting cause.

But at any rate, before meningitis exists, an irritation must be established, and that irritation may arise from an excess of irritability in the part independent of external circumstances, so that the ordinary habitual stimuli become irritant, as well as from influences without. Thus vomiting may proceed from gastritis. But it is generally under the influence of a new or additional irritation, that a part becomes awakened to the presence of irritating sources of which it was before insensible. Thus, an ineffectual purgative frequently develops the irritating influence of feces long accumulated in the cells of the colon; an excess of diet renders the urinary bladder sensible of the presence of a calculus hitherto latent; a fit of indigestion occasions irritation and excitement of a tumor, or other organic disease in the brain, producing a fit of epilepsy. It is through the medium of the nervous sympathies, probably, which produce what is called constitutional disturbance, that local sources of irritation are most frequently excited. Thus irritation of the bowels and womb is transmitted to the brain and spinal cord, and from thence develops its effects on the voluntary muscles, producing spasm and convulsive action. If the original irritation persist long, the reflected or second irritation may continue long after the first has subsided. Anything that disturbes the balance of the functions of the nerve substance is sure to be felt in the weak and disordered part, and a cause of irritation which may be long latent during the quiet and equal action of function, is thus called into activity by any general exciting influence. The operation of causes (and they constitute a numerous class, for contagious effluvia, malaria, septic, and other pestiferous influences may be added to the list) may be sufficient to arouse the inherent, latent, or hereditary excitant. The nature of this relation is obscure, as it is involved in the mystery of the properties of organized matter, and we must therefore rest contented to treat the condition till we have learned what we do not know.

As a sequence of irritation, if long continued, engorgement follows. In order for engorgement or congestion to take place, it is obvious that at least two opposite conditions must exist; either the arteries may carry to the affected capillaries the blood

in too large a quantity, or the action of the veins—the vessels of return—may be impeded. In either case *hyperæmia* is induced; but in one condition it is the hyperæmia of activity, and in the other of inaction. The remedy indicated can by no means be the same in both cases, as might be inferred. Let us not overlook the fact, that this same action or increased circulation may be one of the most potent direct causes of *paresis* of the returning avenues of blood to the heart. Then it can not be fairly doubted, that by diverting or reducing the abnormal and exciting blood-flow, that the hyperæmia is lessened or checked upon a sound pathological principle. For unquestionably, the more active the tissue stimulus to the vessels, the greater will be the degree of vascular *paresis*. In severe tetanus, it has been known to be sufficient to allow extravasation of blood in the affected nerve centre. When the tissue ceases to act abnormally, the vasal nerves regain force; the vessels again contract, and the blood supply is diminished. But if the tissue excitement be excessive and abnormal, if the functional power be lost in morbid and purposeless action, the nerves will remain in a state of paresis, the vessels relaxed, and the hyperæmia will be persistent. Fluid and corpuscles will exude and escape from the relaxed and enervated capillary walls, and inflammatory products make their appearance upon the connective tissue of the meninges. If I am correct, that the corpuscles of an inflamed part proliferate and generate exudation cells, we have a proof of the disturbed and disordered vitality of the affected part, which we made the prime motor of the inflammatory process.

I am satisfied also, that in proportion as the blood is diminished in quantity, or loses its healthy balance of solid constituents, the impressibility of sympathetic parts of the frame becomes augmented, and irregularities of circulation are apt to supervene, which give rise to hyperæmia. The meninges and brain under such circumstances would most probably be strongly impressed. This is illustrated in some cases of uterine hemorhage. After the woman has been rendered almost exsanguine, reaction takes place, and in the course of a few hours the physician in charge of the case is called to relieve phenomena which indicate general excitement of the encephalon—evidence of active congestion—which condition is most usually denominated *determination* of blood to the head. This condition has been induced by the loss of blood; the nervous impressibility becomes irregu-

larly performed, and affects the blood carriers of the encephalon most alarmingly. The meningeal excitement, from whatsoever primary or exciting cause induced, if accompanied with anæmia, is not to be relieved by extraction of blood, but by sedatives and soothing agents, which are adapted both for allaying vascular excitement and suppressing nervous erethism. I wish to be understood, by using the term hyperæmia, to mean simply congestion or distention of the capillaries, accompanied with the precursory condition of inflammation—as it were, the musketry engagement, just before the artillery of inflammatory action has fairly engaged. That a condition of aggravated hyperæmia may pass away without the supervention of inflammation can not be doubted. Congestion and inflammation pass so gradually into each other, that they are necessarily always combined as before stated. It would be a difficult and uncertain task to determine an exact line of demarcation between them, particularly in an organ so concealed as the brain. If, however, the conditions I have just mentioned in hyperæmia continue to advance in a more intense degree, the contractility of the capillary vessels of the pia mater and arachnoid is paralyzed by over-distention, effusion of coagulable lymph and serous fluid, destructive structural and functional changes which end the drama quickly; or if powers of resistance and vitality be great, an effort of resolution is made, but which I above stated, I believe will eventually terminate in destructive degeneration of the nerve cells, ending at last in death to the wretched sufferer. I would except such cases of meningitis as children of strong and healthy frame.

I have stated that I bled in this case of meningitis, and bled profusely, forty or more ounces of blood having been taken at this only detractus. For I hold as a rational treatment, that where or whenever the blood carriers are under distention, so that due motion of blood and function of part depending on motion of blood for function is disturbed, abstraction of blood is the most legitimate and direct remedy, where the sthenic action of the system is sufficient to sustain the measure. Because I have proven by established physiological laws, that the condition resulting directly from hyperæmia or congestion of the superficies of the brain and spinal cord must be removed, either by efforts of nature or abstraction of blood, or the resulting detritus consequent must end in death most usually. The older surgeons and physicians of a half century back clearly under-

stood the necessity of blood-letting, where the conditions demanded it. They did not hesitate to take blood in lightning-stroke and sun-stroke, and they saved their patients, where we of the present day often dally and stand upon uncertain theories and let the patient die. The surgeons of a former day recognized in lightning and sun-stroke the paralyzing of the nerve centres, resulting in congestion of right side of the heart, which they rationally and often successfully removed by promptly using the lancet. The reaction in opposition to bleeding set in thirty or more years ago very decidedly against the accumulated experience of ages, and I do not doubt but with some good grounds of reasoning. But popular movements in medicine, like many other things, go a step beyond justifiable and conservative views. I would not be understood to encourage bleeding empirically in all conditions, and like the fabled vampire, suck the living current until the vital powers are dried.

MISCELLANEOUS.

[By an unfortunate accident, a portion of the manuscript of a valuable original article by Dr. Sternberg, Surgeon U. S. Army, has been lost. We expect it will be replaced so that the paper will appear in the March issue. In the mean time, as an atonement to our readers, we occupy the vacant space in republishing a plain and most practical lecture from Prof. Tyndall, on a subject full of interest to the physician.—EDITOR.]

FERMENTATION AND ITS BEARINGS ON THE PHENOMENA OF DISEASE.*

By John Tyndall, LL.D., F.R.S.

In a book with which we are all familiar, amid other wise utterances, this one occurs: "Cast thy bread upon the waters, for thou shalt find it after many days." In more senses than one this precept is illustrated by my presence here to-night. Firstly, in a general sense, I stand indebted, morally and intellectually, to the poets, historians, and philosophers of Scotland. Secondly, in a special sense, it so happens that one of the first rootlets of my scientific life derived its nutriment from this city

* A discourse delivered before the Glasgow Science Lectures Association, October 9, 1876.

of Glasgow. In early youth it was my ambition to qualify myself for the profession of a civil engineer, and as I grew up one of my aids toward the attainment of this object was the study of a periodical then published in Glasgow, and called *The Practical Mechanic's and Engineer's Magazine.* In that journal I read, with an interest unfelt before, a series of essays on various departments of science—on anatomy and physiology, on geology, on mechanics, on arithmetic, and on natural philosophy and chemistry. Biography and history were also included, while in detached articles various collateral subjects were discussed, such, for example, as the difference between Newton and Leibnitz as to the measure of moving force. It was there that I first learned what Leslie had done in Edinburgh, and what Davy had done in the Royal Institution. And I can now call to mind the day and hour when the yearning to possess such apparatus as Leslie and Davy possessed, and to institute with it such inquiries as they had instituted, rose to a kind of prophetic strength within me—prophetic, for it has come to pass that my own studies as a scientific man have been in great part pursued in that particular domain which had been enriched by the discoveries of Leslie; while the very instruments used by Davy, and which I first saw figured in the pages of the journal just mentioned, are the identical and familiar instruments with which my lectures in London are now illustrated.

Another point brought more or less home to me in those early days was the injury inflicted on the learner by bad scientific exposition. It does more than the negative damage of withholding instruction. It daunts the young mind, and saps the motive power of self reliance. This I had experienced; and the essays referred to had this special value for me, that they not only instructed me, but gave me faith in my own capacity to be instructed. Since those days I have written books myself, and in doing so have tried to remember, and to act on the remembrance, that the labor spent in logically ordering one's thoughts, and in saying what one has to say clearly and correctly, is labor well bestowed.

The position assumed at the outset has, I think, been now made good. Glasgow in my case cast its bread upon the waters, and lo! it has returned after many days. Of the nutritive value of the return it is not for me to speak; for it may well have been soured by fortuitous ferments, mixed by the world's tainted atmosphere with the first pure leaven derived from the pages of *The Practical Mechanic's and Engineer's Magazine.*

The figure of speech here employed will become more intelligible as we proceed; for it is my desire and intention to spend the coming hour in speaking to you about *ferments*, not in a metaphorical, but in a real sense. Proper treatment is, I am persuaded, the only thing needed to make the subject both pleasant and profitable to you. For our knowledge of fermentation, and of the ground it covers, has augmented surprisingly of

late, while every fresh accession to that knowledge strengthens the hope that its final issues will be of incalculable advantage to mankind.

One of the most remarkable characteristics of the age in which we live is its desire and tendency to connect itself organically with preceding ages—to ascertain how the state of things that now is came to be what it is. And the more earnestly and profoundly this problem is studied, the more clearly comes into view the vast and varied debt which the world of to-day owes to that fore-world in which man, by skill, valor, and well-directed strength, first replenished and subdued the earth. Our prehistoric fathers may have been savages, but they were clever and observant ones. They founded agriculture by the discovery and development of seeds whose origin is now unknown. They tamed and harnessed their animal antagonists, and sent them down to us as ministers, instead of rivals, in the fight for life. Later on, when the claims of luxury added themselves to those of necessity, we find the same spirit of invention at work. We have no historic account of the first brewer, but we glean from history that his art was practiced, and its produce relished, more than two thousand years ago. Theophrastus, who was born nearly four hundred years before Christ, described beer as *the wine of barley.* It is extremely difficult to preserve beer in a hot country; still, Egypt was the land in which it was first brewed, the desire of man to quench his thirst with this exhilerating beverage overcoming all the obstacles which a hot climate threw in the way of its manufacture.

Our remote ancestors had also learned by experience that wine maketh glad the heart of man. Noah, we are informed, planted a vineyard, drank of the wine, and experienced the consequences. But, though wine and beer possess so old a history, a very few years ago no man knew the secret of their formation. Indeed, it might be said that until the present year no thorough and scientific account was ever given of the agencies which come into play in the manufacture of beer, of the conditions necessary to its health, and of the maladies and vicissitudes to which it is subject. Hitherto, indeed, the art and practice of the brewer have resembled those of the physician, both being founded on empirical observation. By this is meant the observation of facts apart from the principles which explain them, and which give the mind an intelligent mastery over them. The brewer learned from long experience the conditions, not the reasons, of success. But he had to contend, and he has still to contend, against unexplained perplexities. Over and over again his care has been rendered nugatory; his beer has fallen into acidity or rottenness, and disastrous losses have been sustained, of which he has been unable to assign the cause. It is the hidden enemies against which the physician and the brewer have hitherto contended that recent researches are dragging into the light of day, thus preparing the way for their final extermination.

Let us glance for a moment at the outward and visible signs of fermentation. A few weeks ago I paid a visit to a private still in a Swiss chatelet; and this is what I saw: In the peasant's bedroom was a cask with a very large bung-hole carefully closed. The cask contained cherries which had lain in it for fourteen days. It was not entirely filled with fruit, an air-space being left above the cherries when they were put in. I had the bung removed, and a small lamp dipped into this space. Its flame was instantly extinguished. The oxygen of the air had entirely disappeared, its place being taken by carbonic-acid gas.* I tasted the cherries; they were very sour, though when put into the cask they were sweet. The cherries and the liquid associated with them were then placed in a copper boiler, to which a copper head was closely fitted. From the head proceeded a copper tube which passed straight through a vessel of cold water, and issued at the other side. Under the open end of the tube was placed a bottle to receive the spirit distilled. The flame of small wood-splinters being applied to the boiler, after a time vapor rose into the head, passed through the tube, was condensed by the cold of the water, and fell in a liquid fillet into the bottle. On being tasted, it proved to be that fiery and intoxicating spirit known in commerce as Kirsch or Kirschwasser.

The cherries, it should be remembered, were here left to themselves, no ferment of any kind being added to them. In this respect what has been said of the cherry applies also to the grape. At the vintage the fruit of the vine is placed in proper vessels, and abandoned to its own action. It ferments, producing carbonic acid; its sweetness disappears, and at the end of a certain time the unintoxicating grape-juice is converted into intoxicating wine. Here, as in the case of the cherries, the fermentation is spontaneous—in what sense spontaneous will appear more clearly by-and-by.

It is needless for me to tell a Glasgow audience that the beer-brewer does not set to work in this way. In the first place the brewer deals not with the juice of fruits, but with the juice of barley. The barley having been steeped for a sufficient time in water, it is drained, and subjected to a temperature sufficient to cause the moist grain to germinate; after which, it is completely dried upon a kiln. It then receives the name of malt. The malt is crisp to the teeth, and decidedly sweeter to the taste than the original barley. It is ground, mashed up in warm water, then boiled with hops until all the soluble portions have been extracted; the infusion thus produced being called the *wort*. This is drawn off, and cooled as rapidly as possible; then, instead of abandoning the infusion, as the wine-maker does, to its own action, the brewer mixes yeast with his wort, and places it in

* The gas which is exhaled from the lungs after the oxygen of the air has done its duty in purifying the blood, the same also which effervesces from soda-water and champagne.

vessels each with only one aperture open to the air. Soon after the addition of the yeast, a brownish froth, which is really new yeast, issues from the apertures, and falls like a cataract into troughs prepared to receive it. This frothing and foaming of the wort is a proof that the fermentation is active.

Whence comes the yeast which issues so copiously from the fermenting-tub? What is this yeast, and how did the brewer become in the first instance possessed of it? Examine its quantity before and after fermentation. The brewer introduces, say 10 cwts. of yeast; he collects 40, or it may be 50 cwts. The yeast has, therefore, augmented from four to five-fold during the fermentation. Shall we conclude that this additional yeast has been spontaneously generated by the wort? Are we not rather reminded of that seed which fell into good ground, and brought forth fruit, some thirty-fold, some sixty-fold, some a hundred-fold? On examination this notion of organic growth turns out to be more than a mere surmise. In the year 1680, when the microscope was still in its infancy, Leeuwenhoek turned the instrument upon this substance, and found it composed of minute globules suspended in a liquid. Thus knowledge rested until 1835, when Cagniard de la Tour in France, and Schwann in Germany, independently, but animated by a common thought, turned microscopes of improved definition and heightened powers upon yeast, and found it budding and sprouting before their eyes. The augmentation of the yeast alluded to above was thus proved to arise from the growth of a minute plant, now called *Torula* (or *Saccharomyces*) *cerevisiæ*. Spontaneous generation is therefore out of the question. The brewer deliberately sows the yeast-plant, which grows and multiplies in the wort as its proper soil. This discovery marks an epoch in the history of fermentation.

But where did the brewer find his yeast? The reply to this question is similar to that which must be given if the brewer were asked where he found his barley. He has received the seeds of both of them from preceding generations. Could we connect without solution of continuity the present with the past, we should probably be able to trace back the yeast employed by my friend Sir Fowell Buxton to-day to that employed by some Egyptian brewer two thousand years ago. But you may urge that there must have been a time when the first yeast cell was generated. Granted—exactly as there was a time when the first barley-corn was generated. Let not the delusion lay hold of you that a living thing is easily generated, because it is small. Both the yeast-plant and the barley-plant lose themselves in the dim twilight of antiquity, and in this our day there is no more proof of the spontaneous generation of the one than there is of the spontaneous generation of the other.

I stated a moment ago that the fermentation of grape juice was spontaneous; but I was careful to add, "in what sense spontaneous will appear by-and-by." Now, this is the sense meant: The wine-maker does not, like the brewer and distiller,

deliberately introduce either yeast, or any equivalent of yeast, into his vats; he does not consciously sow in them any plant, or the germ of any plant; indeed, he has been hitherto in ignorance whether plants or germs of any kind have had anything to do with his operations. Still, when the fermented grape-juice is examined; the living *Torula* concerned in alcoholic fermentation never fails to make its appearance. How is this? If no living germ has been introduced into the wine-vat, whence comes the life so invariably developed there?

You may be disposed to reply, with Turpin and others, that, in virtue of its own inherent powers, the grape-juice, when brought into contact with the vivifying atmospheric oxygen, runs spontaneously and of its own accord into these low forms of life. I have not the slightest objection to this explanation, provided proper evidence can be adduced in support of it. But the evidence adduced in its favor, as far as I am acquainted with it, snaps asunder under the least strain of scientific criticism. It is, as far as I can see, the evidence of men who, however keen and clever as *observers*, are not rigidly-trained *experimenters*. These alone are aware of the precautions necessary in investigations of this delicate kind. In reference, then, to the life of the wine-vat, what is the decision of the experiment when carried out by competent men? Let a quantity of the clear, filtered "must" of the grape be boiled, so as to destroy such germs as it may have contracted from the air or otherwise. In contact with germless air the uncontaminated must never ferments. All the materials for spontaneous generation are there, but so long as there is no seed sown there is no life developed, and no sign of that fermentation which is the concomitant of life. Nor need you resort to a boiled liquid. The grape is sealed by its own skin against contamination from without. By an ingenious device, Pasteur has extracted from the interior of the grape its pure juice, and proved that in contact with pure air it never acquires the power to ferment itself, nor to produce fermentation in other liquids."* It is not, therefore, in the interior of the grape that the origin of the life observed in the vat is to be sought.

What, then, is its true origin? This is Pasteur's answer, which his well-proved accuracy renders worthy of all confidence: At the time of the vintage little microscopic particles are observed adherent, both to the outer surface of the grape and of the twigs which support the grape. Brush these particles into a capsule of pure water. It is rendered turbid by the dust. Examined by a microscope, these minute particles are seen to present the appearance of organized cells. Instead of receiving them in water, let them be brushed into the pure inert juice of

* The liquids of the healthy animal body are also sealed from external contamination. Neither pure urine, collected fresh from the bladder, nor pure blood, drawn with due precautions from the veins, will ever putrefy in contact with pure air.

the grape. Forty-eight hours after this is done, our familiar *Torula* is observed budding and sprouting, the growth of the plant being accompanied by all the other signs of active fermentation. What is the inference to be drawn from this experiment? Obviously that the particles adherent to the external surface of the grape are the veritable germs of that life which, after they have been sown in the juice, appears in such profusion. Wine is sometimes objected to on the ground that fermentation is "artificial;" but we notice here the responsibility of Nature. The ferment of the grape is in fact a parasite of the grape, and the art of the wine-maker from time immemorial has consisted in bringing—and it may be added, ignorantly bringing—two things thus closely associated by Nature into actual contact with each other. For thousands of years, what has been done consciously by the brewer has been done unconsciously by the wine-grower. The one has sown his leaven just as much as the other.

Nor is it necessary to impregnate the beer-wort with leaven to provoke fermentation. Abandoned to the contact of our common air, it sooner or later ferments; but the chances are, that the produce of that fermentation, instead of being agreeable, would be disgusting to the taste. By a rare accident we might get the true alcoholic fermentation, but the odds against obtaining it would be enormous. Pure air acting upon a lifeless liquid will never provoke fermentation; but our ordinary air is the vehicle of numberless germs which act as ferments when they fall into appropriate infusions. Some of them produce acidity, some putrefaction. The germs of our yeast-plant are also in the air; but so sparingly distributed that an infusion like beer-wort, exposed to the air, is almost sure to be taken possession of by foreign organisms. In fact, the maladies of beer are wholly due to the admixture of these objectionable ferments, whose forms and modes of nutrition differ materially from those of the true leaven of beer.

Working in an atmosphere charged with the germs of these organisms, you can understand how easy it is to fall into error in studying the action of any one of them. Indeed, it is only the most accomplished experimenter, who, moreover, avails himself of every means of checking his conclusions, that can walk without tripping through this land of pitfalls. Such a man is the French chemist Pasteur. He has taught us how to separate the commingled ferments of our air, and to study their pure individual action. Guided by him, let us fix our attention more particularly upon the growth and action of the true yeast-plant under different conditions. Let it be sown in a fermentable liquid, which is supplied with plenty of pure air. The plant will flourish in the aërated infusion, and produce large quantities of carbonic-acid gas—a compound, as you know, of carbon and oxygen. The oxygen thus consumed by the plant is the free oxygen of the air, which we suppose to be abundantly supplied

to the liquid. The action is so far similar to the respiration of animals, which inspire oxygen and expire carbonic acid. If we examine the liquid even when the vigor of the plant has reached its maximum, we hardly find in it a trace of alcohol. The yeast has grown and flourished, but it has almost ceased to act as a ferment. And could every individual yeast-cell seize, without any impediment, free oxygen from the surrounding liquid, it is certain that it would cease to act as a ferment altogether.

What, then, are the conditions under which the yeast-plant must be placed so that it may display its characteristic quality? Reflection on the facts already referred to suggest a reply, and rigid experiment confirms the suggestion. Consider the Alpine cherries in their closed vessels. Consider the beer in its barrels, with a single small aperture open to the air, through which it is observed not to imbibe oxygen, but to pour forth carbonic acid. Whence come the volumes of oxygen necessary to the production of this latter gas? The small quantity of atmospheric air dissolved in the wort and overlying it would be totally incompetent to supply the necessary oxygen. In no other way can the yeast-plant obtain the gas necessary for its respiration than by wrenching it from surrounding substances in which the oxygen exists, not free, but in a state of combination. It decomposes the sugar of the solution in which it grows, produces heat, breathes forth carbonic-acid gas, and one of the liquid products of the decomposition is our familiar alcohol. The act of fermentation, then, is a result of the effort of the little plant to maintain its respiration by means of combined oxygen, when its supply of free oxygen is cut off. As defined by Pasteur, fermentation is *life without air.*

But here the knowledge of that thorough investigator comes to our aid to warn us against errors which have been committed over and over again. It is not all yeast-cells that can thus live without air and provoke fermentation. They must be young cells which have caught their vegetative vigor from contact with free oxygen. But, once possessed of this vigor, the yeast may be transplanted into a saccharine infusion absolutely purged of air, where it will continue to live at the expense of the oxygen, carbon, and other constituents of the infusion. Under these new conditions its life, *as a plant*, will be by no means so vigorous as when it had a supply of free oxygen, but its action *as a ferment* will be indefinitely greater.

Does the yeast-plant stand alone in its power of provoking alcoholic fermentation? It would be singular if amid the multitude of low vegetable forms no other could be found capable of acting in a similar way. And here, again, we have occasion to marvel at that sagacity of observation among the ancients to which we owe so vast a debt. Not only did they discover the alcoholic ferment of yeast, but they had to exercise a wise selection in picking it out from others, and giving it special prominence. Place an old boot in a moist place, or expose common

paste or a pot of jam to the air: it soon becomes coated with a blue-green mould, which is nothing else than the fructification of a little plant called *Penicillium glaucum*. Do not imagine that the mould has sprung spontaneously from boot, or paste, or jam; its germs, which are abundant in the air, have been sown, and have germinated, in as legal and legitimate a way as thistle seeds wafted by the wind to a proper soil. Let the minute spores of *Penicillium* be sown in a fermentable liquid, which has been previously boiled in order to kill all other spores or seeds which it may contain; let pure air have free access to the mixture: the *Penicillium* will grow rapidly, striking long filaments into the liquid, and fructifying at its surface. Test the infusion at various stages of the plant's growth: you will never find in it a trace of alcohol. But forcibly submerge the little plant, push it down deep into the liquid, where the quantity of free oxygen that can reach it is insufficient for its needs: it immediately begins to act as a ferment, supplying itself with oxygen by the decomposition of the sugar, and producing alcohol as one of the results of the decomposition. Many other low microscopic plants act in a similar manner. In aërated liquids they flourish without any production of alcohol, but cut off from free oxygen they act as ferments, producing alcohol exactly as the real alcoholic leaven produces it, only less copiously. For all this knowledge we are indebted to Pasteur.

In the cases hitherto considered, the fermentation is proved to be the invariable correlative of *life*, being produced by organisms foreign to the fermentable substance. But the substance itself may also have within it, to some extent, the motive power of fermentation. The yeast-plant, as we have learned, is an assemblage of living cells; but so at bottom, as shown by Schleiden and Schwann, are all living organisms. Cherries, apples, peaches, pears, plums and grapes, for example, are composed of cells, each of which is a living unit. And here I have to direct your attention to a point of extreme interest. In 1821, the celebrated French chemist, Bérard, established the important fact that all ripening fruit, exposed to the free atmosphere, absorbed the oxygen of the atmosphere, and liberated an approximately equal volume of carbonic acid. He also found that, when ripe fruits were placed in a confined atmosphere, the oxygen of the atmosphere was first absorbed, and an equal quantity of carbonic acid given out. But the process did not end here. After the oxygen had vanished, carbonic acid, in considerable quantities, continued to be expired by the fruits, which at the same time lost a portion of their sugar, becoming more acid to the taste, though the absolute quantity of acid was not augmented. This was an observation of capital importance, and Bérard had the sagacity to remark that the process might be regarded as a kind of fermentation.

Thus the living cells of fruits can absorb oxygen and breathe out carbonic acid, exactly like the living cells of the leaven of

beer. Supposing the access of oxygen suddenly cut off, will the living fruit-cells as suddenly die, or will they continue to live as yeast lives, by extracting oxygen from the saccharine juices round them? This is a question of extreme theoretic significance. It was first answered affirmatively by the able and conclusive experiments of Lechartier and Bellamy, and the answer was subsequently confirmed and explained by the experiments and the reasoning of Pasteur. Bérard only showed the absorption of oxygen and the production of carbonic acid; Lechartier and Bellamy proved the production of alcohol, thus completing the evidence that it was a case of real fermentation. Influenced by his theoretic views, so full was Pasteur of the idea that the cells of a fruit would continue to live at the expense of the sugar of the fruit, that once in his laboratory, while conversing on these subjects with M. Dumas, he exclaimed, "I will wager that if a grape be plunged into an atmosphere of carbonic acid, it will produce alcohol and carbonic acid by the continued life of its own cells—that they will act for a time like the cells of the true alcoholic leaven." He made the experiment, and found the result to be what he had foreseen. He then extended the inquiry. Placing under a bell-jar twenty-four plums, he filled the jar with carbonic-acid gas; beside it he placed twenty-four similar plums uncovered. At the end of eight days he removed the plums from the jar, and compared them with the others. The difference was extraordinary. The uncovered fruits had become soft, watery, and very sweet; the others were firm and hard, their fleshy portions being not at all watery. They had, moreover, lost a considerable quantity of their sugar. They were afterwards bruised, and the juice distilled. It yielded six and a half grammes of alcohol, or one per cent. of the total weight of the plums. Neither in these plums, nor in the grapes first experimented on by Pasteur, could any trace of the ordinary alcoholic leaven be found. The fermentation was the work of the living cells of the fruit itself, after air had been denied to them. When, moreover, the cells were destroyed by bruising, no fermentation ensued. The fermentation was the correlative of a vital act, and it ceased when life was extinguished.

Lüdersdorf was the first to show by this method that yeast acted, not, as Liebig had assumed, in virtue of its *organic*, but in virtue of its *organized*, character. He destroyed the cells of yeast by rubbing them on a ground-glass plate, and found that with the destruction of the organism, though its chemical constituents remained, the power to act as a ferment totally disappeared.

One word more in reference to Liebig may find a place here. To the philosophic chemist thoughtfully pondering these phenomena, familiar with the conception of molecular motion, and the changes produced by the interactions of purely chemical forces, nothing could be more natural than to see in the process of fermentation a simple illustration of molecular instability, the

ferment propagating to surrounding molecular groups the overthrow of its own tottering combinations. Broadly considered, indeed, there is a certain amount of truth in this theory; but Liebig, who propounded it, missed the very kernel of the phenomena when he overlooked or contemned the part played in fermentation by microscopic life. He looked at the matter too little with the eye of the body, and too much with the spiritual eye. He practically neglected the microscope, and was unmoved by the knowledge which its revelations would have poured in upon his mind. His hypothesis, as I have said, was natural—nay, it was a striking illustration of Liebig's power to penetrate and unveil molecular actions; but it was an error, and as such has proved an *ignis fatuus* instead of a *pharos* to some of his followers.

I have said that our air is full of the germs of ferments differing from the alcoholic leaven, and sometimes seriously interfering with the latter. They are the weeds of this microscopic garden which often overshadow and choke the flowers. Let us take an illustrative case. Expose boiled milk to the air. It will cool, and then turn sour, separating like blood into clot and serum. Place a drop of this sour milk under a powerful microscope and watch it closely. You see the minute butter-globules animated by that curious quivering motion called the Brownian motion* But let not this attract your attention too much, for it is another motion that we have now to seek. Here and there you observe a greater disturbance than ordinary among the globules; keep your eye upon the place of tumult, and you will probably see emerging from it a long, eel-like organism, tossing the globules aside and wriggling more or less rapidly across the field of the microscope. Familiar with one sample of this organism, which from its motions receives the name of vibrio, you soon detect numbers of them. It is these organisms which, by decomposing the milk, render it sour. This vibrio is in fact the butyric-acid ferment, as the yeast-plant is the alcoholic ferment. Keep the vibrio and its germs out of your milk and it will never turn sour. But, instead of becoming sour, milk may become putrid. This is due to the action of another living ferment. Examine your putrid milk microscopically, and you find it swarming with organisms much shorter than the vibrios, and manifesting sometimes a wonderful alacrity of motion. Keep this smaller organism and its germs out of your milk and it will never putrefy. Expose a mutton-chop to the air and keep it moist; in summer weather it soon stinks. Place a drop of the juice of the fetid chop under a powerful microscope; it is seen swarming with organisms resembling those in the putrid milk. These organisms, which receive the common name of bacteria,†

* Which I am inclined to regard as an effect of surface tension.

† Doubtless organisms exhibiting grave specific differences are grouped together under this common name.

are the agents of all putrefaction. Keep them and their germs from your meat and it will remain forever sweet. Thus we begin to see that within the world of life to which ourselves belong there is another living world requiring the microscope for its discernment, but which, nevertheless, has the most important bearing on the welfare of the higher life-world.

And now let us reason together as regards the origin of these bacteria. A granular powder is placed in your hands, and you are asked to state what it is. You examine it, and have, or have not, reason to suspect that seeds of some kind are mixed up in it. But you prepare a bed in your garden, sow in it the powder, and soon after find a mixed crop of docks and thistles sprouting from your bed. Until this powder was sown neither docks nor thistles ever made their appearance in your garden. You repeat the experiment once, twice, ten times, fifty times. From fifty different beds after the sowing of the powder you obtain the same crop. What will be your response to the question proposed to you? "I am not in a condition" you would say, "to affirm that every grain of powder is a dock-seed or a thistle-seed; but I am in a condition to affirm that both dock and thistle seeds form, at all events, part of the powder." Supposing a succession of such powders to be placed in your hands with grains becoming gradually smaller, until they dwindle to the size of impalpable dust-particles; assuming that you treat them all in the same way, and that from every one of them in a few days you obtain a definite crop—it may be clover, it may be mustard, it may be mignonette, it may be a plant more minute than any of these—the smallness of the particles or of the plants that spring from them does not affect the validity of the conclusion. Without a shadow of misgiving you would conclude that the powder must have contained the seeds or germs of the life observed. There is not in the range of physical science an experiment more conclusive or an inference safer than this one.

Supposing the powder to be light enough to float in the air, and that you are enabled to see it there just as plainly as you saw the heavier powder in the palm of your hand. If the dust sown by the air instead of by the hand produce a definite living crop, with the same logical rigor you would conclude that the germs of this crop must be mixed with the dust. To take an illustration: The spores of the little plant *Penicillium glaucum*, to which I have already referred, are light enough to float in the air. A cut apple, a pear, a tomato, a slice of vegetable marrow, or, as already mentioned, an old moist boot, a dish of paste, or a pot of jam, constitutes a proper soil for the *Penicillium*. Now, if it could be proved that the dust of the air when sown in this soil produces this plant, while, wanting the dust, neither the air nor the soil, nor both together, can produce it, it would be obviously just as certain in this case that the floating dust contains the germs of *Penicillium* as that the powders sown

in your garden contained the germs of the plants which sprung from them.

But how is the floating dust to be rendered visible? In this way: Build a little chamber and provide it with a door, windows, and window-shutters. Let an aperture be made in one of the shutters through which a sunbeam can pass. Close the door and windows, so that no light shall enter save through the hole in the shutter. The track of the sunbeam is at first plain and vivid in the air of the room. If all disturbance of the air of the chamber be avoided, the luminous track will become fainter and fainter, until at last it disappears absolutely, and no trace of the beam is to be seen. What rendered the beam visible at first? The floating dust of the air, which, thus illuminated and observed, is as palpable to sense as any dust or powder placed on the palm of the hand. In the still air the dust gradually sinks to the floor, or sticks to the walls or ceiling, until, finally, by this self-cleansing process, the air is entirely freed from mechanically suspended matter.

Thus far, I think, we have made our footing sure. Let us proceed. Chop up a beefsteak and allow it to remain for two or three hours just covered with warm water; you thus extract the juice of the beef in a concentrated form. By properly boiling the liquid and filtering it you can obtain from it a perfectly transparent beef-tea. Expose a number of vessels containing this tea to the moteless air of your chamber, and expose a number of similar vessels containing precisely the same liquid to the dust-laden air. In three days every one of the latter stinks, and, examined with the microscope, every one of them is found swarming with the bacteria of putrefaction. After three months, or three years, the beef-tea within the chamber is found in every case as sweet and clear, and as free from bacteria, as it was at the moment when it was first put in. There is absolutely no difference between the air within and that without, save that the one is dustless and the other dust-laden. Clinch the experiment thus: Open the door of your chamber and allow the dust to enter it. In three days afterward you have every vessel within the chamber swarming with bacteria, and in a state of active putrefaction. Here, also, the inference is quite as certain as in the case of the powder sown in your garden. Multiply your proofs by building fifty chambers instead of one, and by employing every imaginable infusion of wild animals and tame; of flesh, fish, fowl, and viscera; of vegetables of the most various kinds. If, in all these cases, you find the dust infallibly producing its crop of bacteria, while neither the dustless air nor the nutritive infusion, nor both together, are ever able to produce this crop, your conclusion is simply irresistible that the dust of the air contains the germs of the crop which has appeared in your infusions. I repeat, there is no inference of experimental science more certain than this one. In the presence of such facts, to use the words of a paper lately published in the "Philo-

sophical Transactions," it would be simply monstrous to affirm that these swarming crops of bacteria are spontaneously generated.

Is there, then, no experimental proof of spontaneous generation? I answer without hesitation, *none!* But to doubt the experimental proof of a fact, and to deny its possibility, are two different things, though some writers confuse matters by making them synonymous. In fact, this doctrine of spontaneous generation, in one form or another, falls in with the theoretic beliefs of some of the foremost workers of this age; but it is exactly these men who have the penetration to see, and the honesty to expose, the weakness of the evidence adduced in its support.

And here observe how these discoveries tally with the common practices of life. Heat kills the bacteria, cold numbs them. When my housekeeper has pheasants in charge which she wishes to keep sweet, but which threaten to give way, she partially cooks the birds, kills the infant bacteria, and thus postpones the evil day. By boiling her milk she also extends its period of sweetness. Some weeks ago, in the Alps, I made a few experiments on the influence of cold upon ants. Though the sun was strong, patches of snow still maintained themselves on the mountain slopes. The ants were found in the warm grass and on the warm rocks adjacent. Transferred to the snow, the rapidity of their paralysis was surprising. In a few seconds a vigorous ant, after a few languid struggles, would wholly lose its power of locomotion, and lie practically dead upon the snow. Tranferred to the warm rock it would revive, to be again smitten with death-like numbness when retransferred to the snow. What is true of the ant is specially true of our bacteria. Their active life is suspended by cold, and with it their power of producing or continuing putrefaction. This is the whole philosophy of the preservation of meat by cold. The fishmonger, for example, when he surrounds his very assailable wares by lumps of ice, stays the process of putrefaction by reducing to numbness and inaction the organisms which produce it, and in the absence of which his fish would continue sweet and sound. It is the astonishing activity into which these bacteria are pushed by warmth that renders a single summer's day sometimes so disastrous to the great butchers of London and Glasgow. The bodies of guides lost in the crevices of Alpine glaciers have come to the surface forty years after their interment without the flesh showing any signs of putrefaction. But the most astonishing case of this kind is that of the hairy elephant of Siberia which was found incased in ice. It had been buried for ages, but when laid bare its flesh was sweet, and for some time afforded copious nutriment to the wild beasts which fed upon it.

Beer is assailable by all the organisms here referred to, some of which produce acetic, some lactic, and some butyric acid, while yeast is open to attack from the bacteria of putrefaction. In relation to the particular beverage the brewer wishes to pro-

duce, these foreign ferments have been properly called *ferments of disease.* The cells of the true leaven are globules, usually somewhat elongated. The other organisms are more or less rod-like or eel-like in shape, some of them being beaded so as to resemble necklaces. Each of these organisms produces a fermentation and a flavor peculiar to itself. Keep them out of your beer and it remains forever unaltered. Never without them will your beer contract disease. But their germs are in the air, in the vessels employed in the brewery, even in the yeast used to impregnate the wort. Consciously or unconsciously, the whole art of the brewer is directed against them. His aim is to paralyze if he cannot annihilate them.

For beer, moreover, the question of temperature is one of supreme importance; indeed, the recognized influence of temperature is causing on the Continent of Europe a complete revolution in the manufacture of beer. When I was a student in Berlin, in 1851, there were certain places specially devoted to the sale of Bavarian beer, which was then making its way into public favor. The beer is prepared by what is called the process of *low fermentation;* the name being given partly because the yeast of this beer, instead of rising to the top and issuing through the bung-hole, falls to the bottom of the cask; but partly, also, because it is produced at a low temperature. The other and older process, called *high fermentation*, is far more handy, expeditious, and cheap. In high fermentation eight days suffices for the production of the beer; in low fermentation, ten, fifteen, even twenty days, are found necessary. Vast quantities of ice, moreover, are consumed in the process of low fermentation. In the single brewery of Dreher, of Vienna, 100,000,000 pounds of ice are consumed annually in cooling the wort and beer. Notwithstanding these obvious and weighty drawbacks, the low fermentation is rapidly displacing the high upon the Continent. Here are some statistics which show the number of breweries of both kinds existing in Bohemia in 1860, 1865, and 1870.

	1860.	1865.	1870.
High fermentation -	281	81	18
Low fermentation -	135	459	831

Thus in ten years the number of high-fermentation breweries fell from 281 to 18, while the number of low-fermentation breweries rose from 135 to 831. The sole reason for this vast change—a change which involves a greater expenditure of time, labor, and money—is the additional command which it gives the brewer over the fortuitous ferments of disease. These ferments, which, it is to be remembered, are living organisms, have their activity suspended by temperatures below 10° C., and as long as they are reduced to torpor the beer remains untainted either by acidity or putrefaction. The beer of low fermentation is brewed in winter, and kept in cool cellars; the brewer being thus enabled to dispose of it at his leisure, instead of forcing its

consumption to avoid the loss involved in its alteration if kept too long. Hops, it may be remarked, act to some extent as an antiseptic to beer. The essential oil of the hop is bactericidal; hence the strong impregnation with hop-juice of all beer intended for exportation.

These low organisms, which one might be disposed to regard as the beginnings of life, were we not warned that the microscope, precious and perfect as it is, has no power to show us the real beginnings of life, are by no means purely useless or purely mischievous in the economy of Nature. They are only noxious when out of their proper place. They exercise a useful and valuable function as the burners and consumers of dead matter, animal and vegetable, reducing such matter, with a rapidity otherwise unattainable, to innocent carbonic acid and water. Furthermore, they are not all alike, and it is only restricted classes of them that are really dangerous to man. One difference in their habits is worthy of special reference here. Air, or rather the oxygen of the air, which is absolutely necessary to the support of the bacteria of putrefaction, is absolutely deadly to the vibrios which provoke the butyric-acid fermentation. This is most simply illustrated by the following beautiful observation of Pasteur: You know the way of looking at these little organisms through the microscope. A drop of the liquid containing them is placed upon glass, and on the drop is placed a circle of exceedingly thin glass; for, to magnify them sufficiently, it is necessary that the microscope should come very close to the organisms. Round the edge of the circular plate of glass the liquid is in contact with the air, and incessantly absorbs it, including the oxygen. Here, if the drop be charged with bacteria, we have a zone of very lively ones. But through this living zone, greedy of oxygen and appropriating it, the vivifying gas cannot penetrate to the centre of the film. In the middle, therefore, the bacteria die, while their peripheral colleagues continue active. If a bubble of air chance to be inclosed in the film, round it the bacteria will pirouette and wabble until its oxygen has been absorbed, after which all their motions cease. Precisely the reverse of all this occurs with the vibrios of butyric acid. In their case it is the peripheral organisms that are first killed, the central ones remaining vigorous while ringed by a zone of dead. Pasteur, moreover, filled two vessels with a liquid containing these vibrios: through one vessel he led air, and killed its vibrios in half an hour; through the other he led carbonic acid, and after three hours found the vibrios fully active. It was while observing these differences of deportment fifteen years ago that the thought of life without air, and its bearing upon the theory of fermentation, flashed upon the mind of this admirable investigator.

And here I am tempted to inquire how it is that during the last five or six years so many of the cultivated English and American public, including members of the medical profession

and contributors to some of our most intellectual journals, could be so turned aside as they have been from the pure well-spring of scientific truth to be found in the writings of Pasteur? The reason I take to be, that, while against unsound logic a healthy mind can always defend itself, against unsound experiment without discipline it is defenseless. To judge of the soundness of scientific data, and to reason from data assumed to be sound, are two totally different things. The one deals with the raw material of fact, the other with the logical textures woven from that material. Now, the logical loom may go accurately through all its motions, while the woven fibres may be all rotten. It is this inability, through lack of education in experiment, to judge of the soundness of experimental work, which lies at the root of the defection from Pasteur.

I will cite an example of this mistake of judgment. Between the large-type articles and the reviews of the *Saturday Review* essays on various subjects are interpolated. On Alpine slopes and in the calm of summer evenings, while reading these brief essays, I have been many a time impressed, not only with their sparkling cleverness, but with their deep-searching wisdom and their wealth of spiritual experience. In this central region of the *Review* the question of spontaneous generation has been taken up and discussed. The writer is not a whit behind his colleagues in literary brilliancy and logical force. But, having no touchstone in his own experience to enable him to distinguish a good experiment from a bad one, he has committed, on the point of the gravest practical import, the influence of the powerful journal in which he writes to the support of error. It is only, I would repeat, by practice among facts that the intellect is prepared to judge of facts, and no mere logical acuteness or literary skill can atone for the want of this necessary education.

We now approach an aspect of this question which concerns us still more closely, and which will be best illustrated by an actual fact. A few years ago I was bathing in an Alpine stream, and, returning to my clothes from the cascade which had been my shower-bath, I slipped upon a block of granite, the sharp crystals of which stamped themselves into my naked shin. The wound was an awkward one, but, being in vigorous health at the time, I hoped for a speedy recovery. Dipping a clean pocket-handkerchief into the stream, I wrapped it round the wound, limped home, and remained for four or five days quietly in bed. There was no pain, and at the end of this time I thought myself quite fit to quit my room. The wound, when uncovered, was found perfectly clean, uninflamed, and entirely free from pus. Placing over it a bit of gold-beater's skin, I walked about all day. Toward evening itching and heat were felt; a large accumulation of pus followed, and I was forced to go to bed again. The water bandage was restored, but it was powerless to check the action now set up; arnica was applied, but it made matters worse. The inflammation increased alarmingly, until finally I

was ignobly carried on men's shoulders down the mountain, and transported to Geneva, where, thanks to the kindness of friends, I was immediately placed in the best medical hands. On the morning after my arrival in Geneva, Dr. Gausier discovered an abscess in my instep, at a distance of five inches from the wound. The two were connected by a channel, or *sinus*, as it is technically called, through which he was able to empty the abscess without the application of the lance.

By what agency was that channel formed—what was it that thus tore asunder the sound tissue of my instep, and kept me for six weeks a prisoner in bed? In the very room where the water-dressing had been removed from my wound and the gold-beater's skin applied to it, I opened this year a number of tubes containing perfectly clear and sweet infusions of fish, flesh, and vegetables. These hermetically-sealed infusions had been exposed for weeks, both to the sun of the Alps and to the warmth of a kitchen, without showing the slightest turbidity or sign of life. But two days after they were opened the greater number of them swarmed with the bacteria of putrefaction, the germs of which had been contracted from the dust-laden air of the room. And, had the pus from my abscess been examined, my memory of its appearance leads me to infer that it would have been found equally swarming with these bacteria—that it was their germs which got into my incautiously-opened wound. They were the subtile workers that burrowed down my shin, dug the abscess in my instep, and produced effects which might well have proved fatal to me.

And here we come directly face to face with the labors of a man who has established for himself an imperishable reputation in relation to this subject, who combines the penetration of the true theorist with the skill and conscientiousness of the true experimenter, and whose practice is one continued demonstration of the theory that the putrefaction of wounds is to be averted by the destruction of the germs of bacteria. Not only from his own reports of his cases, but from the reports of eminent men who have visited his hospital, and from the opinions expressed to me by Continental surgeons, do I gather that one of the greatest steps ever made in the art of surgery was the introduction of the antiseptic system of treatment, practised first in Glasgow and now in Edinburgh, by Prof. Lister.

The interest of this subject does not slacken as we proceed. We began with the cherry-cask and beer-vat; we end with the body of man. There are persons born with the power of interpreting natural facts, as there are others smitten with everlasting incompetence in regard to such interpretation. To the former class in an eminent degree belonged the celebrated philosopher Robert Boyle, whose words in relation to this subject have in them the forecast of prophecy. "And let me add," writes Boyle in his "Essay on the Pathological Part of Physik," "that he that thoroughly understands the nature of ferments and

fermentations shall probably be much better able than he that ignores them to give a fair account of divers phenomena of several diseases (as well fevers as others) which will perhaps be never properly understood without an insight into the doctrine of fermentations."

Two hundred years have passed since these pregnant words were written, and it is only in this our day that men are beginning to fully realize their truth. In the domain of surgery the justice of Boyle's surmise has been most strictly demonstrated. Demonstration is indeed the only word which fitly characterizes the evidence brought forward by Prof. Lister. You will grasp in a moment his leading idea. Take the extracted juice of beef or mutton, so prepared as to be perfectly transparent, and entirely free from the living germs of bacteria. Into the clear liquid let fall the tiniest drop of an infusion charged with the bacteria of putrefaction. Twenty-four hours subsequently the clear extract will be found muddy throughout, the turpidity being due to swarms of bacteria generated by the drop with which the infusion was inoculated. At the same time the infusion will have passed from a state of sweetness to a state of putridity. Let a drop similar to that which has produced this effect fall into an open wound: the juices of the living body nourish the bacteria as the beef or mutton juice nourished them, and you have putrefaction produced within the system. The air, as I have said, is laden with floating matter which, when it falls upon the wound, acts substantially like the drop. Prof. Lister's aim is to destroy the life of that floating matter—to kill such germs as it may contain. Had he, for example, dressed my wound, instead of opening it incautiously in the midst of air laden with the germs of bacteria, and instead of applying to it gold-beater's skin, which probably carried these germs upon its surface, he would have showered upon the wound, during the time of dressing, the spray of some liquid capable of killing the germs. The liquid usually employed for this purpose is dilute carbolic acid, which, in his hands, has become a specific against putrefaction and all its deadly consequences.

We now pass the bounds of surgery proper, and enter the domain of epidemic disease, including those fevers so sagaciously referred to by Boyle. The most striking analogy between a *contagium* and a ferment is to be found in the power of indefinite self-multiplication possessed and exercised by both. You know the exquisitely truthful figures regarding leaven employed in the New Testament. A particle hid in three measures of meal leavens it all. A little leaven leaveneth the whole lump. In a similar manner a particle of *contagium* spreads through the human body and may be so multiplied as to strike down whole populations. Consider the effect produced upon the system by a microscopic quantity of the virus of small-pox. That virus is to all intents and purposes a seed. It is sown as leaven is sown, it grows and multiplies as leaven grows and multiplies, and it

always reproduces itself. To Pasteur we are indebted for a series of masterly researches, wherein he exposes the looseness and general baselessness of prevalent notions regarding the transmutation of one ferment into another. He guards himself against saying it is impossible. The true investigator is sparing in the use of this word, though the use of it is unsparingly ascribed to him; but, as a matter of fact, Pasteur has never been able to effect the alleged transmutation, while he has been always able to point out the open doorways through which the affirmers of such transmutations had allowed error to march in upon them.*

The great source of error here has been already alluded to in this discourse. The observers worked in an atmosphere charged with the germs of different organisms; the mere accident of first possession rendering now one organism, now another, triumphant. In different stages, moreover, of its fermentative or putrefactive changes, the same infusion may so alter as to be successively taken possession of by different organisms. Such cases have been adduced to show that the earlier organisms must have been transformed into the later ones, whereas they are simply cases in which different germs, because of changes in the infusion, render themselves valid at different times.

By teaching us how to cultivate each ferment in its purity—in other words, by teaching us how to rear the individual organism apart from all others—Pasteur has enabled us to avoid all these errors. And where this isolation of a particular organism has been duly effected it grows and multiplies indefinitely, but no change of it into another organism is ever observed. In Pasteur's researches the Bacterium remained a Bacterium, the Vibrio a Vibrio, the Penicillium a Penicillium, and the Torula a Torula. Sow any of these in a state of purity in an appropriate liquid, you get it, and it alone, in the subsequent crop. In like manner, sow small-pox in the human body, your crop is small-pox. Sow there scarlatina, and your crop is scarlatina. Sow typhoid virus, your crop is typhoid—cholera, your crop is cholera. The disease bears as constant a relation to its contagium as the microscopic organisms just enumerated do to their germs, or indeed as a thistle does to its seed. No wonder, then, with analogies so obvious and so striking, that the conviction is spreading and growing daily in strength that reproductive parasitic life is at the root of epidemic disease—that living ferments finding lodgment in the body increase there and multiply, directly ruining the tissue on which they subsist, or destroying life indirectly by the generation of poisonous compounds within the body. This conclusion, which comes to us with a presumption almost amounting to a demonstration, is clinched by the fact that

* Those who wish for an illustration of the care necessary in these researches, and of the carelessness with which they have in some cases been conducted, will do well to consult the Rev. W. H. Dallinger's excellent "Notes on Heterogenesis," in the October number of the *Popular Science Review*.

virulently-infective diseases have been discovered with which living organisms are as closely and as indissolubly associated as the growth of Torula is with the fermentation of beer.

And here, if you will permit me, I would utter a word of warning to well-meaning people. We have now reached a phase of this question when it is of the very last importance that light should once for all be thrown upon the manner in which contagious and infectious diseases take root and spread. To this end the action of various ferments upon the organs and tissues of the living body must be studied; the habitat of each special organism concerned in the production of each specific disease must be determined, and the mode by which its germs are spread abroad as sources of further infection. It is only by such rigidly accurate inquiries that we can obtain final and complete mastery over these destroyers. Hence, while abhorring cruelty of all kinds, while shrinking sympathetically from all animal suffering—suffering which my own pursuits never call upon me to inflict—an unbiassed survey of the field of research now opening out before the physiologist causes me to conclude that no greater calamity could befall the human race than the stoppage of experimental inquiry in this direction. A lady whose philanthropy has rendered her illustrious said to me, some time ago, that science was becoming immoral; that the researches of the past, unlike those of the present, were carried on without cruelty. I replied to her that the science of Kepler and Newton, to which she referred, dealt with the laws and phenomena of inorganic Nature; but that one great advance made by modern science was in the direction of biology, or the science of life; and that in this new direction scientific inquiry, though at the outset pursued at the cost of some temporary suffering, would in the end prove a thousand times more beneficient than it had ever hitherto been. I said this because I saw that the very researches which the lady deprecated were leading us to such a knowledge of epidemic diseases as will enable us finally to sweep these scourges of the human race from the face of this fair earth.

This is a point of such special importance that I should like to bring it home to your intelligence by a single trustworthy illustration. In 1850, two distinguished French observers, MM. Davainne and Rayer, noticed, in the blood of animals which had died of the virulent disease called *splenic fever*, small microscopic organisms resembling transparent rods, but neither of them at that time attached any significance to the observation. In 1861 Pasteur published a memoir on the fermentation of butyric acid, wherein he described the organism which provoked it; and, after reading this memoir, it occurred to Davainne that splenic fever might be a case of fermentation set up within the animal body by the organisms which had been observed by him and Rayer. This idea has been placed beyond all doubt by subsequent research.

Some years in advance of the labors undertaken by Davainne,

observations of the highest importance had been made on splenic fever by Pollender and Brauell. Two years ago, Dr. Burdon-Sanderson gave us a very clear account of what was known up to that time of this disorder. With regard to the permanence of the contagium, it has been proved to hang for years about localities where it had once prevailed; and this seemed to show that the rod-like organisms could not constitute the contagium, because their infective power was found to vanish in a few weeks. But other facts established an intimate connection between the organisms and the disease, so that a review of all the facts caused Dr. Sanderson to conclude that the contagium existed in two distinct forms: the one "fugitive," and visible as transparent rods; the other permanent but "latent," and not yet brought within the grasp of the microscope.

At the same time that Dr. Sanderson was writing this report, a young German physician, named Koch, occupied with the duties of his profession in an obscure country district, was already at work, applying, during his spare time, various original and ingenious devices to the investigation of splenic fever. He studied the habits of the rod-like organisms, and found the aqueous humor of an ox's eye to be particularly suitable for their nutrition. With a drop of the aqueous humor he mixed the tiniest speck of a liquid containing the rods, placed the drop under his microscope, warmed it suitably, and observed its subsequent action. During the first two hours hardly any change was noticeable; but at the end of this time the rods began to lengthen, and the action was so rapid that at the end of three or four hours they attained from ten to twenty times their original length. At the end of a few additional hours they had formed filaments in many cases a hundred times the length of the original rods. The same filament, in fact, was frequently observed to stretch through several fields of the microscope. Sometimes they lay in straight lines parallel to each other; in other cases they were bent, twisted, and coiled, into the most graceful figures; while sometimes they formed knots of such bewildering complexity that it was impossible for the eye to trace the individual filaments through the confusion.

Had the observation ended here an interesting scientific fact would have been added to our previous store, but the addition would have been of little practical value. Koch, however, continued to watch the filaments, and after a time noticed little dots appearing within them. These dots became more and more distinct, until finally the whole length of the organism was studded with minute ovoid bodies, which lay within the integument like peas within their shell. By-and-by the integument fell to pieces, the place of the organism being taken by a long row of seeds or spores. These observations, which were confirmed in all respects by the celebrated naturalist Cohn, of Breslau, are of the first importance. They clear up the existing perplexity regarding the latent and visible contagia of splenic fever; for, in the

most conclusive manner, Koch proved the spores, as distinguished from the rods, to constitute the contagium of the fever in its most deadly and persistent form.

How did he reach this important result? Mark the answer. There was but one way open to him to test the activity of the contagium, and that was the inoculation with it of living animals. He operated upon Guinea-pigs and rabbits, but the vast majority of his experiments were made with mice. Inoculating them with the fresh blood of an animal suffering from splenic fever, they invariably died of the same disease within twenty or thirty hours after inoculation. He then sought to determine how the contaginm maintained its vitality. Drying the infectious blood containing the rod-like organisms, in which, however, the spores were not developed, he found the contagium to be that which Dr. Sanderson calls "fugitive." It maintained its power of infection for five weeks at the farthest. He then dried blood containing the fully-developed spores, and exposed the substance to a variety of conditions. He permitted the dried blood to assume the form of dust; wetted this dust, allowed it to dry again, permitted it to remain for an indefinite time in the midst of putrefying matter, and subjected it to various other tests. After keeping the spore-charged blood which had been treated in this fashion for four years, he inoculated a number of mice with it, and found its action as fatal as that of blood fresh from the veins of an animal suffering from splenic fever. There was no single escape from death after inoculation by this deadly contagium. Uncounted millions of these spores are developed in the body of every animal which has died of splenic fever, and every spore of these millions is competent to produce the disease. The name of this formidable parasite is *Bacillius anthracis.**

Now, the very first step toward the extirpation of these contagia is the knowledge of their nature; and the knowledge brought to us by Dr. Koch will render as certan the stamping out of splenic fever as the stoppage of the plague of *pébrine* by the researches of Pasteur. One small item of statistics will show what this implies. In the single district of Novgorod in Russia, between the years 1867 and 1870, over 56,000 cases of death by splenic fever, among horses, cows, and sheep, were recorded. But its ravages did not confine themselves to the animal world, for, during the time and in the district referred to, 528 human beings perished in the agonies of the same disease.

A description of the fever will help you to come to a right

* To produce its characteristic effects the contagium of splenic fever must enter the blood. The virulently-infective spleen of a diseased animal may be eaten with impunity by mice. On the other hand, the disease refuses to be communicated by inoculation to dogs, partridges, or sparrows. In their blood *Bacillius anthracis* ceases to act as a ferment.

decision on the point which I wish to submit to your consideration. "An animal," says Dr. Burdon-Sanderson, "which perhaps for the previous day has declined food and shown signs of general disturbance, begins to shudder and to have twitches of the muscles of the back, and soon after becomes weak and listless. In the mean time the respiration becomes frequent and often difficult, and the temperature rises to three or four degrees above the normal; but soon convulsions, affecting chiefly the muscles of the back and loins, usher in the final collapse, of which the progress is marked by complete loss of power of moving the trunk or extremities, diminution of temperature, mucous and sanguinolent alvine evacuations, and similar discharges from the mouth and nose." In a single district of Russia, as above remarked, 56,000 horses, cows, and sheep, and 528 men and women, perished in this way during a period of two or three years. What the annual fatality is throughout Europe I have no means of knowing. Doubtless it must be very great. The question, then, which I wish to submit to your judgment is this: Is the knowledge which reveals to us the nature, and which assures the extirpation, of a disorder so virulent and so vile, worth the price paid for it? It is exceedingly important that assemblies like the present should see clearly the issues at stake in such questions as this, and that the properly-informed common sense of the community should temper, if not restrain, the rashness of those who, meaning to be tender, would virtually enact the most hideous cruelty by the imposition of short-sighted restrictions upon physiological investigation. It is a modern instance of zeal for God, but not according to knowledge, and an instructed public opinion must correct its excess.

And now let us cast a backward glance on the field we have traversed, and try to extract from our labors such further profit as they can yield. For more than two thousand years the attraction of light bodies by amber was the sum of human knowledge regarding electricity, and for more than two thousand years fermentation was effected without any knowledge of its cause. In science one discovery grows out of another, and cannot appear without its proper antecedent. Thus, before fermentation could be understood, the microscope had to be invented and brought to a considerable degree of perfection. Note the growth of knowledge. Leeuwenhoek, in 1680, found yeast to be a mass of floating globules, but he had no notion that the globules were alive. This was proved in 1835 by Cagniard de la Tour and Schwann. Then came the question as to the origin of such microscopic organisms, and in this connection the memoir of Pasteur, published in the "Annales de Chimie" for 1862, is epoch-making, proving as it did to all competent minds spontaneous generation to be thus far a chimera. On that investigation all Pasteur's subsequent labors were based. Ravages had over and over again occurred among French wines.

There was no guarantee that they would not become acid or bitter, particularly when exported. The commerce in wines was thus restricted, and disastrous losses were often inflicted on the wine-grower. Every one of these diseases was traced to the life of an organism. Pasteur ascertained the temperature which killed these ferments of disease, proving it to be so low as to be perfectly harmless to the wine. By the simple expedient of heating the wine to a temperature of 50° centigrade, he rendered it unalterable, and thus saved his country the loss of millions. He then went on to vinegar—*vinaigre*, acid wine—which he proved to be produced by a fermentation set up by a little fungus called *Micoderma aceti*. *Torula*, in fact, converts the grape-juice into alcohol, and *Micoderma aceti* converts the alcohol into vinegar. Here also frequent failures occurred and severe losses were sustained. Through the operation of unknown causes, the vinegar often became unfit for use; sometimes, indeed, falling into utter putridity. It had been long known that mere exposure to the air was sufficient to destroy it. Pasteur studied all these changes, traced them to their living causes, and showed that the permanent health of the vinegar was insured by the destruction of this life. He passed from the diseases of vinegar to the study of a malady which a dozen years ago had all but ruined the silk-husbandry of France. This malady, which received the name of *pébrine*, was the product of a parasite which first took possession of the intestinal canal of the silkworm, spread throughout its body, and filled the sack which ought to contain the viscid matter of the silk. Thus smitten, the worm would go automatically through the process of spinning when it had nothing to spin. Pasteur followed this parasitic destroyer from year to year, and, led by his singular power of combining facts with the logic of facts, discovered eventually the precise phase in the development of the insect when the disease which assailed it could with certainty be stamped out. Pasteur's devotion to this inquiry cost him dear. He restored to France her silk-husbandry, rescued thousands of her population from ruin, set the looms of Italy also to work, but emerged from his labors with one of his sides permanently paralyzed. His last investigation is embodied in a work entitled "Studies on Beer," in which he describes a method of rendering beer permanently unchangeable. That method is not so simple as those found effectual with wine and vinegar, but the principles which it involves are sure to receive extensive application at some future day. Taking into account all these labors of Pasteur, it is no exaggeration to state that the money value of his work would go far to cover the indemnity which France had to pay to Germany.

There are other reflections connected with this subject which, even were I to pass them over without remark, would sooner or later occur to every thoughtful mind in this assembly. I have spoken of the floating dust of the air, of the means of rendering

it visible, and of the perfect immunity from putrefaction which accompanies the contact of moteless air. Consider the woes which this wafted matter, during historic and prehistoric ages, has inflicted on mankind; consider the loss of life in hospitals from putrefying wounds; consider the loss in places where there are plenty of wounds but no hospitals, and in the ages before hospitals were anywhere founded; consider the slaughter which has hitherto followed that of the battle field, when those bacterial destroyers are let loose, often producing a mortality far greater than that of the battle itself; add to this the other conception that in times of epidemic disease the self same floating matter has frequently, if not always, mingled with it the special germs which produce the epidemic, being thus enabled to sow pestilence and death over nations and continents—consider all these, and you will come with me to the conclusion that all the havoc of war, ten times multiplied, would be evanescent if compared to the ravages due to atmospheric dust.

This preventable destruction is going on to-day, and it has been permitted to go on for ages, without a whisper of information regarding its cause being vouchsafed to the suffering sentient world. We have been scourged by invisible thongs, attacked from impenetrable ambuscades, and it is only to-day that the light of science is being let in upon the murderous dominion of our foes. Men of Glasgow, these facts excite in me the thought that the rule and governance of this universe are different from what we in our youth supposed them to be—that the inscrutable Power, at once terrible and beneficient, in whom we live and move and have our being and our end, is to be propitiated by means different from those usually resorted to. The first requisite toward such propitiation is *knowledge;* the second is *action*, shaped and illuminated by that knowledge. Of knowledge we already see the dawn, which will open out by-and-by to perfect day, while the action which is to follow has its unfailing source and stimulus in the moral and emotional nature of man—in his desire for personal well-being, in his sense of duty, in his compassionate sympathy with the sufferings of his fellow-men. "How often," says Dr. William Budd, in his celebrated work on "Typhoid Fever"—"how often have I seen in past days, in the single narrow chamber of the day-laborer's cottage, the father in his coffin, the mother in the sick-bed in muttering delirium, and nothing to relieve the desolation of the children but the devotion of some poor neighbor, who in too many cases paid the penalty of her kindness in becoming herself the victim of the same disorder!" From the vantage-ground already won I look forward with confident hope to the triumph of medical art over scenes of misery like that here described. The cause of the calamity being once clearly revealed, not only to the physician, but to the public, whose intelligent coöperation is absolutely essential to success, the final victory of humanity

is only a question of time. We have already a foretaste of that victory in the triumphs of surgery as practised at your doors.—*The Popular Science Monthly.*

THERAPEUTICAL.

1. *Liquor Potassæ in Diphtheria.* SHALL. (*Boston Jour. Chem.*, June, 1876).

This agent is considered by the writer the quickest solvent of the diphtheritic membrane. Twenty drops doses every three hours, in the first case in which liquor potassæ was used, after 24 hours' use of iron, potassic chlorate, ammonia, etc., was followed by an entire disappearance of the membrane and by defervescence. Its use is followed by uniformity of result, viz., disappearance of membrane. While it is not considered a *specific* by the writer, it is declared extraordinarily useful. Dose, 20 drops every three hours, diluted largely, for adults; for minors, dose must be graduated.

2. *Ergot, Hypodermically, in Spleen Enlargement.* MILLER. (*Cin. Med. News*, 1876.)

The spleen, in the case reported, enlarged from malarial poisoning, occupied nearly all the abdominal cavity, extending into the right hypochondrium, and from the umbilicus into the epigastrium. Other remedies having utterly failed, ergot, hypodermically daily, reduced the organ to proper proportions in less than 10 days. Nearly a month later the reduction was found to be permanent.

3. *Wash to Prevent Bedsores.* (*New Remedies.*)

For this purpose Sir James Paget recommends a wash composed of one part sweet spirits of nitre and three parts water.

J. S. K.

4. *Calabar Bean as a Galactagogue.* (*New Remedies.*)

In the *Bristol Medical Journal* of Oct. 28th, Dr. W. Monro remarks that he had already brought before the profession various uses to which Calabar bean might be put, from its power of dilating the peripheral blood-vessels Wishing, recently, to restore the secretion of milk after it had disappeared from the breast about three days, he had prepared an ointment of the strength of 20 grains of the bean to the ounce, and ordered it to be applied and washed off carefully before the baby was allowed

to suck. After two applications, the baby not having been put to the breast in the meanwhile, the milk returned in full flow.

J. S. K.

5. *Lime Water in Infantile Eczema and Impetigo.* (*Bulletin de Therap. Southern Med. Record.*)

It is especially useful in chronic cases of eczema of head and impetigo of face that have resisted other treatment. It is to be taken in quantities varying up to eight ounces, daily, according to age. If the secretions are very irritating, dust the parts with carbonate of magnesia. J. S. K.

6. *Sulphide of Carbon.* DOERING. (*Pacific Med. and Surg. Journal*, Oct, 1876.)

The following brief summary embodies the results the writer has obtained after an extensive trial with this drug:

1. Sulphide of carbon is particularly useful in all ulcers showing a tendency to spread, especially if of a syphilitic nature. It ought to be applied freely at least twice a day.

2. If no beneficial effect is observed after trial with this drug for a week, in any class of ulcer, it will be useless to continue its further application.

3. It is by far the best local application thus far presented to the profession in the treatment of that large class of ulcers termed indolent or chronic.

Sulphide of carbon is a transparent, colorless, exceedingly volatile fluid, of pungent, aromatic taste and very fetid smell. The mode of application is to lightly brush the surface of the ulcer by means of a camel hair pencil or piece of lint, and then cover the surface with some mild, unirritating powder, as subnitrate of bismuth or starch. The application generally produces severe pain, which, however, lasts but a few seconds.

J. S. K.

7. *Bromohydrate of Conia.* MOURRUT. (*Répertoire de Pharmacie.*)

M. M. states that this salt has been used with success in the treatment of whooping cough, in doses of one-twelfth grain, if necessary every hour, for a child three years of age; or one-thirtieth grain for a child of one year; or one-sixth grain for adults. Good results have also followed its hypodermic use in sciatica, in quantities of one-twelfth grain. The salt, when pure, occurs in colorless prismatic needles, soluble in water and alcohol, less so in ether or chloroform, is odorless, nearly tasteless and deliquescent. Exposed to the light it turns red but does not decompose, should therefore be kept dark. J. S. K.

8. *Conium.* HAMILTON. (*Med. and Surg. Reporter*, Nov. 4, 1876.)

Dr. H. says that in the treatment of diseases where tremor is a symptom, much benefit has followed the use of conium at the Female Epileptic and Paralytic Hospital, Blackwell's Island. In two cases of chorea, of long standing, it produced a prompt amelioration of the patient's condition, and in the tremor of sclerosis it suppressed the movements for several weeks. It was given in the form of fluid extract in doses of 10 m., three times a day. J. S. K.

9. *Ergot in Diarrhœa.* COMEGYS. (*N. Y. Med. Record*, Aug. 26, 1876.)

Dr. C. was induced thus to use this drug from a belief in its power in causing contraction in unstriped muscular fibre. If such were its action, it would relieve the atony of the vessels of the intestinal mucous membrane, diminish hyperæmia by contracting the capillaries, and prevent the transudation of the watery part of the blood. To one patient, suffering from chronic diarrhœa of two years' standing, 40 drops of fluid extract ergot were given three times a day, and in four days the number of stools was reduced from eight to two per day. In ten days the patient was quite recovered. A similar successful use of ergot in many other cases causes him to recommend the treatment to the profession. J. S. K.

10. *Monobromide of Camphor.* GOSS. (*Med. and Surg. Reporter*, Oct. 28, 1876.)

The monobromide of camphor consists of one equivalent of camphor and one of bromine united (C_{10}, N_{16}, O, Br). It is a white crystaline salt, having the odor of camphor and slightly that of bromine. The atmosphere decomposes it at a temperature of 100° F. W. A. Hammond has used it successfully in infantile convulsions from teething, dose one gr. each hour; hysteria, four gr. each hour; headache in females from nervous excitement or over study, one dose of four grains being sufficient for cure.

Dr. O. says in chordee, in doses of one or two grains each hour, it is a very positive remedy, one or two doses generally giving relief. In nymphomania there is no remedy equal to this compound salt of camphor and bromine. It is also a positive remedy in spermatorrhœa, nocturnal emissions with amorous dreams, in doses of three or four grains, at bedtime.

In cases of cerebral anæmia, from excessive venery, it calms nervous excitement; in debility, with cold extremities from feeble heart, it equalizes circulation—impressing the cerebro-spinal system. Dose, three or four grains three times a day.

In nocturnal incontinence of urine it is efficacious in doses of from one to six grains at bedtime.

(Best given dissolved in alcohol and glycerine, or suspended in mucilage and syrup, as it irritates the stomach.) J. S. K.

11. *Viburnum Primifolium.* JENKS. (*N. Y. Med. Record.*)

The virtue attributed to black haw is that it prevents abortions by some sedative action upon the uterus, apparently the opposite of that of ergot. It has been used extensively for this purpose by Drs. Faris, of Miss., Jenks, of Detroit, and Bates, of New York. It is also useful in menorrhagia coming on during the menepause, and in cases of dysmenorrhœa when there is no mechanical cause of obstruction.

The method of administration is to give the fluid extract in doses of from one-half to one drachm, a few days before and a few days after the menstrual period, or from two to four grains of resinoid in the same manner. J. S. K.

12. *Bromide of Potassium as a Caustic.* PEYRAND. (*Canadian Journal of Med. Science*, Nov. 1876.)

M. Peyrand's first clinical experiment on the subject took place in April, 1874, when by means of daily applications of powdered bromide he effected the removal, within 28 days, of an epitheliomatous growth on the face. He has since had equally good results from this treatment of atonic ulcers of the legs; rapid cicatrization following the separation of sloughs following the application. In such cases he uses either the powder or an ointment of one part in five, or a mixture (one in ten) of glycerine. In many skin affections, as chronic eczema, pytiriasis, and acne, in phagadæna, ulcerative stomatitis, and many other local inflammatory disorders, he has found it of use. As a local hæmostatic a solution of one part in fifty has served for epistaxis; and as a general hæmostatic its success in many cases of hæmoptysis and metrorrhagia was very marked where ergot, perchloride of iron and rhatany had failed. J. S. K.
—*Chicago Medical Journal and Examiner.*

SYPHILIS AND VENEREAL DISEASES.

Suspected Vaccinal Syphilis. GUERIN. (*L'Union Médicale*, November 23, 1876.)

Guérin presented to the Paris Academy of Medicine a little patient who had been vaccinated nine days after birth—seven weeks prior to date. The immediate results of the vaccination had been quite normal, the vesico-pustules becoming well developed. On the eighth day the virus from the latter had been employed in the vaccination of an elder brother, in whose case

the evolution of the disease and the subsequent cicatrization had been entirely regular.

In the case of the first child, however, deep ulceration had occurred at the three sites of inoculation, with indurated edges, quite analogous to that found in indurated chancre; but the corresponding lymphatic ganglia were not engorged. On the same arm, however, was a perfectly cicatrized periostosis. The difficulty was pointed out of establishing the influence of syphilis in a case which displayed tertiary symptoms after a few weeks, without the occurrence of symptoms intermediate between it and the primary lesion The reporter consequently assumed the phenomena to be manifestations of the strumous diathesis in an infant vaccinated very early after birth; others who observed the child being inclined to adopt the same opinion.

Communication of Syphilis by Milk. Voss. (*Petersburg Med. Wochenschrift*, No. 23, 1876.)

Three prostitutes were inoculated with the milk of a woman affected with papular syphilis, who suffered also from moist mucous papules of the anal and genital regions—the mammary glands being free from disease. A syringeful of milk, expressed from one breast, was injected into the tissues of each prostitute by means of a Praviz syringe. One who had been previously syphilitic, suffered no inconvenience, the second had urethritis, and was not affected; the third was a young girl sixteen years old, free from syphilis, who was injected on the eleventh day after her admission to the hospital. The inflammation and local suppuration excited, subsided in one week; but forty days after the inoculation papules were developed around the site of the injection, and in five days a maculo-papular syphilide appeared over the body, with concomitant adenopathy—these symptoms disappearing after the employment of mercurial inunction.—*Chicago Medical Journal and Examiner.*

Dr. Prosper de Pietra Santa's Solutions of Sulphites as Antiseptics in Surgery, Skin Diseases, Fluor Albus, etc.

The author gives the following formulæ, and adds: After many trials we have adopted the formulæ which appeared in the *Annales de Clinic de Milan*, November, 1876.

No. 1. ℞—Sodæ sulphis, - - 1 part;
Distilled elder water, - 12 parts;
Alcohol, camphorated, - 2 parts.
Mix.

No. 2. ℞—Sodæ sulphis, - - - 1 part;
Distilled rose water, - 12 parts;
Glycerine, - - - 3 parts.
Mix.

—*Sanitarian.*

CURRENT MEDICAL LITERATURE.

PRACTICAL MEDICINE.

BY S. M. BEMISS, M.D.,

Professor of Theory and Practice of Medicine, and Clinical Medicine, Medical Department, University of Louisiana.

DENGUE.

By Sir J. Fayrer, K.C.S., M.D.

SYNONYMS.—Scarlatina Rheumatica (Cock); Exanthesis Arthrosia; Dandy fever (inhabitants of West Indies); Three-day fever; Red fever (E. Goodeve); Break bone fever; Broken-wing fever; Stiff-necked fever; Tootiah (natives of Bengal); Eruptive articular fever; and other synonyms.

DEFINITION.—An infectious, eruptive fever, commencing suddenly, remitting, and liable to relapse. Accompanied by severe pain in the head and eyeballs, with swelling and pain in the muscles and joints, which are prone to shift suddenly from one joint to the other. Catarrhal symptoms, sore throat, congested conjunctivæ; submaxillary glands affected.

Eruption commencing on third day, of short duration—twenty-four to forty-eight hours. Great prostration and debility. It is characterized by intervals, remissions, and relapses, which may continue over some weeks. Cachexia and arthritic pains liable to be protracted; convalescence tedious; rarely fatal.

NATURAL HISTORY AND GEOGRAPHICAL DISTRIBUTION.—It occurs epidemically and sporadically in India, Burmah, Persia, Thibet, Arabia, Egypt, and other parts of Africa, North and South America, and the West Indies. It is not known in Britain, at all events as an epidemic, though Dr. Richardson describes certain cases of so-called scarlet fever combined with acute rheumatic fever, for an account of which we were first indebted to Dr. Golden Bird. Drs. Kelso and Ross have also noticed a similar supposed conjunction of the scarlatinal and rheumatic disorders. Dr. Richardson also describes certain cases that he observed near London (Barnes Green) in which four children suffered from fever with an eruption, combined with pain and swelling of the joints, particularly of the wrists, ankles and knees. In two of these cases there was endocardial mischief and albuminuria. They all recovered. These, however, Dr. Richardson describes as scarlatina and rheumatic fever occurring simultaneously in the same persons. Dr. Willen also notices similar cases.

Dr. F. E. Charles, who has given an account of the epidemic of dengue of 1871–72 in Calcutta, says:—"I have nowhere seen any trustworthy evidence of dengue having occurred in Europe

in any country except Spain. In 1865-67 Andalusia and other provinces were severely visited by it. Paggio, who published an account of dengue in 1871, alluded to a very similar epidemic having prevailed in Cadiz and Seville between 1764-68. If this really was dengue, the notice is the first reliable one that we have of the disease.

Dengue is endemic in India, and cases occur sporadically every year in Calcutta. It is there known as the red fever (E. Goodeve). It spreads epidemically over India at long intervals. A most severe visitation occurred in 1824, and again in 1871-72; of 2,324 persons employed by the government and East India Railway officers—Europeans, Eurasians, and natives —during the latter 1,636 suffered from the disease; over 70 per cent being attacked. It spread over the whole of India. A previous general and most severe outbreak, which extended to Burmah, had occurred in 1824. In other countries similar epidemic waves of the disease have occurred.

In 1780, on the Coromandel Coast, the native population were attacked, though none died.

In 1779 Gaberts describes a severe epidemic which raged in and around Cairo. It recurred there in 1845, and in 1871 at Port Said, and in other parts of Egypt. Dr. Rush describes one in Philadelphia in 1780. Pezet one in Lima in 1818.

In 1826 it prevailed in Savannah; in 1827 at St. Thomas and Santa Cruz; thence it spread to North and South America and the islands over which it passed. In 1828 it passed epidemically over New York. In 1848 New Orleans and part of the Southern States were affected; In 1850 it prevailed severely in the Southern States.

On the west coast of Africa, St. Louis, Senegal, and the island of Gozee it prevailed severely in 1845-48, 1856-64, and then in the Canary Islands.

These epidemic visitations of dengue, extending over wide tracts of country, occur at considerable intervals, and probably depend on certain unknown atmospheric and cosmic conditions that favor its development, under which a single sporadic case is, as Dr. Charles says, "Sufficient to sow the disease broadcast over a wide extent of country, and, as the intervals are generally long between each, it thus finds a virgin soil in which to germinate."

The epidemic of 1871-72 which spread over India, Dr. Charles suggests, may be attributed to extension from sporadic cases occurring in the country and to its importation from Arabia; the last theory being supported by the fact that the Jewish community in Calcutta, among whom it first appeared, have close commercial connections with Arabia. This may be the case if the disease existed, as it appears to have done, about the time, or a little earlier, in Arabian ports. It appears to have been imported to Aden in 1871 from Zanzibar, where previously to this, it had been epidemic.

The characteristic features of dengue are the presence of severe continuous arthritic and muscular pains, great debility and prostration, the occurrence of an initial, and a terminal rubeoloid, or scarlet rash; fever which is subject to remissions and relapses; frequently convalescence is tedious and painful, and may be complicated by the continuance of general cachexia, pain and swelling of joints, enlargement of glands, orchitis, weakness of eyes, deafness; visceral disease, such as diarrhœa and dysentery, of a chronic and intractable character, and hepatic derangement; boils, carbuncles; and, according to Dr. Charles, insanity has sometimes been a sequel. In the female, uterine hæmorrhage and miscarriage may occur.

The invasion of dengue is sudden; the patient may have felt well up to the period of attack, the earliest symptom being severe pain in some joint, probably of a finger, which rapidly extends to all the other joints and bones; and these pains during the progress of the disease often pass from one joint to the other by a sort of metastasis.

There may be a period of preliminary malaise, of one or more days, marked by anorexia, a sense of weariness and languor, chilliness, sometimes amounting to rigor, severe pain in the head, perhaps confined to one region, or in one or both eyeballs; pains in the body, limbs, and joints, notably of the fingers and toes, giddiness and nausea; but the attack is often quite sudden, and without any premonition, as was frequently seen in the last Calcutta epidemic, commencing with violent arthritic pains, with swelling of the joints, or severe pains in the head and eyeballs, neck and back. In some epidemics certain phenomena prevail, and are more prominently marked than others.

Fever, accompanied by redness of the face, which is puffy and swollen, sore throat, congested conjunctivæ, a general redness, like the scarlatinal rash, extending over the whole body. Tongue red at tip and edges, loaded with white fur, through which red papillæ protrude, rapid pulse, from 102 to 120, or even 140, respiration hurried, temperature rising to 103° or even 105°, mark the occurrence of the initial fever and rash. These endure for a period varying from one day to forty-eight hours. After which the rash disappears, the fever subsides, and the remission lasts for a period of two, three, or four days, when a recurrence of febrile symptoms takes place; and with it a second, the terminal rash, differing in character from the first, resembling a rubeoloid or even urticarial eruption, often showing itself first on the palms of the hand, and in some cases resulting in profuse desquamation of the cuticle; though the rash is so slight as to be sometimes barely perceptible. These gradually subside, leaving the patient weak, exhausted, and often still tortured by swelled and painful joints, especially the smaller ones, which often continue for a period of weeks, making convalescence tedious and painful; or there may be repeated relapses prolonging the suffering, and protracting recovery.

The symptoms vary in different cases, both as to the character of the rash, the temperature, and the muscular, or osseous pains.

The rash not only varies considerably in color, character, and duration, but it is sometimes almost absent; in other cases it is attended with so much hyperæmia and action of the skin that excessive desquamation results.

This hyperæmia also sometimes expresses itself by hæmorrhage from the mouth, nose, bowels, and uterus.

The fever is sometimes accompanied by delirium, or in children by convulsions; in the latter, indeed, these occasionally initiate the disease.

The distinction betwixt scarlatina and dengue is well marked; though during the outset there is considerable resemblance between the two diseases. There is a high temperature at first in both, but it is more quickly attained, and is transient in dengue; in scarlatina it endures for several days, whilst in dengue the fastigium gives a temperature of 103°, even up to 105° or 107°, this being attained it rapidly declines; it then is exceptional to find a temperature above 102° maintained in dengue.

In scarlatina the period of decline extends over several days, and is marked by slight exacerbations in the evening. In dengue it occupies a few hours, and the temperature may even fall below the normal standard.

The severe muscular and arthritic pains of dengue do not occur in scarlatina; and the pulse in the latter is much more rapid in the early stages than in the former. The initial rash in dengue occurs sooner than the eruption in scarlatina.

Dr. Charles, who has forcibly drawn attention to the diagnostic distinction, points out that occasionally dengue assumes a malignant form, where the amount of poison received has been overwhelmingly large. He says, "Drowsiness may have passed into coma, and the temperature verges on the hyperpyretic, a failing heat and œdematous lungs, with a whole surface highly cyanotic; these cases have been popularly termed 'black fever,' and are justly much dreaded." Happily such, however, are rare. Again, there are very slight forms of the disease in which the patients are scarcely ill, and where it is not easy to decide as to their exact nature; "A trifling sore throat and slight malaise may be all you can lay hold of till the terminal rash appears to show you what you have to deal with; even this may not be seen."

An attack of dengue does not confer absolute protection from a recurrence of the disease, though it does so to a great extent; there can be no doubt that many persons during the last Calcutta epidemic suffered more than once. It certainly is infectious, as has been proved by many examples of its having been conveyed from person to person. The period of incubation is probably from five to six days; it may be a day or two more or less in some cases. Relapses are liable to be frequent, and

the patient may suffer more than even a second or third before recovery.

In simple and uncomplicated cases the average period for the duration of the disease may be taken as about eight days; but it is frequently prolonged over weeks, and the recovery is slow and painful; the constitution often being so much shattered that complete restoration to strength and vigor does not occur for months.

Some of the sequelæ already mentioned remain torturing the patient and retarding his recovery. Albumen is occasionally present in the urine; but it is not, as in scarlatina, especially in the cases of children, so frequent or so dangerous a result of the disease. Dengue attacks all ages, from the infant in arms to persons of extreme old age.

TREATMENT.—This is a specific fever, and has to run through a certain course. The treatment is simple, and if judiciously directed mitigates the sufferings and materially aids recovery.

Neither emetics nor active purgatives are necessary. They do no good, but increase the weakness and aggravate the suffering by the muscular movements necessarily induced. Moderate action of the bowels, followed by a warm carminative aperient, with an occasional dose of calomel, rhubarb, or colocynth, especially if they remain confined, to which there does not appear to be any peculiar tendency, though the alvine evacuations are dark and often slimy, and confined at the outset; salines, such as the acetate of ammonia, citrate of potash, with nitro-æther, combined with aconite are good in the pyrexia. In cases of very high temperature, 105°, 106°, 107°, Dr. Charles suggests cold sponging as beneficial; he recommends it when 105° is reached. The danger to life of such a high temperature during the great heat of the hot months in India is great; and it is then that the cold sponging or bath is indicated.

Belladonna seems to confer great relief in this disease; ten to fifteen drops of the tincture may be given, and two or three such doses given at intervals of an hour will sometimes produce excellent effects and give much relief. The extract may be given if prepared in doses of one-third of a grain; or the juice in similar doses to those of the tincture.

For the pains and nocturnal restlessness, morphia or Dover's powder may be given; and, as external applications, liniments containing opium, belladonna, and chloroform are serviceable, rubbed on the spine, back and joints.

Tonics, and a carefully regulated nutritious diet, are also indicated, and all spoliative or depletive measures must be avoided. The tonics should be of the bitter vegetable kind, such as gentian and calumba; with these may be combined a small quantity of quinine, with some mineral acid; and, in some cases, the dilute phosphoric acid, combined with nux vomica or small doses of strychnine may prove useful.

As to wine, good claret is probably the best, but others may be given if preferred.

Quinine is given more for its tonic than its antiperiodic effects; though, where there is a tendency to relapses the judicious administration of five or even ten-grain doses may be beneficial in arresting them. Bromide of potassium is recommended by some authorities, and especially when convulsions occur in children. Alkalies, colchicum, and other remedies in use in rheumatism have been found to have little, if any, effect in relieving the pains of dangue.

For the irritation of the skin, which is sometimes very troublesome, Dr. Charles recommends the application of camphorated oils. Warm baths also are likely to confer relief on this symptom.

As in so many other diseases, especially those that occur to Europeans in tropical climates, complete restoration to health is likely to be expedited and promoted by change of air, and if the cachexia be severe after a prolonged attack of the disease, return to the patient's native climate for a season is desirable.—*Practioner.*

HEPATIC ABSCESS TREATED ANTISEPTICALLY.

By J. Dickson Hunter, M.D. Edin., Arequipa, Peru.

Arequipa, the second largest town in Peru, situated more than seven thousand feet above the sea-level, and in 17° S. and 72° W., having a dry and equable climate (the thermometer in the shade during winter and summer varying little above or below 64° F.) without high winds, built upon a gravelly soil with a pretty surrounding country, may be said to be naturally indicated as a health resort. By the inhabitants of the west coast of South America, especially by those of Peru and Chili, it is so used, and latterly even from Europe some invalids have come. As may be inferred from the above slight description of its peculiarities, it is chiefly useful in lung affections, more particularly phthisis and spasmodic asthma. In some cases of the latter disease it effects an immediate and complete cure, that is to say patients never having an attack after their arrival. Unfortunately one cannot even guess which cases are to be cured by coming here. So far as I have been able to observe they have often been cases where the disease had existed since childhood.

I, as a local practitioner, am naturally inclined to laud the place excessively; nevertheless, I cannot be blind to certain drawbacks which it has. One of the most serious of these is dysentery. How far this may be attributable to the ignorance of the people, leading to carelessness as to the sources and purity of their water supply, this is not the place to discuss;

suffice it for the present to say that dysentery is endemic, being always present to a greater or less degree.

It cannot be said that dysentery is always followed by abscess of the liver, nor even that hepatic abscess has always been preceded by dysentery, but it may be looked upon as a rule that in a locality where dysentery is endemic, there hepatic abscess will also be found. Such is the case here, so, during a residence of fifteen years I have had the opportunity of seeing many cases of the disease.

My experience includes most of the different modes of termination and treatment—(1) the abscess opening naturally through the lung, intestine, peritoneum, and even the skin; (2) the abscess being opened artificially by incision, tapping (trocar and aspirator), Vienna paste, and sometimes use of drainage-tube after; (3) treatment by chloride of ammonium, numerous applications of Vienna paste, emetics, and treatment on general principles. Of all these different modes of termination, one, that of bursting into the peritoneum is certainly and rapidly fatal, and the others are very uncertain in their ultimate result. Probably one of the most favorable terminations is by opening through the lung—the lung acting, in this case, as the antiseptic ganze. Artificial evacuation is far from being always successful, and, even when it is so, is attended by a good deal of suffering and a tardy convalescence, besides the dangers (lardaceous degeneration) incurred by a copious and long-continued suppuration.

Thanks to the antiseptic system, I think we may now hope for—(1) a succesful result, (2) no suffering excepting the very slight pain at the moment of the operation, and (3) a rapid convalescence.

As an example I give the following case. I shall be somewhat particular in my description, hoping that thereby others may be induced to give the plan a trial. Moreover, it will show what can be done with means which are within reach of all, and this may be of advantage, as many of my fellow-workers are stationed in distant parts of the world where all the later appliances of antiseptic surgery may not be attainable.

J. H., æt. forty-one, had been suffering from dyspepsia and occasional diarrhœa since the beginning of this year. I first saw him on March 6, he then had bilious diarrhœa without any dysenteric symptoms, and complained of slight pain on pressure about the pit of the stomach. Various measures were adopted to cure the diarrhœa, but without permanent effect. Towards the end of the month I observed tenderness, hardness, and dulness on percussion for about three finger's-breadth below the right false ribs. I then gave full doses of ipecacuana, as if treating a case of dysentery. This cured the diarrhœa.

Here let me make two observations—(1) this is the most effectual treatment for many cases of bilious diarrhœa; (2) Prof. Maclean has proposed this treatment in cases of threatened

hepatic abscess. I have tried it on several occasions, and have thought that it sometimes did good; but of course I could not be certain whether the cases, if left alone, would have gone on to suppuration. In the present case it had no effect upon the swelling; this went on slowly enlarging and becoming more tender, so that latterly he walked bent forward, so as to diminish the pressure of the abdominal muscles.

About the beginning of April he had shivering, and this was soon followed by severe sweatings in the early morning, complete loss of appetite, and sleepless nights. Urine loaded with lithates. Latterly he complained more of pain in the lower ribs at the back than of the pain in front, so much so that I examined for abscess there but found no indications.

April 25th.—For the last fifteen days he has been applying spongiopiline. The swelling at its broadest part now extended about four inches below the ribs, and near the middle there was a slight elevation looking as if, time being given, it would point there. He was looking so ill and suffering so much that I decided to operate at once.

I need not here repeat Prof. Lister's directions as to disinfecting instruments, etc., merely remarking that they were attended to as closely as possible.

I had prepared a one to twenty watery solution of carbolic acid, and a one to eight oily solution. These are stronger than now recommended, but I thought it better to err on the side of safety, and so if possible make up for the want of the antiseptic gauze, etc. The only disadvantage of the extra strength of the watery solution being a slight but passing numbness of the fingers if held in it for any considerable time.

I washed the skin for about eight inches around the elevation, and applied a piece of lint doubled about two inches square and dipped in the oil. This I left on for a few minutes that it might act as an anæsthetic, the patient being extremely nervous. Lifting the lint, and the spray being now continuously directed upon the part, I made an incision about half an inch in length in the most prominent part of the swelling, immediately covering it with the lint. The knife seemed to penetrate about three quarters of an inch before reaching the cavity. A somewhat thick, flaky, blood-stained pus escaped. When the discharge ceased flowing I employed pressure, but only to a very slight extent as the abdomen was very tender. A large drainage-tube was now introduced to the extent of six inches (as was ascertained afterwards), and this was secured by a prepared (carbolized) silk ligature and sticking plaster at a distance of five inches from the wound. More of the tube could have been introduced, but I thought this sufficient. Over the lint a new piece of oiled lint was applied, and over this an eight inch square of oil silk—not gutta-percha tissue, which is quickly acted upon by the oil—then a large broad bandage.

Only a teacupful of matter was collected, the rest having

escaped upon the towels placed to prevent the soiling of the bed-clothes.

The operation was performed at 4 p. m.

April 26th.—9 a.m. dressing changed for the first time—under spray of course.

There was a little dirty-looking discharge on the lint.

From this date the dressing was changed morning and evening.

Patient was looking cheerful and said he had no pain. He had, however, not slept, having imagined that the tube might slip in, and so he had occupied the night in picturing to himself the dreadful consequences.

April 28th.—Was now sleeping well, eating well, and feeling well. Urine clear; no fever. On this day I withdrew ten lines of the tube.

May 1st.—Cut off other seventeen lines.

May 2d.—Twenty-two lines more withdrawn, and the rest had a tendency to follow. I secured it until the following day.

May 3d.—When the remaining twenty-three lines were taken out, a small button of granulations had formed round the wound.

From each portion of the tube, after extraction, there could be pressed a cast of the tube, consisting of pus and clot, with a faint odour, but not putrefactive.

May 8th.—Upon making firm pressure, which was now done with ease, a drop of pus escaped from the centre of the granulations. He still used the spray, but of a one to forty strength; and I ordered him to apply fresh lard, well washed in cold water, and afterwards beat up with some of the oil, and the dressing to be changed once a day. Under this treatment the granulations shrunk and a small scab formed, which fell off in a few days.

After the operation he had no medicine whatever.

May 23d.—I examined him to-day and found that, in the recumbent posture, the liver dulness barely extended a finger's-breadth below the false ribs. He expressed himself as feeling perfectly well. He walked erect and had nearly reached his normal weight.—*The Practitioner.*

AN ADDRESS ON THROMBOSIS AND EMBOLISM.

Delivered at the Opening of the Liverpool Medical Society.

By James Turnbull, M.D., F.R.C.P.,

Physician to the Liverpool Royal Infirmary; President of the Medical Institution, etc.

I have selected as the subject of this address the coagulation of the blood in the heart and blood-vessels during life; and I

have chosen it partly because I have met with several cases during a comparatively recent period, and also because the effects of coagulation are so widely spread in their influence on the various organs of the body, that it must interest those who are engaged in every branch of practice or medical inquiry.

From an early period, clots and concretions were from time to time observed in the vascular system, which led to speculations similar to those which have occurred in more recent times as to whether they had formed during life or after death. The great German pathologist Virchow was, however, the first to examine the whole subject in a complete and systematic manner, and to put together and explain the isolated facts seen by previous observers without being fully understood in their relation to each other. He placed the whole subject on a firm foundation, and applied the term "thrombosis" to coagulation of blood in the heart or vascular system, and "embolism" to the plugging of vessels which results from the transportation of such clots or thrombi by the current of the blood.

The light thrown on pathology by these investigations was regarded by the late Dr. Parkes as one of the great recent advances in medical science; and, to prove that such is the case, let me point to the embolic pneumonias which arise from plugging of branches of the pulmonary artery, to the sudden deaths which occur in puerperal and other conditions from more complete obstruction of the artery, to the paralytic seizures from plugging of the cerebral arteries, and to the gangrenous attacks in the extremities consequent on heart-affections: all of which were at one time involved in much obscurity.

Systematic treatises on this subject have been published in the German language by Conheim and Cohn, but the researches of British medical men are chiefly to be found in the medical periodicals and in papers in the *Transactions* of the societies, which abound in cases illustrating the subject, and showing that the profession in this country is fully alive to its importance. In referring to the thrombosis of the veins, Mr. Prescott Hewett, in his address to the Clinical Society in 1873, stated that it is of greatly increasing frequency, but this probably arises from the fact that the true nature of this condition is now more generally recognized.

Before directing your attention to the clots and concretions which form in the vascular system, I would remind you that the coagulation of the blood is produced by the passage of the fibrine from the soluble to the insoluble fibrinated condition. This seems to be dependent on some change in the vital condition of the blood which is not fully understood. Dr. Richardson's theory of its dependence on the escape of ammonia has not been sustained; but the fact remains that the volatile alkali as well as the fixed alkalis have the power of retarding or even preventing coagulation.

In the normal condition, the blood contains from 2 to 3½ parts of fibrin in 1000, but the proportion is altered in many diseases, and is increased greatly in all the acute inflammatory diseases, especially in pneumonia and acute rheumatism. This increase is the cause of the buffy coat formerly so carefully looked for in reference both to diagnosis and treatment. In the puerperal condition, the blood contains an increased quantity of fibrin, which contracts slowly and presents generally the buffy coat. In chlorosis, it occurs also from there being some absolute increase of the fibrine, together with a large relative increase, owing to the great diminution of red corpuscles In many cachectic diseases, such as cancer, there is a condition of the blood similar to that of chlorosis, and in all the diseases now referred to the condition of the blood itself predisposes to the formation of clots in the vascular system. In persons of gouty constitution, there is a remarkable tendency to thrombosis in the veins. This may be due to the presence of an acid or other morbid matter in the blood; but Sir James Paget, who has drawn attention to this form of thrombosis, seems to think that there is a local phlebitis. It is, however, worthy of observation that, in the allied disease acute rheumatism, supposed also to be connected with an acid diathesis, there is likewise a tendency to the deposit of fibrin, especially on the valves of the left side of the heart.

With regard to thrombi, they may form in any part of the vascular system. In the heart, we meet with three kinds of clots or thrombi: 1. The loose, soft, dark-colored clots, which form ordinarily after death; 2, the firmer yellowish-white thrombi, often adherent to the walls and entangling the valves, which form while death is taking place, or shortly before; 3, the firm laminated concretions, made up of layers of fibrin with colorless corpuscles, which have existed so long, that they have often undergone partial softening, especially towards the centre of the concretion.

The second variety of concretions, with which most of us are familiar, form at a variable but short period before death, and they occur chiefly in cases where there has been a severe and protracted struggle, more especially in pulmonary and cardiac diseases. But little attention has been paid to these concretions, and they have scarcely been looked upon as a cause of death, and have been regarded as merely an evidence of how life has terminated. I am, however, disposed to look upon them as in some cases a cause of death which might possibly be warded off if we could prevent their formation, and so gain time for resolution of pneumonia or other diseases with which they are associated. I had lately an opportunity of seeing a *post mortem* examination in a case of acute pneumonia, where the right cavities of the heart were filled with firm whitish concretions enveloping the valves and cordæ tendinæ, which must have formed a considerable time before death, and where the left ven-

tricle contained also a firm white flattened concretion of still older date. In this case, I think that the immediate cause of death was as much in the blood itself as in the condition of the lung, and that it must have begun with the coagulation of the blood in the cavities of the heart.

In the treatment of this disease, I think we should not overlook the use of any means that can be used to prevent the formation of such fibrinous concretions in the heart. The use of stimulants, which urge on the languid circulation, is clearly indicated; but the alkalis, and more particularly the volatile alkali ammonia, are the only agents we are acquainted with which have a direct power in diminishing the tendency to coagulation, and they should, therefore, be freely administered when we have reason to dread the formation of concretions in the heart. The value of ammonia for this purpose, I may add, was long ago pointed out by Dr. Richardson.

With regard to the class of diseases in which this kind of concretions occur, Dr. Bristowe found that, in a series of forty-one cases, in all but one, which was a case of sloughing sore throat after scarlet fever, they were cases of either heart-disease, arterial disease, chronic bronchitis, renal disease, tuberculosis, or such a complex of two or more of these affections as we are constantly meeting with in hospital practice.

The third kind of concretions are not always separated by a distinct line of demarcation from the previous one. The concretions, whether in the heart or blood-vessels, which have begun to soften and break down in the centre are often of long standing. I had clear evidence in one case of a concretion in the right ventricle, which was partially softened, of its existence for more than one month; and, in a case recorded by Lancereaux (Observation cxxii.), where several concretions had so softened as to assume the form of fibrinous cysts, the duration was probably much longer. The softening of these concretions produces the puriform appearance often seen in the centre, and the washing away of the detritus is a cause of capillary embolism in various organs: in the lungs, when the thrombus or concretion is in the venous system or right side of the heart; in the liver, when the concretion is in the portal system; and in the brain, spleen, and other organs of the body, when the concretion is in the left side of the heart or larger arteries.

Dr. Ogle reports eight cases of concretions in the cavities of the heart of old standing, some partially converted into a puriform fluid. Of these, five were in the right auricle, one in the right ventricle, and two in the left ventricle.

The thrombi which form in the veins may undergo the same kind of softening, but they also undergo other changes, and may be partially or completely absorbed.

With respect to the causes of thrombi, we have seen that the clotting of blood by which thrombi are formed is caused by an alteration in the state of the fibrin, and the conditions which

determine this in the heart or vessels have been fully studied by pathologists, and they may be arranged in two principal groups: 1, those which produce interruption, stagnation, or slowing of the blood-current, 2, those which produce changes in the vessels or their walls. In many cases, however, these conditions are combined and act together.

To the first group belong the thrombi from ligature of vessels from the pressure of tumors or abscesses, tubercular or carcinomatous disease, and from surgical injuries. The pressure or stagnation from consolidation of an organ, as in pneumonia or nephritis, may first cause coagulation in the capillary veins, from which it may extend by continued deposition till it reaches the larger vessels. Dilatation, by producing stagnation of blood in the part, causes fibrinous deposits: in the veins, when these are in a varicose condition; in the arteries, where there is aneurism; and in the heart, where the cavities are dilated.

The long continuance of any chronic disease may, by weakening the power of the heart and the vessels, and by lessening the respiratory force which aids the circulation, produce what has been called marasmus or debility thrombosis. In this way, clots form in the sinuses of the brain in chlorosis, and also in other cachectic diseases where the blood is detained by wasting of the cerebral substance. Thus, too, thrombi form in the veins as a consequence of febrile diseases, such as typhus and typhoid, and in tubercular and carcinomatous affections.

The *second* group of conditions which produce clotting—those, viz., within the vessels, and where the blood comes in contact with an abnormal surface deficient in vitality—comprise phlebitis, endocarditis, endarteritis, and also the roughness of the vascular coats from the degenerative changes of fatty or calcareous nature. Also the projection of any foreign body into the vessels or the blood, such as needles, bone, shot, or blood-clots themselves. The passage of pus into the vascular system acts in the same way; and, after fractures, there is sometimes absorption of marrow or fat by the veins, which becomes a source of thrombosis and pulmonary embolism. (On Fat Embolism, see *Medical Times and Gazette*, January 8th, 1876.) Purulent matter may find its way into the veins, not only by the opening of an abscess into them, but also from suppurative phlebitis; the occurrence of which, though rare, cannot be questioned. There are thus two kinds of thrombi—those which are caused by mere mechanical stasis, and those which are produced by suppurative gangrenous or other inflammation in or around the walls of the veins. Thrombi of the latter kind, transported by the blood current, carry with them the embolic seeds of disease to the distant part in which they are arrested, and thus we have pyæmic thrombosis and embolism. It is not improbable that pyæmia may sometimes result from the puriform softening of fibrinous concretions formed in the heart or veins; but no doubt it far

more frequently arises from those thrombi having access to the external air, and connected with wounds or with the uterus.

When we see the great variety of conditions which may thus lead to clotting of the blood, we are enabled to appreciate the importance of thrombosis in a practical sense, and in its relations to other diseases. Time presses, however, and we pass on to view the subject in some of its clinical aspects.

In doing this, I shall first direct your attention to thrombosis of the venous system, and of the right side of the heart, in causing embolism of the pulmonary artery, embolic pneumonia, etc.; 2d, to thrombosis and embolism of the portal system and the liver; 3d, to thrombosis of the left side of the heart and embolism of the arterial system.

1. The following case is one where a fibrinous concretion formed in the right ventricle of the heart; and the course of the symptoms showed that another coagulation subsequently took place in the left subclavian vein at its junction with the internal jugular vein. A robust young man, twenty years of age, steward of a ship, was admitted into the infirmary on November 16th; ill five weeks, and off work nine days. His legs and abdomen were dropsical, but there was no albumen in the urine. The pulse was feeble, and the heart acted with great irregularity. There were extreme cardiac distress and difficulty of breathing, which symptoms were aggravated by being raised, so that he lay with his head as low as possible. An indistinct systolic murmur was heard at the apex, which afterwards became inaudible. The dropsy disappeared from the abdomen and legs; but he had frequent vomiting, and the cardiac distress and weakness were most severe for three weeks. The pulse then became more regular and stronger, the distress at the heart abated, no murmurs could be heard, but new symptoms appeared. The left arm began to swell; he complained of pain in the left shoulder; there was tenderness on pressure above the left clavicle, œdema of the surrounding parts, and signs of effusion in the same side of the chest. From the 10th to the 18th of December, these new symptoms continued, whilst the heart symptoms abated; and on the 18th, while sitting up in bed and eating a biscuit, he suddenly expired.

On examination, an old fibrinous concretion, partially softened and broken down, was found in the apex of the right ventricle; and this must have been the cause of the unusually distressing cardiac symptoms, as the heart did not appear diseased. A firm fibrinous thrombus was found in the left subclavian vein, at its junction with the jugular, which completely obstructed the former, and was the cause of the œdema of the arm. It must have formed long after the cardiac concretion; and as we can scarcely suppose that the softened particles from this could pass through the pulmonary capillaries, and then through the systemic capilaries, to form the nucleus of the concretion in the vein, it appears more probable that there may have been a

morbid tendency in the blood to coagulation, the persistence of which caused the formation of the second as well as the first thrombus.

I was called to see in consultation a gentleman, about fifty-six years of age, a large robust man, whose illness began with a pain and slight swelling in the calf of the right leg, which he could attribute to nothing except a slight jerk in getting into an omnibus. This was followed by severe pain in the abdomen, then pain in the chest, and pneumonic signs in the right lung, and expectoration of blood and sputa mixed with blood. The left leg next began to swell, and both continued painful, œdematous, and the superficial veins were hard and painful to the touch. He sank in about three weeks with increasing pulmonary obstruction, pleuritic effusion, and œdema of the legs. No examination could be obtained.

The next case was so similar to the preceding in the succession of symptoms, as well as in the slightness of the injury from which it was supposed to arise, that I ventured, from the description given by the medical attendant, to suggest before seeing the patient the probability of its being a case of venous thrombosis and embolic pneumonia.

An active, healthy-looking gentleman, forty five years of age, rode out ten miles on horseback The horse, being spirited, gave him trouble; and he felt stiff in his legs after the exertion. Next day there were slight redness and pain on the inside of the right leg, with œdematous swelling. This was followed by rigor and pain in the right side of the chest, cough and expectoration of bloody mucous more fluid than the rusty expectoration of ordinary pneumonia. When I saw him on the third day, there were some dulness on percussion, and rather coarse crepitation over the lateral and central portion of the right lung, with moderate febrile disturbance; but the right leg had also begun to be swollen, with painful streaks of redness in the course of the internal saphena vein, and pain also on pressure in the groin. The embolic pneumonia quickly subsided, but the venous obstruction increased, and required surgical treatment. The case passed, therefore, from my care and observation; and, after having made partial recovery, the gentleman died about four months after his first attack, ulceration of the cartilages of the right ankle having supervened after erysipelas, on account of which he underwent amputation.

In the first of these cases, the thrombosis could not be traced to its cause; and the injury or cause to which it was attributed in the two other cases was of so trifling a nature that we can scarcely doubt that there must have been some predisposing condition in the constitution or the blood itself.

Sir James Paget has shown that similar cases occur in persons of gouty constitution, and he inclines to the view that the coagulation is caused by gouty phlebitis. He tells us it affects chiefly the superficial veins of the lower limbs, and shows a disposition

towards being metastatic and symmetrical, characters which, in his opinion, are strongly in favor of the belief that the essential and primary disease is not a coagulation of the blood, but an inflammation of portions of the venous walls. On the other hand, however, we must not forget that, whilst phlebitis is a cause of coagulation, thrombi likewise produce adhesive phlebitis.

Mr. Prescott Hewett, Dr. Tuckwell, and Dr. George Johnson have likewise observed the occurrence of thrombosis in the gouty condition. Mr. Hewett observes: "In a very few cases only did the clotting of the blood appear to be connected with an injury—a slight contusion, a sudden strain of the limb. In some cases it followed fever, especially typhoid fever; and in one remarkable case, in which both external iliac veins and both axillary in the course of months became permanently blocked, it followed small-pox. In most cases, the patients were over forty. In three of his cases, there was embolism, with pleuro-pneumonia. The limb usually remained more or less swelled, but one gentleman recovered so as to return to deer-stalking."

Dr. George Johnson (*British Medical Journal*, November 30th, 1872) found in two of his cases that the symptoms of cardiac thrombosis preceded those of venous obstruction, resembling in this respect the first case I have detailed; and from this he infers that fibrinous *débris* from clot in the pulmonary artery may pass through the capillaries of the lungs and thence into the arterial capillaries, and so reach the veins of the limbs. I have, however, already observed that we can more readily conceive the occurrence of secondary venous clotting from continuance of the original cause than from the passage of the solid particles from the *débris* of fibrine through two sets of capillaries.

It has been observed that in chlorosis the state of the blood predisposes to thrombosis; and a case came under my observation at the Infirmary this summer, where there was a great amount of clotting in many of the veins, and apparently confined entirely to the venous system. There was also clear evidence from the symptoms of two distinct attacks of clotting in different parts of the venous system A pale, delicate girl, aged 21, was admitted on June 28th. She had not menstruated for two months; and, after bathing in the sea was seized with pain in the lower part of the abdomen and the sacrum. The left leg, and then the right, became painful, hard, and swollen. She afterwards had an attack of dyspnœa. On July 14th, head symptoms suddenly showed themselves; she became unconscious; hemiplegia on the right side followed; and she died on the 17th. A great amount of blood-clotting of dark colour was found in both femoral veins, in those behind the uterus and bladder; and where the iliacs terminated in the inferior vena cava there was a firm whitish old thrombus adherent to the venous walls; higher up, the thrombus was softer and of a dark colour; but, still nearer the heart, it became again white and firm, with a conical termination. There were thrombi in some of the branches

of the pulmonary artery, and a small portion of lobular pneumonic consolidation in the left lung. A branch of the pulmonary vein from the left lung was obstructed by a firm thrombus, and soft recent concretions were found in the left auricle and ventricle. No infarction of the viscera or appearance of arterial embolism was discovered. There was a firm white thrombus obstructing the straight sinus of the brain; and the veins on the surface of both hemispheres were filled with dark clots. There was an extensive softening and diffusion of dark clots of blood in the left hemisphere, and similar less advanced appearances on the right side.

What was the cause of the venous clotting in this remarkable case? Did it arise from phlebitis, seeing that there was some pelvic irritation, or from some condition of the blood itself? I take the latter view, and partly for this reason, that there was a second clotting in the cerebral veins, the symptoms of which were separated by about fifteen days from those marking the first attack in the pelvic and femoral veins.

In the medical journals, and more particularly in the *Transactions* of the Pathological Society, there have been published numerous cases illustrating thrombosis and embolism; and Lancereaux gives, in his work, *Atlas d'Anatomie Pathologique*, many cases which throw light on the subject. In two cases, he shows the danger from sudden movement or excitement in displacing venous thrombi, and thus causing them to be carried into the pulmonary artery.

A woman sixty-six years of age, who had thrombosis of the femoral vein and pneumonia, from which she was recovering, got out of bed in a passion, and died suddenly of embolism of the pulmonary artery. Another woman twenty-three years of age, was suffering from venous thrombosis and œdematous thickening of the left leg, but was better and about to be discharged. After a fit of laughing ("à la suite d'un accès de rire"), she died quite suddenly. The popliteal and tibial veins were found obliterated with clots; and embolic concretions from the femoral vein were found in the right ventricle, and also obstructing the branches of the pulmonary artery. Dr. Browne has reported (*Lancet* June 27th, 1874) the case of a man suffering from an injury to a varicose vein, for which an elastic stocking was applied. In running a short distance to avoid a shower, he was seized with a faintness and dyspnœa, and died within three-quarters of an hour, from complete obstruction of the inferior vena cava. These cases show the importance of complete rest in the treatment of thrombi, and the danger of displacing them from the position in which they have formed. Lancereaux has given a series of seventy cases showing with what diseases thrombosis and embolism of the venous system and right side of the heart are most frequently associated, from which it would appear that they are most frequently met with in connection with carcinomatous, tubercular, and scrofulous

diseases, the puerperal condition, varicose veins, and syphilis. In six of these seventy cases, death occurred suddenly.

Disease of the heart is a frequent source of concretions in the right cavities, especially in the auricle, leading to pulmonary embolism; and this is one of the ways in which cardiac disease may prove suddenly fatal. Lancereaux tabulates eighteen cases to show the cardiac affections most prone to produce these concretions. In seven, there was contracted mitral orifice; in two, insufficiency of the mitral valve; and in nine, dilation of the right side of the heart from pulmonary lesion.

In the puerperal condition, there is not only an increased quantity of fibrin in the blood, but with this there is also venous stagnation from pressure and dilation—a combination of causes prone to induce thrombosis; and it is well known to obstetric practitioners that some of the most formidable accidents consequent on delivery are due to thrombosis and embolism. Dr. Barnes and Dr. W. S. Playfair have both described, in papers in the *Transactions* of the Obstetrical Society, the appalling symptoms of dyspnœa, etc., which from this cause suddenly attack patients after confinement. They do not, however, differ materially from the symptoms which mark the occurrence of complete or partial pulmonary embolism from other causes. Dr. Barnes has shown that the puerperal condition disposes to clotting of blood in the arterial as well as the venous circulation, and in two of his cases the veins and arteries were both obstructed.

When a fibrinous clot from the peripheral veins or from the right side of the heart completely obstructs the pulmonary artery, death must of course follow rapidly; and the same result must ensue where the larger branches are completely obstructed by smaller clots. But, when some of the smaller branches only are plugged, the parts supplied by the vessels become the seat of embolic pneumonia or infarction, formerly known as pulmonary apoplexy. Recovery not unfrequently takes place from this condition, the dark wedge-shaped portions of consolidated lung undergoing fatty transformation and absorption; but, on the other hand, the pneumonic abscesses which result from septic emboli are probably always fatal.

I must necessarily be brief with the two remaining divisions of my subject, each of which would suffice for a single paper or address.

2. Thrombosis and embolism of the portal system and liver have been very fully investigated by Frerichs, who has shown that the same causes which operate in the venous system act here too. Thrombosis and embolism of the vena porta are, perhaps, not unfrequently overlooked for the same reason that they are not observed in the other organs; viz., because the organs are more carefully examined than the vessels. But the study of pathology has become a laborious work, and microscopic examination is also necessary to discover the smaller capilary embo-

lisms. If we are, therefore, to advance pathological knowledge, we must continue to uphold our Microscopical Section, and to encourage those who devote their energies to this laborious work.

3. The third and last branch of our subject comprises thrombosis of the cavities of the left side of the heart, thrombosis of the arteries, and embolism of the branches of the arteries; also the effects of embolism on the viscera and limbs in producing infarction, softening, gangrene, and loss of function.

Concretions form in the cavities of the left side of the heart from conditions similar to those which produce them in the right side, especially in the left auricle from contraction of the mitral orifice; and Lancereaux describes two cases of concretions in the auricle from mitral contraction consequent on acute rheumatism. He has also reported two cases of fibrinous concretions in the left ventricle. In one, where this cavity was much hypertrophied, there were five concretions, varying from the size of a nut to a pigeon's egg. The larger, adherent to the internal surface, were softened at the centre, and contained a milky-looking fluid. In the other, a case of weak, fatty, dilated heart in an intemperate man, there were also several concretions embedded in the fleshy columns, which were softened in the centre.

We know that the left side of the heart is liable to endocardial inflammation, and to valvular affections, which rarely affect the right side; and these conditions cause the formation of smaller fibrinous concretions, which are deposited like granulations on the edges of the valves; and they, as well as the larger concretions resulting from stasis, are a frequent cause of embolic obstructions in the arteries. Rheumatic fever is known to be one of the great causes of endocarditis, and it may produce either valvular contraction or these warty concretions on the edges of the valves. There is, however, another form of endocarditis—the ulcerative—from which embolic matter may be carried away; and this is much more injurious in its effects, being of septic or pyæmic nature; and Lancereaux, who has collected eleven cases, tells us it always proves fatal.

With regard to arterial thrombosis, concretions form less commonly in the arteries than in the veins; but they are produced, as in aneurisms, by dilatation and contraction of the vessels, and also by degeneration of the coats. Last session, Dr. Davidson brought before this society a case of fibrinous obstruction of the arteries of the brain, which were thickened by syphilitic disease, and this he regarded as thrombosis. Dr. Bristowe (*Transactions* of the Pathological Society) reports a similar case, where the right hemisphere was softened from obstruction of the middle cerebral artery. He has also reported seven cases of fibrinous deposits in the arteries of the brain, which, he thinks, were not of embolic nature, and must have been due to spontaneous coagulation of blood or local arteritis. In the arteries as well as in the veins, there must be often this difficulty in deciding

whether a fibrinous clot has formed in the situation where it is found, or has been transported from a distant part. In either case, however, the effects on the obstructed organ or part will not be materially different.

With respect to arterial embolism, not only the large concretions which form in the left auricle and ventricle, but also the smaller ones which are deposited on the valves, as well as the degenerating matters which escape from both forms of concretions, are liable to be swept away by the blood-current to form embolic plugs in the arterial branches. The clots also which form on the coats of diseased arteries, and likewise the fatty or calcareous matters which form there or on the valves, are carried away and block up the arteries of the spleen, the kidneys, the brain, or the limbs, the relative degree of liability to be affected being in this order, and being due to the particular conditions of the circulating system of these organs.

I need not describe the appearances of infarction and softening presented by each of those organs in consequence of embolic obstruction. We are all, however, I believe, in the present day aware of the fact that embolic obstruction of the arteries of the brain is a frequent cause of softening and paralysis, which cannot be removed by any active depleting and counter-irritant treatment, but is more likely to be benefited by rest and gentle stimulation. And I would remark that, just as Paget, so far back as 1844, drew attention to coagulation of the blood in the pulmonary artery, ably illustrating the subject by a series of carefully observed cases, so also Dr. Kirkes was, in 1852, the first to demonstrate clearly by another series of cases that fibrinous deposits in the interior of the left side of the heart are a frequent cause of softening of the brain, which always results when the obstruction is beyond the circle of Willis, owing to the absence of anastomosing branches. In his very original paper, he also illustrated the effects of embolic obstruction in producing infarctions of the spleen and kidneys, and also the violet-colored petechial spots on the mucous membrane of the stomach and bowels, which are produced by the same cause.

I have condensed from the Infirmary Clinical Medical Prize Reports of this year a case which occurred lately in the Infirmary, which shows well the close connection between valvular disease of the left side of the heart and cerebral softening.

A woman, twenty-one years of age, admitted with disease of the heart consequent on rheumatic fever, became suddenly unconscious, with right hemiphlegia, the day before her death. The middle cerebral artery was found plugged by white fibrine; and on the mitral and aortic valves were found numerous fibrinous and calcareous vegetations, which showed the source from which the embolic matter was derived. The cause of the obstruction in this case is sufficiently clear; but in another case, taken from the same reports, and which occurred in the hospital practice of my colleague Dr. Glynn, the cause of the arterial obstruc-

tion was more obscure, and was probably from thrombosis, seeing that there was also venous thrombosis.

A girl, nineteen years of age, was carried helpless into the Infirmary on January 4th, having had a sudden seizure, followed by left hemiphlegia and anæsthesia, which had been preceded by pain in the right side of the head. She died on March 13th. There was extensive softening of the right middle cerebral lobe. The right internal carotid artery was plugged by what appeared to be an embolon at the bifurcation of the anterior and middle cerebral arteries, the higher part being firm and of yellowish color; but lower down, of dark brown color, and having a conical termination in the external carotid. The thyroid body was enlarged; the heart sound. There was also a thrombus in the lower end of the vena cava, and in the left common and external iliac veins adherent to the walls.

Here, again, we have coagulation of blood in both the arterial and the venous system which has been observed in so many other recorded cases.

I might have alluded to some other forms of embolism, to the effect of embolism of the coronary artery in arresting the heart's action, to the effect of plugging of the central artery of the retina in destroying vision, and to the connection between embolism and paraplegia, chorea, and some other nervous affections. I might also have alluded to the view taken by Dr. George Johnson, that the lobular pneumonia which often follows extensive burns arises from the passage of coagulated blood from the injured parts to the pulmonary vessels and the duodenal ulcers from a similar cause. We can readily understand the wide range of effects produced by the blood distributed throughout the whole system; but yet we must be careful in not ascribing to the effect of embolism anything that is not proved by rigid observation. Sufficient has, however, now been adduced to show how great are the consequences that may result from the coagulation, the lessened vitality, or it may be the death of a minute portion of the blood passing through the heart or circulating in a vein or an artery, and to prove the importance of a knowledge of this subject to all who are engaged in the practice of medicine or surgery.—*British Medical Journal.*

RECURRENT EPISTAXIS FROM MALARIAL INFLUENCE.

By E. M. Sinclair, M.D., Surgeon-Major Royal Artillery.

With reference to the paper by Surgeon-Major J. H. Porter of Netley, on Intermittent Hemorrhage from Malarial Influence, read before the Royal Medical and Chirurgical Society in February last, the following case of intermittent epistaxis from the same cause may prove of interest.

G. ——, aged 25, in the service two years, by trade a shoeing-smith, an intemperate man and not of good character, arrived at Kamptee (from England) in December, 1874. In 1875 he had four admissions into hospital for accidental injuries, and one in October under the head of simple continued fever, treated by quinine.

In January of the present year, he became an inmate of the military jail at Secunderabad, and was, after five months' imprisonment, admitted to hospital at that station in a debilatated state, complaining of muscular pains in the trunk and limbs, anorexia, and want of sleep. The temperature was normal; bowels very sluggish; tongue rather foul; urine clear and normal, of specific gravity 1016. He was ordered a mixture of citrate of iron and quinine; and twenty-five grains of hydrate of chloral at bedtime.

On the sixth day after admission, he complained of tingling sensations in the legs, with pain in the back and abdomen, through the thin walls of which the pulsations of the abdominal aorta could be felt most distinctly on very slight pressure, simulating somewhat an aneurism. There was a *bruit* of anæmia, but no tumor or enlargement of the artery, which could be distinctly traced to the bifurcation. He was ordered beef-tea, milk with lime-water, a small quantity of brandy and water occasionally, and a mixture of chlorate of potass, hydrochloric acid, and tincture of iron; also a morphia draught at night. Little or no change occurred till the twelfth day, when he was suddenly seized, about 8 a. m., with epistaxis, and lost blood to the extent of about two ounces. This was checked for the time by the application of ice, but recurred to about the same extent at 1 p. m. Temperature 100.5°, On the following two days (thirteenth and fourteenth days), he had epistaxis twice daily, though to rather less extent. Morning temperature normal; evening 99.4°. He was given tincture of ergot in draught, and also added to the chlorate of potass mixture; and equal parts of tincture of perchloride of iron and water were thrown up the nares with a syringe. He improved slightly. The epistaxis was less in quantity, but recurred, at irregular hours, once in the twenty-four hours until the nineteenth day, when it came on with increased severity twice, about the same hours as at first, viz., 8 a. m. and 1 p. m. These attacks were preceded by a "shivering," but there was no hot stage, the temperature not rising above 99 4°. He was now put upon quinine, fifteen grains a day, with generous diet. On the twentieth, twenty-first, and twenty-second days, there was recurrence twice daily of the epistaxis, but it gradually became less in quantity. On the twenty-third and twenty-fourth days, there was no bleeding. On the twenty-fifth day it occurred once, in the morning, having been preceded, by a longer "shivering" than usual some hours before; but, as the man had failed to call an attendant at the time, as directed, his condition was not noted. The quinine was

continued for ten days longer, but he had no return of the epistaxis or "shivering," as he described the cold stage.

The question in the above case seems to be this: Was the epistaxis in any way attributable to malarial influence? This would appear to be answered in the affirmative, from its cure and prevention by the administration of quinine.

The station of Secunderabad has a red gravelly soil, and is wonderfully free from malaria, a case of true ague *originating* in the station being a rarity; while Kamptee, whence the man came and where he was previously stationed at for one year, is just the reverse, the soil being that known as "black cotton-soil," and intermittent fevers of all sorts the prevailing diseases. Had we here, as Dr. Lauder Brunton considered to have happened in Surgeon-Major Porter's case above referred to, "the poison of ague remaining in the portal system, and being directed into the systemic circulation," owing to the debilitated condition the man had fallen into from the five months confinement in jail? or was the poison all the time in the systemic circulation like that of syphilis, making itself evident in the same manner when the vital powers were debilitated and brought below par.—*British Medical Journal.*

SURGERY.

[Compiled by SAMUEL LOGAN, M.D., Professor of Anatomy and Clinical Surgery Medical Department, University of Louisiana.]

A CASE OF URETEROPLASTY.

BY PROF. NUSSBAUM, OF MUNICH.

(Abstract from Bavaria *Intelligenz Blatt*,. by Dr. Petershausen.)

Ovariotomy has been performed more than a thousand times, when it happened that Prof. Simon, of Heidelberg, accidentally cut through the left ureter at an operation. As he was compelled at the same time to remove a large part of the uterus, the urine afterwards ran both through the abdominal fistula, which formed itself in the cicatrix, and through the cervical cavity and through the vagina. Great suffering was caused to the patient by this state of things. But at last the professor ended her miserable condition by resorting to renotomy, which operation was a complete success, the remaining kidney assuming a two-fold function. Afterwards a similar misfortune occurred to Prof. Nussbaum, while removing an ovarian cyst of fifteen years' standing. The most difficult part of the work was the separation of the tumor from the uterus. Thus far the operation was successful; but it was noticed that, after several days, the quantity of urine was much less than it should have been, while at the same

time a watery exeretion oozed out of the abdominal wound. A close examination of the execretion showed that it contained urine. As the bladder was not injured, it seemed that the injury resembled that in Simon's case. An examination proved that the right ureter, which was closely connected with the ovary, had been cut during the operation. The woman made a quick recovery, but as there remained an abdominal fistula, through which one-half of the urine escaped, the poor woman was so exceedingly troubled by it that the doctor at last concluded to put an end to her suffering. There were different methods which the doctor had in view for this purpose. In this case he thought it would be best to conduct the urine, excreted by the fistula, to the bladder by the shortest way. This could be done, either by uniting the cut parts of the ureter or by forming an artificial one. The doctor intended to try the first method. The abdominal fistula was dilated for two days by laminaria bougies. Then intruding his left forefinger into the fistula, he could reach a reservoir of the urine, and the termination of that part of the ureter which was connected with the kidney. To reach the other end of the ureter the doctor widened the urethra by Simon's dilator, but he was unsuccessful in finding the termination of the ureter. When he introduced a male catheter into the bladder, and pushing the latter upwards by it, his left forefinger in the fistula could be touched, the intervening space being no greater than an inch. This space was now penetrated by a trocar, and in the opening there was introduced a drainage tube. To its lower part there was attached a glass tube with a broad margin, by which an escape of the drainage tube toward the fistula was to be prevented, while a silver wire, fastened to the upper end of the tube, was led from this point through the fistula, and, by strips of adhesive plaster, attached to the skin. The drainage tube, which in this manner was kept in position, was intended for a supplementary ureter. Incontinence followed for three days, but in general the patient got along nicely. Some days later the tube unfortunately escaped, in spite of its rim, through the newly formed ureter, and this became obstructed by flocculent matter. The urine was again excreted by the fistula, and the doctor had to introduce another tube. The upper end of this was likewise connected with a silver wire, but it was so much longer that its lower end protruded from the urethra so that the urine ran into the vessel. The patient was very unwell for some days; but little urine was excreted by the fistula. To the astonishment of the operator he found the drainage tube, two days after its introduction, upon the patient's belly. This tube had also slipped upwards, as in the previous instance. However an injection of litmus solution convinced the doctor that the artificial way was still open, and consequently, he did not introduce another tube. The artificial way kept intact, a normal quantity of urine was excreted, and when, several weeks later a few drops of urine were still excreted by the fistula, which

was then very narrow, this was closed by cauterization. The patient's health became excellent afterwards."—*Medical Record.*

CANCER: INJECTION OF BROMINE.

We saw, also, with Dr. W. Williams, a woman, aged 50, whose cervix uteri had been amputated for epithelial cancer, by Mr. Baker Brown, eight years before. The actual cautery had been applied later by Dr. Routh, and later still, Dr. W. Williams had injected bromine at three sittings, after which the whole of the affected part came away, and complete healing took place. The parts were now quite sound. There was apparently only an inch of uterus left. The solution used is one part of bromine to three of rectified spirits. This developes heat, and should be prepared before being carried for use. From five to ten minims are injected into the tissues by means of a long syringe with platinum nozzle and india-rubber piston. It is desirable to remember that it may destroy the sense of smell in the operator; but this loss may be prevented by alkalinised cotton-wool placed in the nostrils.—*British Medical Journal.*

ON THE TREATMENT OF TETANUS BY NERVE-STRETCHING.

George W. Callender, F.R.S., Surgeon to St. Bartholomew's Hospital, writes to the *Lancet:*

In a paper read before the Abernethian Society (*St. Bartholomew's Hospital Reports*, vol. xi., 1875, p. 287), Mr. Milner has advocated the treatment of tetanus by nerve-stretching, and in some observations on this operation upon nerve-trunks (*Clinical Society Transactions*, vol. vii., 1874, p. 100), I have expressed my regret, in narrating a case of tetanus, that the peroneal nerve was not exposed and stretched. Since this was written, no case of traumatic tetanus has come under my care, but had the opportunity been given me I should certainly have planned an operation such as I have indicated, supposing, of course, that the nature of the case permitted me to stretch a nerve-trunk between the site of injury and the nerve-centres. I am glad to hear that, quite recently, M. Verneuil has had under his care, in La Pitié, a case which he will, I hope, shortly publish.

A man had suffered from a severe crush of the hand, and, following this, showed the symptoms of tetanus. M. Verneuil exposed the median nerve at the elbow, and the ulnar at the wrist, and proceeded to exercise traction on them. The patient recovered completely.

I hope this note may lead to a further trial of this method of treatment. The operation is not a severe one. The nerve

is exposed and is stretched, when freed from its surroundings, by traction with an ordinary vulsellum, from its central connexions. No harm is likely to be sustained as a consequence. There is now abundant evidence, in the cases reported by Billroth, Nussbaum, and myself, of the tolerance with which nerves submit to forcible stretching, so far as the after-performance of their functions is concerned. In view of the unsatisfactory results of the treatment of traumatic tetanus as at present conducted, there is full justification for the performance of the operation as, at least, a last resource, although I should myself advocate its trial, as in the case under the care of M. Verneuil, as soon as the signs of the disease are distinctly recognized.—*Nashville Journal of Medicine and Surgery.*

TRAUMATIC TETANUS CURED BY NERVE-STRETCHING.

Vogt. (*Centralbl. f. Chir.*, No. 40, 1876.)

Since the publication of Prof. Nussbaum's famous case of neuralgia cured by stretching the cervical plexus, the operation of nerve-stretching has been repeatedly performed by Nussbaum, Billroth, Callender, Vogt, and others. The operation was applied for the cure of neuralgia, clonic spasms, and various other nervous affections. It always had the desired effect, and proved to be free from danger. These good results surely warranted the experiment of the operation in the following case: On August 23d, a stone mason, aged sixty-three years, had his right hand wounded by a heavy stone. The large flap wound of the palm of the hand kindly healed under antiseptic dressings, while the smaller wound of the back of the hand very slowly healed by granulations. On September 7th, the attending physician found the first evidence of trismus, and two days later tetanus supervened. On September 16th, Prof. Vogt found the patient suffering from a continuous lock jaw, and he was frequently seized with violent attacks of opisthotonos and clonic spasms, while the lower extremities were excessively rigid. Neither the recent thick cicatrix in the palm of the right hand, nor the surroundings of the well granulating wound at the back of the hand, showed any tenderness on pressure. No painful spots existed in the course of the nerves of the forearm or arm, but the region of the brachial plexus was so sensitive that the slightest touch produced convulsions. The patient, in spite of all treatment, had been daily growing worse; therefore the professor at once resorted to the traction upon the brachial plexus. First, however, the palmar cicatrix was cut into and freed from the aponeurosis and the tendons; a foreign body was not found. On the right side of the neck, then, a longitudinal incision was made, parallel to the anterior border of the trapezius muscle, and in

the triangular space between the trapezius, omohyoid and scalenus muscles, the brachial plexus was exposed. The sheath of nerves being severed, a blunt hook was passed under the nerves to lift them out of their surroundings. The flexed forefinger could there be substituted for the hook, and make energetic tractions on the central as well as the peripheric portions of the nerves. The sheath of the nerves, looking exceedingly hyperæmic, was split up as far as the inter-vertebral foramina. A drainage tube was put in, and the wound was dressed antiseptically. No sooner had the patient recovered from the narcosis than he could open his mouth sufficiently to put out his tongue and to take some fluid nourishment. The tetanic rigidity and spasms of the muscles had entirely disappeared and did not return, a few slight momentary twitchings in the neck and back excepted, which occurred on the patient's first sitting up in a chair. The patient felt exceedingly weak, and slept very much during the day, while at night morphia had to be administered for restlessness. No other medicine was used. And now, ten days after the operation, the wounds are nearly healed, and the patient can, *ad libitum*, stand and sit and walk; nor does he experience any disturbance of sensibility or motility in his right arm.—*Chicago Medical Journal and Examiner.*

TREATMENT OF TRACHEAL AND LARYNGEAL STENOSIS BY DILATATION.

THAON. (*Le Progres. Med.*, No. 38.)

Syphilis, small-pox, and typhoid fever, from their tracheal and laryngeal localizations, are the most frequent causes of contraction of the ærial conduit, and in these stenosis is most surely caused by submucous lesions. Perichondritis is almost invariably observed, and in its train occurs necrosis of bone and anchylosis of the small articulation. It develops an exudation which leads to prominence of the mucous membrane, ulceration, or fibrous transformation, compressed and therefore inactive muscles, which undergo fatty degeneration. These processes are hardly evident to the laryngoscope. Sometimes the epiglottis is destroyed and falls upon the glottis, where, becoming adherent, it remains fixed in a vicious position.

It must be elevated with a curved sound in order to uncover the completely obstructed glottis. It is surprising that respiration should be possible through such a tortuous and occluded canal. Sometimes the tube is closed by a true diaphragm, more or less eccentrically perforated, and composed of a whitish cicatricial membrane.

The symptoms are referable to a distant date, when there was hoarseness, dyspnœa, and a sense of suffocation. Then tracheotomy does not cure; it saves life, but leaves behind the stricture

which pre-existed, and a true fistule of a dangerous character. Existence at such a price is dear.

Before the tracheal tube can be removed, the natural passage-way of the air must be restored. Liston (1827), Czermak (1851), Guêrin, Richet, Busch, Brake, Gurlt, Bruns, Dolbeau, Gerhardt, Trendelenberg, operated by instruments passed upward through the artificial opening.

The direct method (by the mouth) has been tried by only Ronx, Desprès, Thiersch and Navratil—always without success.

After two months' trial with the method of Schrötter, the author is disposed to recommend it highly. The former operates by the superior or natural passage, but the method of operating and the form of his instruments vary according to whether there (*a*) is or (*b*) is not a surgical opening in the neck.

(*a*) In this case the tracheal fistula is utilized only for the purpose of fixing in the larynx a dilating prism, introduced through the mouth. The prisms are zinc, triangular in shape, with rounded borders, and resemble in form the glottis. Inferiorly they present a small narrowed neck, surmounted by an equally small rounded head. The prism descends into the air passage and becomes engaged in the opened tracheal canula, toward its dome. A pair of slender forceps, capable of continuous pressure, is introduced through the neck, seizes the prism at its constricted part, and holds it in place. At its upper extremity the prism is provided with a stout thread. At the time of introduction this thread is made to pass through a long curved tube, when it is firmly fastened by a knot to the handle by which the tube is carried. Thus constituted, the apparatus represents an uninterrupted instrument, composed of a curved branch (the tube) and a terminal enlargement (the prism). By the aid of the laryngeal mirror, it is engaged in the larynx and fixed below by the tracheal forceps. The knot is then unfastened; the tube, which is no longer retained by the prism, is withdrawn, and the thread, which remains attached to the prism, is brought out of the mouth and attached to the ear. The patient or physician has but to draw upon the thread and open the forceps in order to extract the prism from the larynx.

Some education of the parts is requisite before proceeding to the dilatation, which is accomplished by the successive introduction of a series of prisms, numbered from one to twenty-four—the smallest being eight millimeters in one measurement and six in the other, the largest being twenty by sixteen. All are four centimeters long. The duration of the dilatation is from a few minutes at the outset to the entire night, the patient being finally able to sleep with the instrument *in situ*, because accustomed to its presence. The results are satisfactory to a surprising degree. Soon the knife or galvano-cauter may be used to divide a bridle, or various caustic applications may be made to localized swollen tissue. Sometimes the voice returns, or the patient can breathe and talk with the canula closed.

Insuccess is due generally to obstructions lower down. Of course more recent cases afford the best results.

(b) In non-tracheotomized subjects the sounds are adapted to the different conditions, and the patients learn to use them themselves. The base of the tongue is depressed with the finger, and the instrument made to penetrate the larynx without hesitation. Schrötter employs also rubber sounds, somewhat longer than those described above, with a triangular laryngeal extremity and rounded borders. Lateral openings are made for the exit of mucous secretions. There is also an oval shield of hard rubber, so arranged that the expectorated secretions are directed to the floor, and not in the face of the operator. Often a previous incision of the obturator membrane by the knife or cauter is requisite before the introduction of the sound.—*Chicago Medical Journal and Examiner.*

A CASE OF RESECTION OF THE TARSAL BONES FOR CONGENITAL TALIPES EQUINO-VARUS.

By J. N. C. Davies-Colley, M.A., M.C., F.R.C.S.

Notwithstanding the recent improvements in the treatment of club-foot, cases from time to time occurred, which, from the age to which the patient had attained, the rigidity of the tissues, and the altered shape of the bones, presented insurmountable obstacles to a cure by the ordinary methods. It was not improbable that many of these cases might be successfully treated in the way which was adopted in the following instance. Edwin Harrison, aged 12, was admitted into Guy's Hospital on May 8th, 1875, under Mr. Cooper Forster. He was found to be the subject of severe talipes equino-varus; both feet were directed inwards, the soles backwards, the heels raised, and he could barely walk on account of the suppuration of bursæ which had formed on the back of the cuboid bones. He was kept in bed and splints were applied. In September, 1875, Mr, Davies-Colley took charge of the case, and divided some tendons of the left foot. As very little advantage was thus gained, it was decided to take out a V-shaped piece from the tarsus. On October 12th, this operation was performed. It was found necessary first to dissect out the cuboid bone, and then with knife and saw to cut away portions of the os calsis, astragalus, scaphoid, and cuneiform bones, together with the cartilage of the two outer metatarsal bones. There was troublesome oozing of blood after the operation, which was performed antiseptically; so a sponge was put in, and the foot left in its old position for a week. A peculiar splint was subsequently used in order to twist the anterior half of the foot into its proper position. He recovered rapidly, and, on November 23d, a similar operation was performed upon the right foot. Less than six weeks after the second resection, he

was able to get about in a wheel-chair. In nine weeks he could walk with help. In ten weeks the wounds were quite healed, all apparatus was left off, and he was able to walk alone. He was shown at a meeting of the Medico-Chirurgical Society in April last, and he could then run, jump, and hop with considerable agility. He had since that time gone to work, and, in September, a letter was received from his father stating that he had walked six miles with but little fatigue. The operation performed upon this boy was somewhat similar to one which was suggested by Dr. Little, and had been employed once by the late Mr. Solly, and several times by Mr. Davy, viz., excision of the cuboid bone. If, however, it were the object of the surgeon to restore at once a severe case of talipes to the normal position, it was necessary to cut away large portions of the adjacent bones, as well as to remove the cuboid. This mode of procedure appeared to have been once adopted by Mr. Solly, but without a very satisfactory result. The operation must be much simpler when the foot was rendered bloodless by Esmarch's bandage. The careful use of antiseptic precautions diminished very much the danger which would otherwise arise from the opening of so many joints and synovial sheaths. Finally, the splint which was afterwards used rendered the subsequent moulding of the foot into its proper relations a very easy matter. It was an operation which might be adopted with great advantage where other methods of treatment had failed, or when the patient desired to avoid the long and painful treatment and the costly apparatus which were required for the cure of the severe examples of this deformity.

Mr. Adams said that if the operation were frequently repeated, very unsuccessful results would probably have to be recorded, as so many tendons were divided and so many serous cavities opened. For relapsed varus, excision of the cuboid bone was totally unnecessary. All such cases were to be cured by mechanical means aided by tenotomy. The tendo Achillis, in the operation for varus, should not be at first divided, but should be cut last of all; up to that time, it should be made use of to overcome the inversion of the foot. The less done with the knife usually the better; the mechanical treatment generally was not properly carried out. With care in this respect, all cases could be properly cured.—Mr. Brodhurst had never seen it necessary to remove a bone at all. In Mr. Solly's case, the deformity at the end of twelve months was greater than it had been before the operation.—Mr. Davy had seen so many cases of club-foot that had been operated upon in the usual manner, in which the last stage of the patient was worse than the first, that he had taken to removing the cuboid bone, which was done without difficulty and without danger. He should repeat the operation in the more serious cases. In his third case, he had removed the cuboid and then, with a chisel, had cut out a wedge-shaped piece of bone across the foot. In some cases, the exci-

sion of the cuboid was not enough; with the further removal of other bones the success was greater.—Mr. Carr Jackson believed that the cases of relapsed varus which one saw outnumbered the cases of original varus. This arose from the fact that the mechanical treatment of varus was not sufficiently prolonged; it should last from infancy to adult life. And, if the treatment were not continued, the cases inevitably relapsed.—Mr. Davies Colley said that Mr. Solley's original intention had been to take a wedge-shaped piece out of the cuboid, and leave the anterior and posterior articular surfaces. But he eventually took away all the bone except the posterior articular surface. He (Mr. Colley) was surprised to hear Mr. Brodhurst's statement, because Mr. Solly had said in his paper, that the cure in his case was undoubtedly much expedited by the operation. It was applicable to those cases in which the patient could not attend the hospital, or could not pay for the necessary apparatus. As regarded the opening of the serous cavities, Mr. Colley thought little of that where the "antiseptic method" in its entirety was adopted. His operation was not merely excision of the cuboid bone, but of nearly the whole tarsus.—*British Medical Journal.*

PATHOLOGICAL SOCIETY OF DUBLIN.

Henry Kennedy, M.B., President, in the Chair.

Difficulty of Diagnosis of Non-existence of Thoracic Aneurism.—Dr. Finney detailed the particulars of a remarkable case The specimens were taken from the body of a Frenchwoman, aged 22, who, ten weeks before admission to hospital, had given birth to a child after a difficult labor. There was no history of syphilis or intemperance. Shortly after seeking admission to the City of Dublin Hospital, in December, 1875, for an attack of dry pleurisy of the right side, a systolic murmur was discovered over the heart, and especially towards its base and to the left side of the sternum. After six weeks' daily observation and careful examination, diagnosis of an aneurism of the left side of the ascending portion of the arch of the aorta was come to, based on the following signs and symptoms. 1. There were no symptoms or signs of constitutional disease, such as phthisis or cancer, the patient being plump, healthy-looking, and, except for the pains felt in the chest and the pulsation at the second left sterno-costal articulation, being quite well. 2. There was evidence of intrathoracic tumor, such as dulness over an area extending from the midsternum up to the left sterno-clavicular articulation, two inches to the sternal end of the clavicle and thence to the third rib one inch and a half to the left of the sternum. Over this space, no breath-sounds were heard; but a loud ringing single murmur, heard, indeed, over the base of the heart, but at a maximum towards the lower edge of the clavicle;

not heard in the carotids nor along the spine. It conveyed the idea of being very superficial. Over the same place, a diastolic pulsation, with a marked fremitus, was observable; and at the left side of the sternum above the second rib the pulsation could be seen; the heart's apex-beat being normal in force and position. The signs of pressure of an intrathoracic tumor were present. *a.* Stridor from below; *b.* Laryngeal spasmodic cough; *c.* Dysphagia; *d.* Diminution of the left side by two inches; *e.* Feeble respiratory murmur over the whole left side, while breathing outside of the area of dulness was prolonged and whistling; *f.* The left radial pulse was markedly smaller than the right; *g.* The left pupil was for a time dilated, and perspiration was noticed to be confined to the left side of the face and neck; *h.* The occurrence of phthisical softening at the left apex towards the last month of life, and catarrhal pneumonia of the whole left side. The variability of some of these signs pointed still more to aneurism. The patient died on March 6th. No aneurism was found; but over the left side of the pulmonary artery a great many peribronchial glands were found enlarged; one of the size of a small walnut lay at the side of the aorta where Botalli's duct enters it, and here the aorta had a mark as if passed by the enlarged gland, while at the same spot its calibre was reduced to admit with difficulty the little finger. This particular gland engaged the left pneumogastric nerve, the left recurrent, and the cardiac and pulmonic bronchus. The apex of the lung contained a cavity of the size of a large walnut, while the whole of the lung was in caseous degeneration and commencing softening. The pleura was also thickened and adherent. On examining the heart, the chambers and walls were normal; the aortic orifice was a little narrower than normal, but the aortic valves were perfectly natural and healthy. The pulmonary valves presented thickening at the corpora aurantii, and a small fourth valve existed between the anterior and left valves. The common pulmonary artery was somewhat dilated. No communication existed between the right and left sides of the heart, nor at the ductus Botalli. The aorta just at this spot became so narrowed as hardly to admit the little finger, and continued small for the next six inches. The explanation of the signs and symptoms was as follows. The murmur was generated at the pulmonary valves and carried up that vessel to its bifurcation. Here the overlying bronchial glands conveyed the murmur up to the clavicle, while the cavity in the lung just outside gave it intensity of tone, and caused the idea of superficiality of the sac. The engagement of the nerves by the enlarged glands explained all the other symptoms except the smallness of the left radial; and this only can be explained with deviation of the blood in the aorta due to the lateral pressure of the enlarged gland. The case exemplified the difficulty of diagnosing the *non-existence* of aneurism when all its signs and symptoms were present; and illustrated a condition of parts, not generally known,

which might closely simulate aneurism of the aortic arch. The age of the patient, and the area of loud murmur not being accompanied by an equally strong impulse were the only points which threw doubts upon the diagnosis of aneurism.—*British Medical Journal.*

NOTICES OF NEW BOOKS.

Prescription and Clinic Record (copyright). By E. Seguin.

Dr. Seguin says of this little work:

Its object is to give more precision and certainty to prescriptions by writing them twice, once for keeping, the other for the apothecary.

To substitute more and more positivism for conjecture in diagnosis and prognosis.

To record the signs of disease on the spot, in no time, and keep their series, in sight, in order to compare similar cases, and to treat the complex or protracted ones with scientific unity of plan.

To enable a physician to continue with perfect knowledge the treatment of a confrère absent or sick.

To habituate the families to keep similar records of health of every child and adult.

To generalize the use of the *numerical method* of observation which Louis, Andral, Bowditch, vainly tried to popularize in Europe and America, because they did not possess the *instruments of positive observation* and the *methods of mathematical record* now accessible to all.

* * * * * *

These *Mathematical* Records indicate the daily fluctuation of each function and their relations; as their weekly tabulation (see next page) represents the movement of the dynamics of life. These records do it in virtue of the radical power of the *norme* of being the root of life-calculations.

For previously unknown patients the pathological calculations can but start from *the average normes.*

The average number of respirations per minute in a healthy adult amounts to eighteen, with individual variations of five, more or less.

The average number of pulse-beats per minute in a healthy adult is seventy-two, with individual variations of ten, more or less.

Contrarily, the normal temperature of the human body at completely sheltered parts of its surface is—with very small and rare exceptions—98.6° Fahr. = 37° cent. = 0 of the physiological scale. Their smallness and rarity make these variations the more important.

But for patients previously known, the family physician must have secured their individual normes (in health), so that he could, in subsequent diseases, calculate in *plus* and *minus* the alterations of each important function.

We have here room only for the

SCHEMA OF HUMAN TEMPERATURE.

(*Taken on the Physiological scale.*)

Fever above the Norme.	7° only two alleged recoveries.
	6° generally death.
	5° often fatal.
	4° high fever.
	3° considerable fever.
	2° moderate fever.
	1.5° slight fever.
	1° suspicious.
The Norme.	0 standard of health.
Depression below the Norme.	—. 5° sub-normal.
	1° depression.
	2° collapse.
	3°—4° algid collapse.
	4°—5° no known recovery, except in cholera and scleroma.

The book is made up of blanks for prescriptions designed to be sent to druggists, while the stubbs from which these filled prescriptions are to be torn, contain blank lines for record of items under following heads.

Date,.....No. of Visit,.....
Name,.....Sex,.....Æt.....
Temper.....Barom.,.....of the room.
Time of observations,.....
Temper.,.....Respir.,.....Pulse,.....
Urine frequency,.....Quantity, ...
Do. Specific Gravity and.....
.....
.....
Skin,.....
Tongue,.....
Attitude,.....
Sleep,.....
Food,.....
Drink, ...
Medication (copy of it on opposite page).

The reverse page of the stubb is left blank for a copy of the prescription by the physician for his own future reference.

This Clinic and Prescription Record book should be accompanied by blank sheets precisely adapted in size and form to the Clinic Record, which have both pages arranged for the "Mathematical Record of Ustion, Circulation, and Respiration." One of these pages is occupied by graduated blank charts for the record of temperature, pulse-rate and respirations. The other page is arranged for the record of a variety of important items and averages connected with cases under treatment. These charts are designed for observations made with the "Physiological Thermometer." We believe the method and means of its accomplishment to be simple and practical, and worthy of encouragement. The reviewer is now instituting a trial of them in Charity Hospital. The Prescription and Clinic Record and the Mathematical Charts may be ordered in any desired number from William Wood & Co., 27 Great Jones street, New York, and probably also through booksellers in this city.

A Treatise on Hernia, with a New Process for its Radical Cure, and Original Contributions to Operative Surgery and New Surgical Instruments. By Greensville Dowell, M.D., Professor of Surgery in Texas Medical College; late Professor of Surgery in Galveston Medical College, formerly Professor of Anatomy in Galveston Medical College; Surgeon to the Medical College Hospital, etc. Cloth ed.; pp. 206. Philadelphia: D. G. Brinton, 115 South Seventh street. 1876.

The first part of this little work is devoted to a general description of the various kinds of hernia, their causes, special symptoms, and comparative frequency of occurrence as determined by the army medical statistics of the late civil war. The classification is very succinct, and the numerous wood-cuts with which almost every subject is illustrated add much to its value as a guide to the student.

The various styles of trusses also receive their quota of attention.

But the most interesting part of the entire work is the brief history of the several methods thus far proposed and put into operation for the radical cure of this unfortunate affliction—all having one end in view, the obliteration of the sac and the dimi-

nution of the size of the exit by the production of adhesive inflammations. To these is added one by the author. The author's method, of which he is sensitively jealous, and which seems to have been the mother of this little work, is a modification of Dr. Thomas Woods' subcutaneous suture process. There are certainly no very marked variations from it, either in the instrument used, the end in view, or the means by which it is accomplished. If there are any—and in a cursory examination the reviewer sees none, except in the minutiæ or details—they are not sufficiently distinctive to warrant the author in setting up the claim of strict originality; nor is the one so far superior to the other in simplicity of performance, or in the successes obtained therefrom, to justify the hope so confidently expressed that it will meet with general adoption. It is but justice, however, to the author, to say that, according to the statistics given, it has both in his and other hands been performed a number of times, and has yielded a heavy per cent. of successes, and this is saying much in view of the fact that most of the procedures thus far proposed have fallen into disrepute by reason of their frequent failures.

The latter part of the work is "Original Contributions to Operative Surgery and New Surgical Instruments," comprising the most interesting and instructive cases seen in a large practice extending over a number of years.

To sum up, we must say that whilst this little work has its faults, and too often reflects the idiosyncrasies of its author, it is well worthy of careful perusal and study by both physician and student, for it treats in a very concise manner of a lesion which may occur at any time, and which when presented, demands prompt attention on the part of the medical attendant.

G. K. P.

Transactions of the Texas State Medical Aossciation; Eighth Annual Session, 1876, *held in the city of Marshall, April 4th, 5th, 6th and 7th.* Marshall: Jennings Bros., Book and Job Printers. 1876.

After a very spirited address from the retiring president we have an elaborate and interesting account of the Eucalyptus Globulus, by Dr. Bibb, of Austin. We gather from this paper that the tree is being extensively planted in Texas, and that up

to the present time there are no instances reported of its destruction by rigors of the winter climate. Next is a modest but remarkably well written "Report on the Science and Progress of Medicine," by Dr. Pope, of Marshall. These are followed by very good reports on Gynæcology, by Dr. Wooten; Anatomical and Physiological Differences between the White and Negro Races, by Dr. Burt; Climatology and Epidemics, by Dr. Norris, and upon Indigenous Remedies, Dr. Kilpatrick. Quite a large number of cases, both surgical and medical, are reported and published in the volume of Transactions. Some of them are scarcely worthy of so much honor. Take the volume in the aggregate, it is quite equal to those from very many organizations in the older States of the Union. The Secretary, Dr. J. H. Pope, of Marshall, Texas, requests Medical Journals throughout the country to exchange with the Texas State Medical Association and to forward exchanges to his address.

A Treatise on the Theory and Practice of Medicine. By John Soyer Bristowe, M.D., Lond., F.R.C.P., Physician to St. Thomas' Hospital, Joint Lecturer at the School, and Examiner in Medicine to the Royal College of Surgeons, etc. Edited, with notes, by James H. Hutchinson, M.D., one of the attending physicians to the Pennsylvania Hospital, Physician to the Children's Hospital Philadelphia, etc. Philadelphia: Henry C. Lea. 1876.

Dr. Hutchinson, in announcing this American Edition, begins his preface with the following paragraph. "The modest preface with which Dr. Bristowe introduces to the profession his work on *The Theory and Practice of Medicine* might possibly mislead the reader, who looked no farther, into thinking that the omission of reports of illustrative cases, or the failure to discuss fully questions pertaining to differential diagnosis, rendered it incomplete. So far is this from being the case, that the editor knows of no other work in which the author has been equally successful in bringing within the compass of a single volume the description of so large a number of diseases—some of which are not always included in works on Practice, as, for instance, diseases peculiar to women and of the skin—and in doing this in a manner as advantageous to the student. Where so much is excellent it is difficult to particularize, but the editor would call attention

specially to the section on Tumors, in which the author shows that he has thoroughly mastered a very difficult subject."

The writer has carefully studied most of the subjects presented in this work, and is fully prepared to justify the encomiums quoted. The author's style is terse—superfluous words are severely avoided—his descriptions of diseases are accurate, and his suggestions of treatment practical and conformable to sound and cultivated reason. It is an octavo volume of 1089 pages, printed upon excellent paper and in the usual finished manner of the house which issued it.

Cyclopædia of the Practice of Medicine. Edited by D. H. von Ziemssen, Professor of Clinical Medicine in Munich, Bavaria. Vol. VI.—Diseases of the Circulatory System, together with the chapters on Whooping Cough, Diseases of the Lips and Cavity of the Mouth, and Diseases of the Soft Palate. By Prof. Rosenstein, Leyden; Prof. Schrœtter, of Vienna; Prof. Lebert, of Vevay; Prof. Quincke, of Berne; Dr. Bauer, of Munich; Dr. Steffen, of Stettin; Prof. Vogel, of Dorpat, and Prof. Wagner, of Leipsic. Translated by George W. Balfour, M.D., of Edinburgh; Edward G. Geoghegan, of London; Thomas Dwight, M.D., of Boston; J. Haven Emerson, M.D., and George G. Wheelock, M.D., of New York; and J. Solis Cohen, M.D., of Philadelphia. Albert H. Bach, M.D., New York, Editor of American Edition. New York: William Wood & Company, 27 Great Jones Street. 1876.

We are glad to lay before our readers information of the publication of the sixth volume of the greatest of recent accumulations of medical learning. The names of nearly all the contributors to this volume are well and favorably known to our readers. It should hence occur that the title page of itself would prove sufficiently commendatory of the volume. Nearly 700 pages of this book are occupied by exhaustive essays upon diseases of the heart and its surroundings, and of the arteries and lymphatic apparatus. The writers on these subjects are Rosenstein, Schrœtter, Lebert, Quincke and Bauer. Then follows a systematic and very practical treatise upon whooping cough, by Prof. Steffen. Two other admirable papers make up the volume. One of these treats of "Diseases of the Lips and Cavity of the Mouth," by Prof. Lebert. The other is upon "Diseases of the Soft Palate," by Prof. Wagner. Whatever may have been either

the real or imaginary shortcomings of former issues of this great work, we sincerely believe that they are well compensated for by the superior merits of the present volume. It is an octavo of 1014 pages, gotten up in superior style. McDonald & Co., 116 Carondelet street, New Orleans, are agents.

A Century of American Medicine—1776–1876. By Edward H. Clarke, M.D., late Professor of Materia Medica in Harvard University, etc.; Henry J. Bigelow, M.D., Professor of Surgery in Harvard University, etc.; Samuel D. Gross, M.D., L.L.D., D.E.L. Oxon., Professor of Surgery in Jefferson Medical College, Philadelphia, etc.; T. Gaillard Thomas, M.D., Professor of Obstetrics, etc., in the College of Physicians and Surgeons, New York, etc., and J. S. Billings, M.D., Librarian to the National Medical Library, Washington, D. C. Philadelphia: H. C. Lea. 1876.

We cannot say that memories of this centennial year of the nation may not in the future bring great shame and remorse to some of our contemporaries, but it has certainly proven an era of proper felicitation to the medical profession. Whatever ills are matured in the womb of time during this year are not from seed of our sowing. We at least, can say with truth, "Thou canst not say that I did it: never shake thy gory locks at me."

Every medical library should be furnished with a copy of this professional remembrancer. It contains upon every page pleasant and profitable reading, telling of the great and good men who have preceded us, and of their labors as pioneers making our own pathways smooth and cheerful.

On Coughs, Consumption, and Diet in Disease. By Horace Dobell, M.D., F.R.M.C.S., etc.; Consulting Physician to the Royal Hospital for Diseases of the Chest, London, etc. Philadelphia: D. G. Brinton, 115 S. Seventh Street. 1877.

This is a duodecimo volume of 222 pages, and will be found by the reader a very fair return for the money and time spent in its purchase and perusal. Most of our readers know that Dr. Dobell, some years since, advocated the treatment of consumption by pancreatic emulsion. Time seems to have strengthened his

convictions in respect to its utility. He writes "My experience of the action of pancreatic emulsion is now so large, and my observations have been so cautiously and doubtingly made, that I dare to speak with a confidence which I trust may be distinguished from dogmatism. Pancreative emulsion of solid fat is a natural substitute for the inactive or prevented pancreatic function. It supplies the lacteal system with solid fat in a condition fit for absorption, fit for transmission through the lymphatic glands, fit for combustion in the pulmonary blood, for the protection of tissues, for histogenesis, and for general utilization throughout the organism.

The Use and Value of Arsenic in the Treatment of Diseases of the Skin. By L. Duncan Bulkley, A.M., M.D., Physician to the Skin Department Deriult Dispensary, New York, etc. New York: D. Appleton & Company, 549 and 551 Broadway. 1876.

This is an excellent and compendious presentation of medical propositions in relation to the best mode of administering arsenic and the therapeutic benefits to be obtained from it.

Walsh's Physician's Combined Call Book and Tablet, from 18— *to* 18—. Second Edition. For sale by J. B. Lippincott & Co., Philadelphia, and booksellers generally.

This is one of the best arranged of all the various visiting lists which have been published. The physician fills in the blank dates at the tops of pages, and continues to use the book until filled.

Epitome of Skin Diseases, with Formulæ, For Students and Practitioners. By Tilbury Fox, M.D., F.R.C.P., Physician to the department for Skin Diseases in University College Hospital, author of various works on skin diseases, etc, and T. C. Fox, B.A. (Cantab), M.R.C.S. Philadelphia: Henry C. Lea. 1876.

Few medical writers have labored more successfully in this cumbersome field of medical investigation than Dr. Fox. His

works have simplified this branch of study, as genius never fails to do when engineering the roads of science. The little volume here announced is a duodecimo of 120 pages, filled with descriptions, treatment and formulæ of remedies, for all skin diseases the practitioner is required to treat.

Pamphlets Received.

On Masturbation and Hysteria in Young Children. Remarks before the Medical Journal Association of N. Y., in November, 1875. By A. Jacobi, M.D., Clinical Professor of Diseases of Children, College of Physicians and Surgeons, N. Y. New York: William Wood & Co., 27 Great Jones street. 1876.

Report of the Board of Managers and Superintendent of the Texas State Lunatic Asylum, for the fiscal year 1876. Austin: Institution for the Deaf and Dumb. 1876.

The Ovulation Theory of Menstruation: Will it Stand? By A. Reeves Jackson, A.M., M.D. Reprinted from the Journal of Obstetrics and Diseases of Women and Children, vol. ix., No. 4, October, 1876. New York: William Wood & Co., 27 Great Jones street. 1876.

Vaginal Ovariotomy. By Clifton E. Wing, M.D., Boston. Reprinted from the Boston Medical and Surgical Journal, November 2d, 1876. Cambridge: Printed at the Riverside Press. 1876.

A Series of American Clinical Lectures, edited by E. C. Seguin, M.D. Vol. II., No. X. (whole No. 22)—Spinal Irritation: its Pathology and Treatment. By William A. Hammond, M.D., Professor of Diseases of the Mind and Nervous System, in the Medical Department of the University of the City of New York. New York: G. P. Putnam's Sons, 182 Fifth Avenue. 1876.

Medical Libraries of Boston. A Report read at the First Annual Meeting of the Boston Medical Library Association, held on October 3d, 1876. By James R. Chadwick, M.D., Librarian of the Association. Cambridge: Printed at the Riverside Press. 1876.

A Case of Exophthalmic Goitre. By J. P. Thomas, M.D., Pembroke, Ky. Louisville, Ky.: Richmond and Louisville Medical Journal Book and Job Steam Print, 104 Green street, 2d door west of post office. 1876.

The First Fonakigrafik Teacher. A guide to a practical acquaintance with the Literary Style of the art of Phonachygraphy. An Improved substitute for long-hand Script, and the basic foundation for both the Note Taking and Reporting Styles. It is designed as an Assistant Instructor for Teachers, Schools, Colleges, and Private Instruction to Students. Adapted to the wants of Literary, Professional and Business men, as well as everybody, as a substitute for the cumbersome long-hand script. The illustrations are in the hand-writing of the author reproduced by the New York Graphic process. Amherst, Mass., U. S. A. John Brown Smith, Author and Publisher. 1876.

Johns Hopkins Hospital. Reports and Papers relating to Construction and Organization. No. 2—With Plates.

Micro-Photographs in Histology, Normal and Pathological. By Carl Seiler, M.D., in conjunction with J. Gibbons Hunt, M.D., and Joseph G. Richardson, M.D. Philadelphia: J. H. Coates & Co., Publishers, 822 Chestnut street.

A Lecture on Specialism in Medicine, delivered before the Class Inaugurating his Annual Course of Instruction, September 21st, 1876. By E. D. Forée, M.D., Professor of Diseases peculiar to Women in the Hospital College of Medicine, Medical Department Central University, Louisville, Ky. Reprinted from the American Practitioner, Nov., 1876. Indianapolis: Journal Company, Printers. 1876.

Recherches Expérimentales sur le Role Physiologique et Thérapeutique de la Pancréatine. Par Th. Defresne, Pharmacien de premiére classe, ex-Interne des Hopitaux, Lauréat de l'Ecole de Pharmacie. Paris: A. Delahaye, Librarie-Editeur Place de l'Ecole de-Médecine. 1875.

Hauptmomente in der Geschichtlichen Entwickelung der Medinischen Therapie. Von Dr. Jul. Petersen. Kopenhagen: Andr. Fred. Höst & Sohn (Universitätsbuchändler), Kommissionäre d. kgl. dän. Gesellschatt d. Wissenschaften. 1877.

CORRESPONDENCE.

St. Louis, Dec. 6th, 1876.

Dr. Stanford E. Chaillé, New Orleans, La.:

Dear Sir—I have read with some interest the case you report in May No. of *N. O. Medical and Surgical Journal*, and am sur-

prised at your success with the digitalis. Your patient was a man of nerve.

I presume the amount your patient took daily was small. The tyranny of small doses, however, when regularly taken for a long time, is as great as that of large ones, and entire escape from the thraldom of the habit is often as difficult. The "tug of war" comes (with my patients) with the absolute giving up of the last grain or half-grain doses.

My patients suffer much less than they used to in passing through the crisis. As I withdraw the opium I substitute large doses of quinia—two to four grains for every grain of morphia withdrawn— and give cannabis indica in tincture when the prostration becomes great.

For the *pains*, the elix. val. ammon. in large and safe doses, two to four drachms.

Chloral always at night, and pills of hyoscyamus, strychnia or nux vomica, during day, also camphor pills sometimes.

I do not interfere with the bowels, except when discharges are too frequent, and then mainly with tannin.

When ulceration or organic intestinal destruction is suspected, turpentine and creosote.

I once had a patient in the insane asylum who died of ulceration of bowels, and in regard to whom I gave up the attempt of withdrawing the opium many weeks before her death, and I have had no fatal nor unsuccessful case since.

I have a case on hand where 30 grs. morph. sulph. has been used hypodermically. She is not in the house and not able to come pecuniarily, and the issue is not certain.

I do not think "Opium Institutes," so called, are necessary to cure these unfortunates.

A home, with an intelligent physician who understands well how to employ all the neurotic and hæmatic reconstructions, and constant surveillance over the patient for a few weeks, especially when passing through the crisis, and until the enthralled nervous system and partially paralyzed organs become reëstablished in their former normal functions, are all-sufficient. I am an advocate of State inebriate asylums, and for the forcible legal restraint and restoration of opium maniacs who have families dependent upon them, but not of *charities*, so called, for the support of impecunious physicians and the reformation of those whose appetites have got the better of their brains, where men are sobered

up, swear they will never drink any more, and are called reformed.

Legal restraint, forced labor, and absolute abstinence for 18 months (rarely less than that in liquor cases), will give hope for the reformation of the average inebriate.

I have no business nor time to write you a long epistle on this subject simply because it interests, and has for years interested me, and I conclude.

I know you only as one of those among us who take an interest in medico-legal and philanthropic problems, and have hurriedly scratched off a few rapid thoughts, while awaiting an appointment, as though you were a friend upon whom I might warrantably impose.

Yours truly, C. H. HUGHES.

McKINNEY, TEX., Dec. 11th, 1876.

Professor S. M. Bemiss:

Dear Sir—Enclosed find report of a case. If you esteem it of sufficient interest to publish, do so; if not, throw it in your waste basket. The chief point in the case is the method of procedure in effecting delivery. I do not now recall any allusion to said method by authors, though there may be many. The small size of my hand contributed much to my success in the case. If I am correct in assuming that it is a new way of meeting an old difficulty, the case is worth publishing for the benefit of men with small hands.

Very truly,

J R. BRISTOW, M.D.

Case No. —. Mrs S, aged twenty years, primipara. Was called to the case December 1st, 1876, at 6 a. m. Found lower extremities and hips delivered; said to have been in this condition seven hours; marks of *violence* about the child showing efforts of midwife to extract by force; examination revealed no obstruction on account of upper extremities; head lying across the antero-posterior diameter of the upper strait; occiput resting on symphysis, and chin on promontory of sacrum; uterus *closely* contracted.

Treatment.—Eviscerated child to obtain room in the vagina; thrust the right hand into the uterus and endeavored to turn by

steady pressure upon the lower jaw, which gave way under pressure and tore loose. Extending the hand a little further, thrust the forefinger into the cavity of right eye, and by firm *pressure* succeeded in turning and delivering the head.

Time, twenty minutes.

Result.—Woman promptly recovering.

NEW ORLEANS, Dec. 25th, 1876.

Editor N. O. Medical and Surgical Journal:

Dear Sir—I desire to call the attention of your readers to two novel cases of a medico-legal character. In the first case a student brings suit against a medical institution for return of fees on account of failure on the part of the latter to comply with "representations and promises held out by the professors and others concerned in the institution." I request you to publish in this connection a newspaper report of the case as it is presented by the plaintiff in his allegations. Of course it would not be proper to prejudge the case, and pronounce sentence against the school, before we shall have had opportunity to examine its grounds of defence. But it cannot be denied that medical schools are under both a moral and legal accountability, and full and explicit performance of every duty assumed as their part of the implied contract, and the redemption of every pledge made by them in their annual circulars, or otherwise, should be exacted of them. Medical schools can no more guarantee to make finished doctors of the students attending their curriculums of studies than the practitioner can guarantee cure to his patients, and neither may be held responsible for failure. But when either the school or the practitioner advertises to furnish patrons specified advantages for a specified price, surely suits to recover prepaid fees must be sustained, if it can be shown that the advertiser has failed to afford the advantages enumerated in his advertisement.

Medical Muddle. A Student Sues the Louisville Medical College for the Recovery of Fees. Claiming that It is an Inferior Institution, and that It Has no Legal Existence. Some Interesting Testimony.

A suit of peculiar interest between L. R. Sale, lately a student of the Louisville Medical College, and that institution, occupied

the time of Judge Speed Peay several days last week. The suit, though only for a small amount, is attracting considerable attention on account of the ill-feeling and jealousy existing between this college and rival institutions in the city. Almost every physician in Louisville of any note is prejudiced in favor of one of the three medical schools here, and to say that he looks upon the others with disfavor is putting it in a mild way.

The present trouble arose out of the late disturbance in the faculty of the Louisville school, which resulted in the resignation of Dr. Octerlony. In retiring from his position in the faculty, Dr. Octerlony left behind him many warm friends among the students, some of whom imitated his example in leaving the school, and matriculated at the other schools. L. R. Sale, the plaintiff in the suit, is one of the latter, and he now sues for the amount of fees paid for that part of the session which he has not attended. Dr. E. S. Gaillard, dean of the faculty, appeared in behalf of the college.

Sale bases his suit on the following grounds: First, that the Louisville Medical College is not a first-class institution; that its curriculum of studies does not embrace the requisite number of branches, and that the instruction is insufficient. Secondly, that the Louisville Medical College is not a legally-organized institution, and that in consequence its diplomas would not be recognized by the medical profession; and thirdly, that he was induced to enter the school under false and fraudulent representations, and promises held out by the professors and others concerned in the institution. Sale also claims that the efficiency of the school was greatly diminished by the resignation of Dr. Octerlony.

It was developed in the proof that this college employs a somewhat novel method of obtaining students by means of what are called "beneficiary scholarships." It is claimed that students who take advantage of these beneficiary scholarships do so under the impression that they will have no fees to pay, but after they get into the school they are made to pay $46. The Louisville Medical College has 250 students, and it is asserted they are all beneficiaries except two. These two pay the regular fees, $120. Mr. Sale, the first witness, stated that it was the habit of this school to take students at even a lower figure than he had paid; in short, that students are taken at any price they choose to pay. In corroboration of this, Sale produced a letter signed by Dr. Gaillard, dean of the faculty, to a young man in Canada, offering to take him through a whole course of lectures for $25, and it is claimed by the use of such means as these the Louisville Medical College has been enabled to swell its list of students to its present proportions. The witness stated further that there had been only two clinical lectures in the school since the commencement of the present term, while at the other schools the students enjoyed from twelve to fifteen clinics a week; and, further, that in the dissecting-room was but

one demonstrator to eighty or ninety students, while in other schools a demonstrator is provided for twenty or thirty.

In reference to the validity of diplomas, the plaintiff claims that the present board of trustees and faculty were not legally appointed, and hence their official actions can not be considered as legal and valid.

The plaintiff will endeavor to prove that about two years ago, in consequence of a disagreement among the trustees and faculty, all the members of the former board, excepting two, vacated their seats, leaving the board without a quorum. Upon this the two met and elected a new board, and reconstructed the faculty. This involves the question as to whether the board and faculty are properly qualified. If it were legal and proper for the board to perform important business without a quorum, then the diplomas issued from this school are valid instruments, otherwise they are not.

After examining several witnesses the plaintiff demanded the minutes of the board of trustees alluded to above, and proposed to offer them as evidence, by which he expects to prove the board to be an unauthorized body. Dr. Wible, the secretary, being absent from the city, it was impossible to obtain the minutes, and the case was therefore postponed, being set down for hearing on January 10th, 1877.

The case, taken in all, is one of great interest to the medical profession, inasmuch as it involves the integrity of the largest medical college in the South, and questions the legality of all the diplomas issued by it during the last two years.

For permission to publish the next one of these novel cases I am indebted to your colleague, Prof. Lewis. Within the limits of my knowledge this case is without a precedent. In an old edition of Denman (1802) we read: "It was formerly the custom to divide the funis under the bed clothes; but having once known a deplorable accident happen from this cause, I make it a general rule decently to withdraw the child, that I may have an opportunity of seeing when I tie or divide the funis." It is also stated in Jame's Merriman, 1816, that "A surgeon-accoucheur not long since included one of the little fingers of the child in the ligation which he had made upon the funis, and cut off the first joint with his scissors. This accident could not have happened had he brought the part to be divided into view."

Your correspondent has not been "interviewed" in this case with a view to make a witness of him, as has Prof. Lewis. While, therefore, it was becoming and proper in Prof. L. to be chary in expressing his opinions until he had obiained a better knowledge of the premises, no such obligation rests upon me. I

do not hesitate to say that I concur with the attorneys in believing that the "accident" was the offspring of a clumsy, but heinously cruel plot to injure the physician. It does not help the matter to charge that the physician may have been intoxicated, for really it is in my opinion quite impossible for a drunken accoucheur to find and ligate the penis of a newly-born child.

Dr. Ernest S. Lewis, New Orleans, La.:

Dear Sir—We are the attorneys for a physician in this place who has been sued for malpractice, and we desire to obtain the depositions of witnesses eminent in the profession to be used on the trial. The case is this: our client was called to deliver a woman of a child, which he did about six o'clock in the evening. About eight o'clock next morning a string was discovered tied tight around the child's penis. When the string was taken off, the penis sloughed off taking the entire glans. The plaintiff alleges that this string was tied by the physician. Our client is wealthy, has been practising a long time, and his skill is unquestioned. We would like for you to answer this, and give us an opinion as to the probability or improbability of a physician's making such a mistake, and also the probable effect upon the child, the damage, etc., that will result. We feel confident that the suit is an attempt to blackmail our client, and from your standing in the profession, your evidence would be worth a great deal to us if you will be kind enough to give us an opinion.

Yours truly, ———— ————

NEW ORLEANS, Dec. 22d, 1876.

Sirs—I would have answered your letter sooner, but have not had the time. You ask of me an opinion, which perhaps may influence the suit against your client. This is a very delicate matter, which cannot be considered without further information than you have given me, and I must therefore decline to express myself positively on the case in question. Such a circumstance as you have related seems so improbable, that I can not conceive of its occurrence.

Whilst awaiting a more detailed account of what has transpired, let me ask a few questions that have some bearing on the case. After the birth of the child, was the umbilical cord tied as well as the penis? In other words, when the string was found

around the child's penis, was there one also around the umbilical cord, and if so, who discovered a string around the penis? If a string was also found around the umbilical cord, I would state emphatically that it is impossible that the physician ligated the penis. If no string was found around the umbilical cord, it might be presumed that the penis was tied up for the umbilical cord; and if so, such a mistake could not be made unless the physician had completely lost his mind from one cause or another, and if so his condition could not have escaped observation.

In the next place, a ligature around so sensitive an organ as the penis should certainly have produced constant screams from pain, and even convulsion, which would have led to an examination of the child's person by the mother or her nurse and in changing the child's diaper. I cannot see how such a condition could avoid detection. Regarding the effects on the child's health, if it recovered from the immediate effects of the operation, there is nothing to apprehend in the future. The loss of the glans penis will not remove sexual desire, nor do I think sensation will be abolished.

Respectfully, E. S. Lewis, M.D.

I hope to be able to lay before the readers of the Journal the evidence and findings growing out of these trials.

Ley.

EDITORIAL.

Eighteen Seventy-Seven.

The present issue of the Journal will reach its patrons at the beginning of a New Year. It is therefore a proper occasion for the usual complimentary expressions. A Happy New Year to each and all of our readers! May it bring to them and to our whole profession freshened and more engrossing interest in its advancement, and success in the pursuit of its objects.

The social character and habits of this country are such as to render it impossible for one class of its population to suffer moral deterioration, without inflicting a degree of similar damage upon other classes. It may be that the cloud of political licentiousness which for a whole decade has overhung the land, has thrown its baneful shadow over us as well as others of our fellow-beings. However the fact may be accounted for, it must

be acknowledged that, within the past few years, the profession has had to contend against an unusual tendency to irregular conduct on the part of some medical schools, and of some individuals in its ranks. It may be safely stated, that the profession is becoming fully enlightened in regard to the existence and growth of these blotches, and that during the present year they will be removed, as far as it is practicable to achieve such a result. The national Medical Associations will not hesitate to deal rigorously with the recalcitrant schools at their next meetings. Nearly all of the Southern States within whose borders political reform has become possible, have passed legislative enactments for the better protection of the public against quackery. These, together with the improvement and elevation of public and professional sentiment everywhere manifested, must exert a powerful influence for our common good.

Our Collaborators for 1877.

The following named gentlemen will contribute to our pages during the year 1877.

H. W. Brown, M.D., Waco, Texas.

S. C. Busey, M.D, Washington City, Professor of the Theory and Practice of Medicine, University of Georgetown.

Stanford E. Chaillè, M D., Professor of Physiology and Pathological Anatomy, University of Louisiana.

N. S. Davis, M.D., Chicago, Professor of Principles and Practice of Medicine, Chicago Medical College.

L. A. Dugas, M D., Augusta, Ga.

Alexander Erskine, M.D., Memphis.

James E. Gardner, M.D., Asst. Surg. U. S. N.

S. S. Herrick, M.D., Professor of Chemistry, U. S A. and M. School.

Joseph Jones, M.D., Professor of Chemistry and Clinical Medicine, University of Louisiana.

Samuel Logan, M.D., Professor of Anatomy and Clinical Surgery, University of Louisiana.

L. S. McMurtry, M.D., Danville, Ky.

G. K. Pratt, M.D., Professor of Physiology, Charity Hospital Medical College.

J. W. Ross, M.D., Surg. U. S. Navy.

J. G. Thomas, M.D., Savannah, Ga.

In our March number we will publish additions to this list, as notices of intended contributions come to hand.

New Medical Journal.

"The Quarterly Journal of Inebriety" is the title of a new periodical published at Hartford, Connecticut, under the auspices of the American Association for the Cure of Inebriates. The Journal is well worthy of the patronage of the profession. Its subscription price is three dollars a year. Communications, subscriptions, exchanges, and books for review, should be addressed T. D. Crothers, M.D., Secretary, Binghampton, New York.

Dr James E. Gardner.

Dr. James E. Gardner, a graduate of Centre College, who recently completed his medical course at the University of Louisiana, after having attended a course of Lectures at the University of Virginia, is now stationed in Boston Harbor, as Assistant Surgeon to the iron-clad naval steamer Wabash, 45 guns—the third largest steamer in the U. S. Navy. In his examination, preparatory to entering the Navy, Dr. Gardner received the highest mark, (608,) given any applicant for a number of years, except one—a graduate of the Medical School of Philadelphia—who received 638. The usual grade of applicants is from 540 to 550,—575 being seldom attained.—*Kentucky Advocate, Danville, Ky.*

An Unpunishable Swindler.

A paper published in one of the country parishes of this State, gives information of the newest and perhaps among the most audacious of the many schemes employed to victimize simple-hearted negroes. A man, representing himself to be a doctor in the employ of the U. S. Government, informs the negroes that he has been sent by the authorities at Washington to take professional care of them for one year, at the rate of one dollar each, the money, of course, to be paid in advance. Immediately after collecting the fees the good missionary leaves for parts unknown. It is at least consoling to know that the perpetration of such a fraud could not be accomplished in more than two or three States of the Union.

Died.

On the 15th of December, at Plaquemine, Iberville Parish, Paul J. Hiriart, M.D., aged 62 years. A skillful and successful physician, and an excellent and beloved member of society, has gone from our ranks.

METEOROLOGICAL REPORT FOR NEW ORLEANS.

Table I---November.

Day of Month.	Temperature.			Mean Barometer Daily.	Relative Humidity—Daily.	Rain fall—inches
	Maximum.	Minimum.	Range.			
1	72	61	11	30.038	72	.00
2	73	61	12	29.932	83	1.30
3	71	51	20	30.025	62	.00
4	65	51	14	30.115	75	.00
5	68	52	16	30.114	71	.00
6	70	51	19	30.065	75	.00
7	71	45	26	30 102	52	.00
8	71	45	26	30 120	69	.00
9	58	43	15	30.138	59	.00
10	56	44	12	30 162	69	.00
11	58	45	13	30.140	69	.00
12	64	48	16	30.175	60	.00
13	64	48	16	30.160	71	.00
14	68	53	15	30.127	66	.00
15	68	50	18	30.173	82	.00
16	61	48	13	30.122	87	.60
17	65	50	15	30.023	86	
18	65	54	11	30.025	81	.00
19	65	44	21	30.102	63	.00
20	65	43	22	30.103	65	.00
21	58	43	15	30.072	72	.00
22	62	48	14	30.115	75	.00
23	63	45	18	30.200	62	.00
24	63	44	19	30.120	74	1.00
25	55	40	15	30.048	71	.00
26	58	43	15	30.030	68	.00
27	58	42	16	29.950	75	.00
28	65	43	22	29.900	78	.00
29	68	53	15	29.950	79	.00
30	68	30	38	30.352	77	.00
Mean..	64.53	47.26	17.26	30.090	71.6	Total. 2.90

Table II---December.

Day of Month.	Temperature.			Mean Barometer Daily.	Relative Humidity—Daily.	Rain fall—inches
	Maximum.	Minimum.	Range.			
1	68	28	40	30.547	52	.00
2	41	28	13	30.498	45	.00
3	42	27	15	30.565	46	.00
4	42	27	15	30.520	51	.00
5	42	27	15	30.540	63	.00
6	45	32	13	30.420	63	.00
7	49	36	13	30.160	62	.00
8	53	39	14	30.160	71	.00
9	54	38	16	30.335	75	.00
10	59	38	21	30.275	76	.33
11	59	38	21	30.150	87	.00
12	59	38	21	30.183	68	.00
13	59	38	21	30.130	73	.00
14	64	49	15	30.090	80	.70
15	70	48	22	30.280	74	.00
16	55	38	17	30.338	64	.00
17	56	39	17	30.300	70	.50
18	57	38	19	30.347	62	.00
19	53	31	22	30.395	70	.00
20	54	35	19	30.293	83	.00
21	58	40	18	29.995	84	3.30
22	62	48	14	29.842	84	.05
23	63	45	18	29 973	77	.00
24	63	46	17	30.000	83	
25	63	45	18	30.145	79	1.25
26	55	32	23	30 170	84	
27	43	32	11	30.065	83	1.40
28	51	45	6	29.838	84	.20
29	53	31	22	30.235	66	.00
30	52	24	28	30.350	43	.00
31	53	31	22	30.045	79	2.20
						Total.
Mean..	54.74	36.48	16.45	30.230	70.3	9.88

Mortality in New Orleans from October 30th, 1876, to December 31st, 1876, inclusive.

Week Ending	Yellow Fever.	Malarial Fevers.	Consumption.	Small-Pox,	Pneumonia.	Total Mortality.
Nov. 5.....	3	3	17	3	6	108
Nov. 12.....	1	3	24	4	6	118
Nov. 19.....	0	3	20	6	3	128
Nov. 26.....	0	4	20	10	5	133
Dec. 3.....	0	3	11	7	8	100
Dec. 10.....	0	2	18	15	13	146
Dec. 17.....	0	2	18	15	5	135
Dec. 24.....	0	2	19	15	17	135
Dec. 31.....	0	2	14	24	13	144
Totals.....	4	24	161	99	76	1147

The present number has been delayed in order that some manuscript designed to replace some missing pages, might arrive in time for publication.—EDITOR.

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ORIGINAL COMMUNICATIONS.

OCCLUSION AND DILATATION OF LYMPH CHANNELS.

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Continued from January No.

CHAPTER II—continued.

Bassius, Soemmering, Gjorgjevic and others refer to the case (29) of Guiffart, reported by Bartholinus.* Gjorgjevic intimates that it was a case of traumatic injury of the thoracic portion of the thoracic duct, in consequence of which the chyle poured into the thoracic cavity in quantity sufficient to produce death by suffocation. Hensen, Gjorgjevic and others refer to the case of Hoffmann,† the latter classing it with the cases of Monro, Guiffart and Bonet, as an instance of wound of the duct. Monro, who wrote in 1765,‡ quotes the cases of Bassius,

* The "opera" of Bartholinus to which these authors refer, is not to be found in any of the libraries of this city.

† Hoffmani Opera Omnia, Supplement ij., Pars ij., p. 461, 1704.

‡ "The first mention of the lymphatic vessels is believed to be found in the works of Hippocrates, in the work on the Glands (edit. Littre v. viii, p. 558). It is doubtful if the author had in view, however, the lymphatics."

"Erasistratus and Herophilus described the chyliferæ, but their discovery, combatted and refuted by Galen, fell into oblivion, and it was not until the xvith century that Nicholas Massa and Fallopius refound the visceral lymphatics, and that Eustachius described the thoracic canal under the name of the vena

Morton and a third case (23, 24 and 26), but does not refer to the wounding of the duct in either of these cases; on the contrary, in case 26, he ascribes the rupture of the lacteals to the compression of the thoracic duct near the subclavian vein by a number of indurated tumors; in the case of Bassius (No. 23), no cause is assigned for the opening in the duct through "which the chylous matter flowed as if from a fountain;" and in case 24, it is simply stated that the girl "became hydropic" after "an effort to raise a burthen." Rudolphi, who wrote in 1835,* asserts "that a wound of the thoracic duct, without co-existing injury to a portion of the body necessary to life," had not happened, and insists that the "only case of wound of the thoracic duct in man as yet shown is that given by Bonet." Gjorgjevic surmises

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alba thoracis. Useless conjectures, the works of these anatomists were of the same sort as those of their predecessors."

"In 1622, Gaspard Aselli discovered anew the chyliferæ of the dog; in 1628, Gassendi demonstrated the presence of the lymphatics in the intestines of man; in 1649, Pecquet refound the thoracic canal and described the termination. Two years after, Olaus Rudbeck (Sappey, tome i., p. 658) saw the lymphatics, properly speaking, generalized their existence, demonstrated their presence elsewhere than in the small intestine and liver, and discovered the lymphatic trunks of the extremities. At the same period, Thomas Bartholin and Joliff confirmed the discoveries of Rudbeck, which were completed later by the works of Ruysch (1665) F. Meckel, Hewson, Mascagni and Hunter (1780)."

"In spite of these works so multiplied, the origin of the lymphatics remained unknown; glanced at by Hunter and by Cruikshank, in 1780, they were not definitely demonstrated until 1830. At that period, and nearly simultaneously, M. Cruvelhier, Panizza and Fohmann, established the existence of the plexus of origin; it is more particularly to Fohmann that is due the merit of having first proved the existence of a tegumentary plexus."

"The pathological history is even more modern than their anatomical history. Down to Hewson (1783) their pathology was consigned to the second rank, and the cases which describe them are to be found scattered either in treatises on anatomy or in collections of observations,"

"At the close of the 18th century, after the labors of Cruikshank and of Mascagni, the study of diseases of the white vessels was conducted with avidity; but it was sought rather to find in them the secret of life, to make them the point of departure and the seat of all affections (see Soemmering de Morbis Vas. Abs., 1795), than to study traumatic lesions."

"However this ardor soon slackened, and the study of the lymphatics was very nearly forsaken, when there appeared the researches of MM. Andral, Allard, Cruvelhier, Dezeimeris, Velpeau (Maladies du Systeme Lymphatique, Archives gen de Medecine, 1835-36) then the excellent article of Ollivier (Diet-en 30 vol. t. xviii)."—Binet, *L'Echo Medical*, Tom. iij., 1859, p. 60.

* Ueber die Todtlichkeit der Wunden Brustganges, in der Casperschen Wochenschrift fur gesamte Heilkunde, 1835, Nos. 41, 42 and 43.

that Rudolphi was unacquainted with the cases of Monro, Hoffmann and Guiffart. I am unable to determine the nature of the lesion in the case referred to Guiffart, and accept the opinion of Gjorgjevic, but I must dissent from the interpretation of the case of Bonet by Rudolphi, and from the intimation of Gjorgjevic, that Hoffmann's case was one of injury to the thoracic duct. The reports of the cases, which follow, will exclude them from the category of lymph fistulæ; in fact neither is entitled to a place here, and I introduce them simply to correct a frequently repeated error.*

Case† 30. "Disquisitio medica circa affectum pectoris varissimum perpetui succi nutritii ex thorace stillicidii. A very learned man, a mathematician, and likewise a theologian, of a sanguineo-melancholic temperament, slender figure, nervous, and of sedentary habits; indulging in the use of acidulated drinks; 43 years of age; frequently attacked with rheumatism since he was eleven years old; suffered with a dry, hacking cough, which began in the autumn and lasted all the spring, unaccompanied with expectoration. His calling exposed him to the influences of a dry, cold climate, which at length produced some fever and a sharp pain in his side. Making use of certain remedies, amongst which were pectoral pills and opiates, he spat up with the cough a great quantity of matter without any difficulty. The food taken was frequently vomited; he became emaciated, his strength left him, his respiration was labored and difficult, so that he could hardly move about without much pain. In the following winter, whilst he was trying with difficulty to perform his duties, a copious purple eruption, which began on his chest but afterwards extended over his body, appeared, which when exposed to the cold air passed away. After a few days there suddenly came on in the evening an attack of asthma, which was so suffocating that he could hardly breathe, accompanied with great pain in the breast and abdomen, and obstinate constipation. These pains continued for 12 days and nights without remission, which reduced his strength. The constipation gave rise to tympanites, although with other remedies

* To Dr. Murphy I am indebted for the translation of these and other reports. To him and Drs. Lee, Kleinschmidt and Drinkard, I am under many obligations for their valuable assistance in aiding me to collect the material for this essay. It has always been cheerfully rendered, and frequently at great sacrifice of time.

† Hoffmann, loc. cit., 1701.

there were used as many as 20 enemata, until at length, from the use of the juice of the borsdorsian apple, the flatus was expelled, after which the abdomen collapsed, and the sick man lay resembling a skeleton. During this space of time (12 days) the patient suffered the most excruciating pains in his body, horrible twitchings, and burning sensations as if balls of fire were moving through his bowels. It is remarkable that his intellect remained unimpaired during these pains, though he had an occasional attack of syncope. His whole body after awhile was one rack of pain, and covered all over with boils, so that for three entire weeks he was not able to stir hand or foot. When by the help of others he attempted to rise from bed, when his feet touched the floor he experienced the most acute and indescribable pain in the right shoulder and side, and his head was turned from left to right, as if by an iron band. It is also worthy of notice that the pulsation of the heart which is observed in the left side of the chest was changed to the right, and could be seen near the right nipple, hence the sick man could not raise himself erect without suffering acute pain. On the cessation of all pulsation in the left side of the chest, other phenomena were observed, to-wit, from the sternum to the left dorsal spine the chest was distended and gradually protruded like a large hunch-back, so that the heart and lung of the left side were crowded into a small space. There were present also great distress in the præcordium, difficult respiration, and if he wished to touch the ground with his left foot, with each step he was compelled to bend his shoulder. His sleep was disturbed during the entire night, owing to the constant cough; his appetite was almost gone, and if he should take food there was the greatest difficulty in swallowing it, owing to the great contraction in the orifice of the ventricle (larynx). With these symptoms all hope of returning health vanished, and with the advice of His Serene Highness and the entire Consistory, the sick man abandoned himself to his fate after the disease had progressed for nearly four years. He was not able to lie unless on his left side, and could not turn towards the right for fear of suffocation, and the lump protruded more and more from the left side of his chest, its large size not only hindering respiration but also the taking of food or drink. Various remedies were employed, but in vain, so that the œdematous swelling which previously had occupied his feet extended to his abdomen and head, and his eyes became so prominent

that death seemed imminent. It happened at the time that a celebrated surgeon came along who, upon examination, easily discovered a large quantity of fluid to be collected in the cavity of the chest, and he learnedly pronounced it to be collected between the external coverings as if in a sac. He determined therefore to evacuate the fluid by tapping (paracentesis). He perforated by means of a double-edged knife the cutis from behind between the ribs, immediately above the diaphragm; and when he had entered sufficiently, a sound was heard as if a bladder distended with water had been burst, and on withdrawing the knife, immediately there flowed a certain material of the consistency and color of white milk and devoid of all odor. The quantity of the material evacuated weighed three pounds. The tent being introduced the wound was bound up. After the operation the patient experienced a double relief: 1st, the painful and annoying pulsation of the heart in the right side immediately ceased; 2d, that he was able to walk about without any of his former inconvenience. On the following day, the tent being removed and a larger instrument used for widening the wound, 4 pounds of fluid escaped. In the evening of the same day, a leaden canula was introduced, through which there passed four pounds of fluid; and in the same manner in about four days an immense quantity of matter, beyond twelve measures, were drawn off from the cavity of the chest. It is curious that after the evacuation of this material, as often as the body was shaken there was heard a noise in the left cavity as if a little rope was dangling in water, which sound was not heard until a few weeks after the opening, and then not any more. During this time there were exhibited the necessary remedies for the medication of the wound, etc, and the sick man so far recuperated that there were hopes entertained of his speedy return to health. However, there appeared around the aperture certain tumors and some inflammation, especially when decoctions used for dressing wounds were passed through the canula and the material withdrawn, which operations were not without pain; these symptoms subsided spontaneously however. After the space of three years, the opening of the aperture was surrounded by a hard cartilaginous substance, so that a small canula could be with difficulty introduced into it, and the flow of the material was much impeded; though after the material air was wont to escape with such force as to extinguish a candle held near to it. For a

number of years subsequently the material continued to flow daily without impediment, so that in the space of twenty-four hours there would pass the fourth part of a wine measure, or twelve ounces, or half a pound. The quality of the material was like the rest, and the color generally the same unless altered by the difference of food, when it would become sometimes yellow, sometimes ashy-colored, at other times brown. The consistency was sometimes thicker, then again thinner. If perchance a drop or two of blood should flow from an unguarded wound of the vessels, it would not be intimately mixed with the material itself, but remain separated as regards its color."

"This praiseworthy man remained in the state I have described, not having gained flesh, strength, or much power in walking, omitting the less prominent symptoms. From external cold and moist atmosphere he was not sufficiently protected, and immediately there followed inflammation around the aperture and the tumor, likewise weakness in the throat, continuous eructations, and vomiting the things he had swallowed. In swallowing, if too much air were admitted, he would suddenly be seized with a spell of coughing with constriction of the fauces. The diet used was light and simple, more fluids being admitted than solids, juices especially, and milky substances being given; he preferred acids more than anything else. Besides the facts mentioned in the history of the disease, there are other phenomena worthy of mention, viz.: after the opening in the left side of the chest near the dorsal region had been made, as often as remedies for cleansing the wound and diluting the liquid in the chest, such as Spanish wine, or water from china root, or a decoction of sarsaparilla, were injected into the cavity, there would follow in one or two hours a distinct paroxysmal fever. It is also a notable fact, if the dressing of the wound or the evacuation of the material were delayed for a single day, it would seek out means of exit, and during the night, whilst the sick man would be lying on his left side, he would be seized with coughing accompanied with expectoration in large quantities. Another phenomenon was likewise observed: if he had to undertake a journey, and should remove the canula for one day, which was placed constantly in the aperture, he would experience no inconvenience from riding. If during the diseases to which this reverend gentleman was subject, he abstained from food and drink, this material which was evacuated would not be lessened

in quantity, or very much changed from what it was when there was less wasting of strength."

This was undoubtedly a case of empyema, and, as such, is especially interesting. The graphic delineation of the symptoms, the accuracy of the diagnosis of the presence of fluid in the pleural cavity, the courage of the surgeon in incising the chest wall, though it was not the first operation of thoracentesis, the use of the tent, the employment of the rude canula to afford constant drainage, and through which to wash out and medicate the pyogenic surfaces, and the prompt recognition of the communication between the pus-producing cavity and the lungs, leave no room to doubt the ability, sound judgment, and accurate observation of the medical men who lived when the science of medicine was shrouded in mystery and prejudice, and show that we of the present day, notwithstanding our enlarged opportunities and proverbial boasting, are in many things but borrowers and copyists.

*Case** 31. "The illustrious Baron de Heinden being injured by a missile in the battle of Fionensis about the middle of the dorsal vertebræ, the ball passing out under the left scapula, did not suffer very much in the beginning, he merely endured the usual symptoms of wounds. After 14 days he observed on the linen an abundant white fluid (humor), and continuing at intervals; but was utterly ignorant from what source it came, or what was its nature. Neither the physician or surgeon whose services he employed gave any opinion concerning it. It stuck to him during the winter at Ottensonia (his abode at that time); but in the month of April, being transferred to these regions, he at once called to his aid my services. I found the distinguished patient suffering much, emaciated, and slightly feverish in the evening of each day. I at once made inquiry about the lung being injured, although he said that up to that time no symptoms from that region had manifested themselves. The opening of the wound above had healed; below, it exuded the accustomed matter. I began to hope for the best results, but after the lapse of two days I noticed that the above named white fluid, now, however, changing to yellow, had flowed in such abundance as to stain not only the five-fold linen dressing, the under garments, and the bed clothes, but even to saturate

* Boneti Sepulchretum Anatomica Prat. Lib. IV. Sect. iii., p. 360. 1700.

thoroughly the bandages. Astonished at the strange matter, I immediately began to think, as it was clearly different from corruption and ichor, that the periodical fluid, the chyle namely, designed for the entire nutrition would flow in this unusual way, since the patient, although having a good appetite and using the choicest and most nourishing food, grew more emaciated in body from day to day."

The baron preferred "death to surgical interference," and Bonet placed his patient upon a strict diet, "and administered internally and applied externally the choicest balsams," which together with "the blessing of God," produced such a marked improvement that in 14 days "the fever and flow" had abated, and the "habit of body became sensibly more florid, to the great joy of the patient, who considering himself free from all danger," * * * "betook himself to the more ardent drink, an old custom of his." The flow returned and continued "to the end of his life, which his restlessness of mind and body greatly accelerated." In consequence of some excitement he was "seized with epileptic fits and afterwards with left hemiplegia, which in a few days carried him off, his shrivelled body being destitute of strength."

Autopsy. "The body was opened in the presence of Holotius Poliateus. The lower extremities presented nothing worthy of notice; the lungs in that part where the wound had been received had begun slightly to decay, but the examination showed that that was slight at first and fraught with no danger."

Bartholinus, to whom the details of this case were communicated, says: "If* I may be permitted to express an opinion, the thoracic duct was thus injured, that there escaped an abundant supply of chylous fluid followed by consumption or wasting."

There is certainly nothing in the history, progress and termination of this case, which will establish the conclusion that the thoracic duct was wounded by the missile. The character of the discharge, the accompanying fever and progressive emaciation, continuing through a period of probably six months, indicate exhaustion and emaciation from a protracted and suppurating wound. The hemiplegia and epilepsy more probably found their cause in some injury of the spinal column than in some incidental mental excitement, superinduced by the loss of chyle.

Traumatic injuries of the absorbent vessels seem to have been

* Sepulchretum Anatomica, p. 361, Tom. iii. 1744.

a subject peculiarly attractive to many of the older authors. Ruysch, as early as 1665, drew attention to wounds of the lymphatic vessels, and refers to a certain surgeon, "who had unfortunately cut a lymphatic vessel in incising a venereal bubo not completely developed, from which flowed daily a great quantity of lymph." Solingen, in 1693, reported two cases of "lymph fistulæ situated at the head of the soleus muscle, one consequent upon a wound, the other produced by contortion of the limb." Muys, in 1695, saw a young man who had been wounded in the left external malleolus, and from the wound "there flowed every day a vast quantity of water." Nuck, in 1733, wrote of wounds of the lymphatic vessels; "very often," he says, "in venesection performed on the arm, and, especially, when performed on the foot, the absorbent vessels are injured; by carelessness in regard to these vessels the lancet has proved fatal." Van Swieten, in 1764, recorded the observation that frequently most abundant discharges of lymph followed venesection, and Haller, a few years later (1773), stated that he had known a "flux of lymph of such long continuance, and so difficult to arrest, that he could explain its existence only upon the supposition that a large vessel" had been severed in blood-letting. Mascagni and Assalini, in 1787, cited cases of lymphorrhagia following venesection; the latter mentions the case "of a boy 11 years old who lost 5 pints of lymph in three days from a slight wound located upon the internal part of the thigh." Soemmerring (1795) and Monro also recorded observations of discharges of lymph following slight wounds; and Schreger (1799) mentions an instance of lymph fistula following blood-letting in the foot. Soemmerring remarks (loc. cit. p. 53) that the healing of wounds on the instep, near the ankles and knees, on the back of the hands, near the bend of the elbows and near all joints, is impeded by the continual dripping of lymph, and offers the explanation that as the "absorbents about the joints are protected only by very thin skin and very little fat," the swelling and inflammation which ensue prevent contraction and compression of the incised vessels. In 1817, Nasse recorded several instances of lymph fistulæ caused by traumatic lesions of lymph vessels; in some of the cases he analyzed the fluid discharged and proved it to be lymph.* Since then, lymph fistulæ from traumatism

* M. Nelaton has three times met with dilatation of lymph vessels at the fold of the elbow, on a level with the cicatrices of bleeding.

seem to have attracted but little attention, though quite a large number of cases of lymphorrhœa and lymphorrhagia, occurring in consequence of diseased conditions of some portion of the lymphatic system, have been carefully recorded. Such cases will be considered under the head of lymph fistulæ.

During the period when traumatic lesions were attracting so much attention, which was subsequent to the discovery of the chyliferæ of the dog by Aselli, of the lymphatics in the intestines of man by Gassendi, of the receptaculum and thoracic duct by Pecquet, and of the lymphatic trunks of the extremities by Rudbeck, and about the time when the works of Ruysch, Meckel, Hewson, Mascagni, Cruikshank and Hunter, appeared, there were reported very many cases of chronic ulcers with fistulous openings, from which a fluid was discharged which the observers believed to be lymph. Even as late as 1859, Binet maintained that neglected lesions of lymph vessels would give rise "to ulcers of the most rebellious character," and suggests that ulcers of the lower extremities very frequently owe their origin "to alterations of the lymphatic vessels." Such ulcers may be recognized, says Binet, "by the abundance of the matter excreted, compared to the extent of the ulcer; by the increase of the excreted fluid when gentle pressure is made from the extremity towards the lesion; by the exceptional difficulty in cicatrization, and by the nature of the excretion." During the same period—previous, however, to the publication of the investigations of Mascagni, Cruikshank, Hunter and Hewson—there were also a number of cases of "milky discharges" recorded. These were evidently cases of copious and, perhaps, somewhat modified purulent secretions. The instance of "milky saliva" reported by Antonio Nuck,* and the case of "milky discharge from the cutaneous

* "Practicus observed saliva evidently milky. For a woman, he says, nursing a child, again became pregnant, and therefore weaned the child. The right breast from neglect became like a large tumor, and on a certain night subsequently, while suffering much pain, she had an abundant discharge of milk from the mouth, with a corresponding decrease of the swelling in her breast. She swallowed the milk as it came into her mouth (without any inconvenience), which continued for four months."

"But it may be asked, how came the decrease in the breast? In my judgment in no other way than this, that the masses of the blood were laden with chyle, the particles of which could not permeate the lactiferous tubules of the mammæ on account of their collapsed condition, but formed a tumor in those nearest the mammary gland, especially since their arteries were filled and were not capable of removing any more. Indeed, the chylous and milky particles were abundantly

surface of the abdomen" reported by Rommel,* are the most authentic of these curious cases. Among these dubious cases may also be enumerated the case of Schurig,† of a milky discharge from a wound; the case of fistulous communication with cold abscesses or deep-seated suppurating glands;‡ of milky discharge from the pleural and peritoneal surfaces by Chomel;§ from the uterus‖ by Dolæus; from the tunica vaginalis;¶ and from the mucous membrane of the nose by Richter.††

Assalini relates (Binet) having seen, during many months, discharged from the neighborhood of the umbilicus, in two women recently delivered, a fluid which he believed to be of a lymphatic nature. Both women succumbed to puerperal accidents. When Assalini wrote (1787) the lymphatics were being studied, and it is probable that he accepted conclusions without verification, as did Soemmerring after him, who, perhaps, mistook various collections of pus for metastases of milk. Puzos,‡‡ whose conception of the pathology of puerperal diseases seems to have been limited to the supposed formation of depots of milk in various parts and tissues, reports several cases in which collections of milk were found in the abdominal cavity. In one instance he found a "gallon of coagulated milk," the patient having died of fever five days after delivery of a dead fœtus.

The view held by Puzos, and by others previous to his time,

distributed through the blood mass, and permeated the glandular structures, especially the salivary, which offered the least resistance. In the meantime the blood, on account of its freer and quieter motion, propelled the chylous particles remaining in the breast towards the veins and thus to the heart; hence it followed the breast was emptied." Sialographia, etc., Ductuum Aquosorum Anat. Lugduni Batavorum, 1695, p. 49.

* A woman who was nursing twins began to complain, a few days after the death of one of them, of a sense of dull pain and tension beneath the ribs of the right side of the abdomen and over the umbilicus. This feeling was succeeded by stretching, the stretching by itching, and the itching by an exudation of fluid from the skin, the color, taste, and consistence of which were identical with milk, and which yielded a true butter on agitation." Ephemerides Germaniæ, decur ij., ann. viij.

† Parthenolopia, Dresden or Leipsig, 1729.

‡ Med. Essays and Obser., by a Society in Edinburgh, vol. 5, part 1, p. 328. 1747.

§ Memoire Acad. des Sciences, 1728.

‖ Epdem. Germ., decur ij., ann. vj., obs. 76.

¶ Madras Quarterly Jour. Med. Sci., vol 1, p. 189.

†† Med. and Surg. Obser., Transl. Ed., 1744.

‡‡ Memoirs sur le lait ripander, on depots laiteux, new edition, Paris, 1801, p. 141.

that milk was formed from the food of pregnant women and passed commingled with the blood throughout the system, being determined, during gestation, to the uterus to nourish the fœtus, and to the breast, after delivery, to nourish the infant, lead very naturally to the conclusion that a superabundant supply or deficient consumption would eventuate in the formation of depots of milk in other localities. This erroneous theory, improperly applied to the explanation of the nature of certain not infrequent complications of the puerperium, is at least suggestive of the important relation, now being studied with so much assiduity, which the lymphatic system may bear to certain puerperal diseases. In the further prosecution of pathological research, the doctrine of metastasis, so conveniently set forth by the older authors, to elucidate many occult morbid phenomena, and now partially explained by the recent doctrine of embolism and thrombosis, may yet find its complete vindication.

Previous to 1800, and even later, many of the surgeons who wrote concerning the nature and cure of such lymphatic tumors* as are now known to be suppurating glands, held that the tumors arose from rupture of the lymphatic vessels, and that the fluid (humor) which they contained was true lymph† extravasated and collected in the cellular tissue. Bienl, in describing the causes which predisposed to these affections, enumerated the rheumatic, arthritic, scrofulous and rachitic diatheses, nevertheless he maintains that external violence, a traumatic lesion, be it a slight compression or contusion, was always necessary. These views were combatted by Marcus Fehlner‡ in an elaborate dissertation,

* The following is an example. "Adolphus O, 17 years old, always enjoyed good health except an attack of measles and scarlet fever, from which he suffered no evil consequences, and an attack of whooping cough in his thirteenth year, which destroyed his appetite and caused much emaciation. After this a tumor not larger than a bean appeared between the scapulæ, which increased in its periphery and soon gave signs of fluctuation. At the expiration of eleven months it had attained the size of a pullet's egg, but was unaccompanied with pain or change in the color of the integument. At this time another began to form below and around the first lumbar vertebra, which soon attained the size of a hen's egg. These tumors were incised in the most dependent parts, and a large quantity of lymph mixed with a fibrous material was evacuated."—Trasch. Inaug. Dis., 1821.

† Soemmerring attributed dropsy and œdema, R. Morton, phthisis, and Brambilla, fungus growths in the joints, to rupture of the lymphatics. Bassius held that in cases of chylous hydrothorax the thoracic duct was ruptured, and Kerkringius believed that all internal dropsies and all œdemas resulted from disturbance of the lymphatic circulation.

‡ Inaug. Dis. Tumore Lymphatico, 1820.

in which he very clearly pointed out the fallacies upon which the theory of lymph extravasation were based, and proved conclusively by experiments and by analysis of the contents of the tumors, that the fluid was pus.

In view of the foregoing considerations, it is not surprising that Hoffmann and Bonet should have been imbued with the prevailing teachings of the time, and been misled into the belief that the discharges in their cases were the "nutritious juice," evacuated from the thorax. And notwithstanding the vague and ambiguous reports by Assalini and Puzos, coupled as they are with their wilful and somewhat vainly conceived explanations of the phenomena they did not understand, and of the somewhat doubtful, though less equivocal, cases of Monro and Percival (Nos. 24 and 25), the post mortem examinations in the cases of Bassius, Morton, Poncy and Scherb, establish the existence of lesions of the chyle ducts which would allow the escape of the fluid contents. To these, the cases of later date add a special and attractive interest.

Case 32. Chylous Dropsy* "M. had been indisposed for a considerable length of time; his disease was supposed to be connected with some morbid affection of the liver, and treated accordingly with mercurials and other remedies; but nevertheless, at length ascites became manifest. A few hours after his death, I was sent for to evacuate the hydropic effusion previously to the body being placed in the coffin. I drew off about 16 quarts of fluid resembling milk, perfectly inodorous and insipid, and some of which I kept for many weeks without any appearance of decomposition."

Case 33. "Abdominal tumor with milky discharge.† Mrs. Reed, aged about 40, naturally of good constitution, enjoyed comfortable health until 1817, when, while pregnant with twins, an umbilical rupture took place which disappeared with delivery. Soon after a tumor, apparently solid, was discovered in the abdomen, which occasioned pains similar to labor pains and was

* F. W. Weaver, Med., Surg. and Pharm. Repos., Aug. 10, 1814, vol. ij., pp. 377, 378.

† Truman Abell, Med. and Surg. Jour., Boston, vol, vij., p. 13, 1833.

followed by anasarca, accompanied with difficult breathing and great debility. Several punctures were made in the legs, and a free discharge took place for several days. After the disappearance of the dropsy, another tumor was discovered in the right side extending from the spine of the ilium to the diaphragm, which caused much pain and great distension. This tumor appeared solid and was non-fluctuating. After 1825, the abdomen appeared to be distended from ascites, presenting a uniform surface, and the distinctness of the tumors became less apparent. As the disease advanced, the umbilical tumor protruded and eventually formed a bag of irregular shape, the apex, which was the umbilicus, being elevated five inches from the surface and in the middle seven or eight inches in circumference, with two lateral processes like nipples, about one inch each in length."

"On the night of July 17th, 1832, the tumor burst at the umbilicus, and during the night and early part of the succeeding day 25 lbs. of fluid were discharged, followed by great exhaustion and fainting. "The fluid was milk and without any disagreeable odor, more than if taken warm from a cow." The two original tumors remained, which the reporter supposed were ovarian.

Case 34.—"Lymph concretion in right pleural cavity.* The patient died ten months after an amputation at the hip-joint for malignant tumor of the thigh. The heart, kidneys, and left lung were free from disease, and also the bronchial, mesenteric and lumbar glands. The right side of the chest contained an

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Note.—Fatal case of vomiting of a chyle-like fluid. On the 12th of October, Dr. Lawrence Sprague was hurriedly called to see a man, who had previously enjoyed good health, and while performing his duty as a mariner had been suddenly seized "with a severe pain in his stomach and bowels," and "across the lumbar region," accompanied with "puking" of a "great quantity of chyle, having the appearance of milk in a frothy state." He was pulseless, surface was "deathly cold," countenance was pale, "and his whole aspect bore marks of immediate dissolution." The vomiting was unaccompanied with nausea, without effort, and continuously flowed from his mouth, seeming to flow "through a channel wtthout any perceptible effort to propel it, and no obstruction to its escape, but completely closing the mouth," so that at times suffocation was threatened. The flow continued for more than a half hour during life, and increased immediately after death. The quantity discharged was variously estimated—by some as much as one gallon.—New England Journal of Medicine and Surgery, vol 12, p. 4, 1823.

* Curling, London Lancet, vol. 1, 1857, p. 352.

immense cyst, filled with a substance resembling medullary cancinoma,* but which proved on careful examination to 'consist of softened and degenerating lymph.' There was no evidence of malignant disease—no secondary deposits in any of the organs."

Case 35.†—"A case of milky ascites. A government ship painter, æt. 59, with lymphatic constitution, and affected for a long time with chronic bronchitis and ascites, in 1793 had two ribs fractured. From 1812 to 1816, had every morning an œdema of the lower extremities, disappearing slightly on moving about and not interfering with ordinary occupations. In 1824 was attacked with pleurisy which became chronic. The last affection from which he suffered commenced with bronchitis. During the course of this affection, a gouty affection of the feet appeared, but at the end of four days it migrated to the chest. The bronchitis became chronic. An expectoration of purulent phlegm, containing tuberculous concretions, increased from day to day. Respiration became difficult, and attacks of asthma frequently occurred. Ascites complicated the bronchitis, and was caused by the interruption of the circulation in the lungs. In consequence of the imminent danger of suffocation, the patient was tapped. The fluid rapidly accumulated in the abdominal cavity, and the operation was repeated a second and a third time, the patient dying three days after the last paracentesis."

"The quantity of liquid evacuated at each operation was about 12 litres. Its color was similar to that of milk. Left at rest in a large vase for several days it deposited large flakes of a white and slightly yellowish color"

"*Characters of the fluid:* opaque, frothy upon agitation, and presenting the aspect and consistency of milk rich in cream; an odor of rotten eggs; sp. gr. 1.018, and reddened litmus paper. It was composed of albumen, 7.38; fatty matter, 1.75; mucus, .25; chloride of sodium, .65; lactate of soda, .20; and traces of sulphur, water and loss, 89.77."

"The clot was dirty white, slightly elastic, presented a fibrinous appearance, and was composed of water, coagulated albu-

* E. Wagner maintains that cancer may be developed from the walls of the lymphatics, and reports a case in which cancer was developed in this manner in the lymphatics of the lung and pleura.—Arch. de Heilk., iv. S., p. 538.

† F. S. VanCamp, Annals of the Medical Society of Anvers, 1842, p. 86.

men, fatty matter, chloride of sodium, lactate of soda and sulphur."

Case 36.*—"Milky Ascites. A girl, æt. 8, had been sick one year; vomited frequently, and was emaciated. The symptoms were analogous to those of tubercular peritonitis. The autopsy showed numerous tubercles in the lungs and a very large ascites."

"The proportion of albumen contained in the fluids was determined by three different experiments as follows:

By coagulation, - - - - - - -	5.33
By the proportion of azote, - - - -	5.07
By the difference of residue of evaporation, -	5 58

In consequence of these analyses, M. Lorain established the composition of the fluid as follows:

Water, - - - - - - -			92.25
Fatty matter,	acid, - -	0.61	1.84
	non-saponifiable,	1.23	
Albumen, or analogous azotized matters, - -			5.33
Salts, chlorides, sulphates, salts of lime, - -			0.34
Loss, - - - - - - - -			0.24
			100.00

Case 37.† "A woman, aged 62, with subcutaneous œdema, and very considerable milky effusion into the sacs of both pleuræ and of the peritoneum, with dilatation of the heart, thickening and shortening of the mitral valve, thickening of the pyloric half of the coats of the stomach, the intestinal villi turgid with a whitish fluid. The sub-pleural lymphatics of the lungs were distended, the lacteals and the thoracic duct in the following condition: They were for the most part, especially from the intestine to the nearest range of glands, mostly nodularly dilated, and stuffed full of a whitish, soapy, unctuous mass, which broke down uniformly in water, to which it communicated a slight opalescent cloudiness. This mass consisted of an agglomeration of fatty granules, chrystals of margarin, oil globules, and a few cells, some of which contained nuclei of

* M. Lorain, Comptes Rendus, etc., de la Societe de Biologie, vol. 5, 2d series. Paris, 1859. pp. 162, 166.

† Rokitansky, Path. Anat. Bd. ij., S. 388; also Ziemssen's Cyclo. vol. vi., p, 531.

considerable size. In isolated spots, particularly at the varicose nodosities, the mass was of a yellowish color, and adhered to the walls of the vessels. At these parts the vessel was covered with a network, and was here and there quite occluded. The meshes of the network contained agglomerations of fatty granules. The glands were not much enlarged, and were here and there studded with white specks. The receptaculum chyli and vessels entering it were dilated, their coats thickened; the former was lined internally with a grayish red reticulated stratum, from which a nodular excrescence here and there protruded, or a filamentous bridge extended. The thoracic duct was occluded by a similar soapy material, partly filled with indurated material and quite blocked up."

Case 38. Hoppe-Seyler* refers to a case of "rupture of chylous vessels, caused by the pressure of a tumor, in which through a puncture, several litres of a chylous fluid was obtained from the abdominal cavity, in which he found diastatic ferment in a very slight quantity; no pepsin, no albumen digesting, or fat decomposing ferment."

Case 39.†—"Obstructed thoracic duct; rupture of receptaculum chyli; peritonitis. Charles S., æt. 19, a shopman, had been suffering for about a week from constipation and loss of appetite, and had taken a good deal of purgative medicine. Two days before admission, he was attacked by severe abdominal pain and tenderness, with vomiting; these symptoms were much relieved by opium, and enemata, which caused the bowels to act. On admission there were some abdominal pain and tenderness; the patient lay on his back with his legs drawn up, and during the night he was a little delirious. The next morning he was seized with vomiting, and brought up much yellowish matter of a somewhat purulent appearance, and then fell into a state of collapse and died in a few hours." "On post mortem examination, the peritoneal cavity was found to contain some turbid yellow fluid, and the surfaces were smeared with a little soft yellowish lymph. The peritoneum in front of the spine was found to be bulged forward; this appearance was produced by the

* Archiv. f. die, Gesammte Physiologie des Menschen und der Thiere, vol. vij., p. 407.

† W. Cayley, Transactions of the Pathological Society of London, vol. xvij., 1866, p. 163.

effusion of a large quantity of milk-looking fluid behind it. The effusion extended as far as the brim of the pelvis. The thoracic duct throughout its course was found immensely dilated; at its termination it was about the calibre of the little finger; it was distended by a milky fluid resembling that extravasated behind the peritoneum. The receptaculum chyli was much dilated, and on its anterior surface was a small perforation about two inches in length. The lymphatic glands in the dorsal and lumbar regions were much enlarged and soft, and appeared infiltrated with a milky fluid; this condition on the right side extended into the iliac region. At the junction of the thoracic duct with the subclavian vein, the former suddenly became narrowed, and its coats thickened, and just at its mouth a fibrinous granular vegetation was attached to the lining membrane of the vein, which almost completely obstructed the opening of the duct. The narrowed part of the duct was completely blocked by a firm, yellow, cylindrical coagulum; on removing this, a very fine probe could just be passed from the duct into the vein. The body was moderately well nourished, and all the other organs were normal. On microscopical examination, the milky contents of the dilated duct were found to consist of lymph corpuscles, and a large number of cells which could not be distinguished from pus."

*Case** 40.—"Specimen of milky or chylous fluid removed from the abdomen. W. P., a hawker, aged 24 years, a dark, unhealthy-looking man, first came under my observation in November, 1864. He had then chronic capsular rheumatism, from which he recovered. In August, 1865, he had a relapse, after exposure to wet and cold, and was again restored. In July, 1867, he caught cold, which was followed by swelling in the lower limbs and scrotum. When admitted to the hospital his face was congested; urine scanty, loaded, not albuminous; abdomen tense with flatus, but containing some fluid, and its small superficial veins generally enlarged. * * * * On the 14th of July the abdomen was tapped, and 14 pints of an opaque milky fluid were drawn off, sp. gr. 1010. The fluid curdled slightly, effervesced a little on the addition of acetic acid, and displayed under the microscope a few compound granular cells, but seemed chiefly composed of small amorphous par-

* Ormerod, communicated by Dr. Wilks. Transactions of the Patholog. Soc. of London, vol. xix., 1868, p. 199.

ticles, scarcely separating on standing. On the 18th the wound reopened, and the fluid which drained for several days coagulated into a gelatinous mass. No tumor could be discovered in the abdomen. On August 3d, 18½ pints were evacuated. It contained a few compound granular cells, and some large cells less granular. The amorphous molecules, which moved with a slight flickering, were the most numerous objects. Acetic acid caused a thick granular curd to rise to the surface; boiled with liq. potassæ the fluid turned dark brown. Nitric acid and heat gave a very slight precipitate. On August 16th, 17 pints of fluid were drawn off, which was followed by an attack of pleurisy on the right side, during which the fluid did not accumulate so rapidly. On September 1st, 12½ pints were drawn off, and on the 14th, 14 pints were evacuated, and a few days subsequently he escaped from the hospital." Subsequently he reappeared as a patient of the Brighton Dispensary, was again tapped, and died on the 4th of November.

"Body much emaciated, abdomen containing 16 pints of the same milky fluid. Peritoneum white and opaque. Close to the spine, behind the intestines, extending from the liver to the promontory of the sacrum, and including the upper part of the right kidney, was a hard, white, nodulated tumor. * * * Spleen large and soft; liver small, thin, thickly studded with masses of a dull white color, from one to three lines in diameter. The left subclavian vein and its affluent vessels were plugged with a light-colored ragged clot, evidently of long standing. It was softened in the centre, and at one point was firmly adherent to the walls of the subclavian vein. The opening of the thoracic duct appeared healthy between this clot and the opening of the jugular vein. Behind the innominata, pressing on it, but not involving its coats, was a white mass * * * like the white masses found in the abdomen. The mediastinal glands, heart and right lung, were healthy; the left lung was compressed by recent pleural effusions of an opaque color, quite unlike the peritoneal fluid. The masses from the abdomen and chest * * * consisted of an imperfectly-fibrous structure, the fibres not being simply such, but rather misshaped cells and amorphous granules, strung in rows, with many fat cells. * * * The deposit in the liver was more woolly, contained no fat, none of the chrystalloid fatty deposits, nor any well-developed nucleated cells."

Dr. Wilks examined the fluid and found it to have a specific gravity of 1010, containing little or no sugar, and precipitating no casein by acids. He found under the microscope innumerable granules, but no distinct oil-globules; it coagulated by heat, and on standing, spontaneously. He concluded that the fluid was not milk, but of a chylous nature, holding fibrin and albumen.

A specimen of the fluid was examined by Dr. W. Marcet, assisted by Mr. M. O. Salter, who furnished the following tabulated result of the analysis.

Composition of the peritoneal fluid in 1000 parts:

Reaction,	Alkaline.
Specific gravity,	1012. 5
Water,	947.73
Solid matter,	52.27
Albumen,	17.26
Substance resembling caseine,	2.39
Fatty matters,	19.93
Chloride of sodium,	6.51
Bile and sugar, phosphoric acid, lime, and other undetermined substances,	6 18
	1000.00

Dr. M. concluded that the fluid was "principally chyle," and suggests that the large amount of fat leads to the presumption that it was actually nothing but chyle; "but that the presence of the bile acids, not found in pure chyle, appear to show that the emulsion consists of chyle mixed with more or less of the common serous peritoneal effusion, which, according to Lehmann (Phys. Chem., vol. ij., p. 323), contains frequently, if not usually, the bile acids." If, however, the investigations of Fleische are correct, the presence of the bile acids may be explained by the direct communication of the hepatic lymphatics with the thoracic duct.

*Case** 41.—"Oily Ascites. M. P., æt. 27, a maiden, menstruated at 20, and at 23 her menses ceased, never to return. She was a patient at La Charité as an incurable, because she was

* Bergeret, Jour. de l'Anatomie, T. ix., 1873, p. 586.

unable to take care of herself. At the age of 13 she had typhoid fever, subsequent to which her lymphatic system was attacked. At the time of her admission she had "*écrouelleux*" discharges from the groins and armpits, and suppuration in the back. Under appropriate treatment the discharges ceased rapidly and the sores healed, but at the same time her belly became enlarged. On August 1st, 1873, her abdomen was very large, and increased so rapidly that respiration became seriously disturbed; cough ensued, and became very troublesome both day and night. At both apices of the lungs there were softened tubercles. On September 10th, her belly was punctured and a milk-like fluid, with a light bluish tinge, was evactuated; sp. gr. 1.007, reaction neutral. Under the microscope were seen fat drops, varying in size; no other figured elements. On October 11th, a second operation was performed, a similar fluid being evacuated, sp. gr. 1.740. Under the microscope it exhibited a serosity holding in solution granulations 'refringentes,' without any large drops of oil."

"The fluid contained:

Fatty matter per litre, - - 16.70 grammes.
Albumen in considerable quantity.
Considerable chlorides.
Sulphates in small quantity.
Phosphates in doubtful quantity."

*Case** 42.—"Milky Ascites. A child six weeks old had a very severe attack of whooping cough, which lasted for two months. Two months after its cessation the parents noticed an enlargement of the abdomen, which continued to increase until the distention produced such dyspnœa that the attending physician gave up the case as hopeless. At the age of nine months (Oct. 1873), Wilhelms performed the operation of paracentesis abdominis, evacuating 16 "schoppen" of a milk-like fluid. After the evacuation of the fluid the abdominal organs were carefully examined, but nothing abnormal could be discovered, except a tumor about the size of a hen's egg, situated in the umbilical region and firmly attached to the spinal column. The operation of paracentesis was repeated ten times in the succeeding seven

* Correspondenz-blatt der arztlichen Vereine der Rhein-provinz, 1873–1875 No. 14, p. 23.

months. Rindfliesch pronounced the fluid pure lymph, which entered the abdominal cavity from a ruptured thoracic duct. Wilhelms supposed the tumor to be an hypertrophied lymph gland, fistulous, and in connection with the thoracic duct, through which the lymph was poured into the abdominal cavity."

Case 43.—Effusion of chyle into the peritoneal cavity.* "R. W., æt. 30, single, always delicate; secretion of urine frequently greatly diminished, ceased entirely for several days in her 12th year; subsequently a densely œdematous swelling gradually developed in the right leg and forearm to the degree now existing. During the winter of 1873 and '74, she suffered with frequent attacks of pulmonary and gastric catarrh, and towards the spring the abdomen became distended, the urine diminished and ceased entirely for three days. In May, 10 litres of a milk-like fluid were evacuated. Reaccumulation very rapid. In June following, both lower extremities became œdematous. The integument was tense, thickened, surface irregular. Right arm and abdominal integument œdematous. Considerable ascites. Thoracic viscera displaced upwards. Secretion of urine scanty, amounting to only a few cub- centim. per day, rarely increasing to 100. No albumen. Diet mostly milk. There were six tappings altogether. Œdema of legs steadily increased. A clear, sometimes yellowish fluid, continuously dribbled in considerable quantity from small integumentary fissures. Death from asthenia took place Sept. 5th."

"The first specimen of ascitic fluid was milk white, and formed upon standing a layer of cream; no smell; alkaline; under the microscope it behaved like chyle, showing innumerable molecular drops and single lymph corpuscles, partly containing fatty granules. With the addition of a few drops of a solution of caustic soda and shaken up with ether, it became perfectly clear and yellowish, like an ordinary exudation. Upon evaporation of the ether, a firm fat was left. When freed from fat the fluid was rich in albumen, and when deprived of albumen it reduced oxide of copper in an alkaline solution, but not in a low temperature. The fluid from the different tappings varied in appearance, sometimes less opaque, but was always the same under the microscope, and coagulated. In May it yielded 1.68 p. c. of fat, and

* Quincke, Deutsch. Archiv. fur Klinisch. Medicin., 1875, Bd. xvi.,p. 128. Leipzig.

in June 1 87, varying in specific gravity from 1.016 to 1.013 in June."

Sectio Cadaveris, by Prof. Langhaus. "Great decomposition; abdomen much distended; greenish discoloration upon the abdominal organs; bloody infiltration of organs of chest; cadaveric emphysema at several places, beneath parietal peritoneum of anterior abdominal walls, in mucosa of stomach and large intestines, liver, spleen, kidneys and muscles of heart. Right pleural cavity contains one litre of a reddish, slightly turbid fluid, with milk white flakes, partly lying upon the costal pleura in separate spots, and which owed their color to the presence of granular fat. No sign of pleuritic inflammation. In left pleural cavity ¼ litre of blood-red fluid without flakes. Both lungs hyperæmic and slightly œdematous. Blood-red fluid in pericardium. Heart flaccid, enlarged, decomposed, in left side well coagulated, in right side fluid dark red blood. Muscular tissue in fatty degeneration." "The abdominal cavity contained a large quantity of fluid of the makroscopic and microscopic characters of chyle. No coagula; only at lower ilium a few fibrinous deposits. Intestinal serosa and peritoneum of parietes thickened and opaque, and covered by numerous fibrinous bands, which connect the intestinal convolutions with each other and with the mesentery and abdominal walls. Here and there these bands were infiltrated with chylous fluid, and consequently milky and opaque; especially striking was this condition upon the walls of the small intestines. About 2 or 3 metres above the ileo-cæcal valve commenced a very dense injection of the chyle-vessels, extending to the duodenum, with a perfectly chyle-like milk-white mass. The chyle vessels were dilated, regular and irregular, and alongside of them were larger, rounded, slightly prominent milk-white spots, representing extravasations. No fluid flowed from the cut surface of the mass, nor from the vessels; the contents were coagulated. Chyle retention was also found upon the swelled mucosa of the entire small intestines in a marked degree, and also in the submucosa. In the latter was found an accumulation of chyle spots, and in the lower portion of the ileum the chyle could be seen in minute white clots. The chyle vessels were injected exactly to the union of the intestines with the mesentery; not injected in the latter; mesenteric glands small, without chyle retention." "Nothing abnormal found in the thoracic duct. The obstruction to the flow of the chyle was

caused by inflammatory thickening of both folds of the mesentery and the transformation of the interposed adipose tissue into tense connective tissue, and the adhesions upon the surface which united the numerous folds of the mesentery to each other." "Liver closely united to the diaphragm, enlarged. Under the microscope the liver cells were distinct, but loosely imbedded in the trabeculæ, and filled with minute fat globules. Spleen slightly enlarged. Supra-renal capsules softened; kidneys small; surface smooth; capsule easily detached; fat drops in the glomeruli and epithelium of the tubules. Stomach and larger intestines normal. Contents bilious. Pancreas very small."

Case 44.—Effusion of Chyle into right pleural cavity.* "C. S., æt. 50, male, dissipated, previous health good. Was run over by a wagon whilst lying partly upon the right side and abdomen. Eleven days afterwards, was admitted to hospital on account of pleuritic effusion. Superficial lesions and bruises healing. 7th and 9th ribs broken anteriorly in the axillary line. Dyspnœa set in on the third day after the accident, and increased from day to day until the tenth day after admission, when 1800 cm. of fluid were withdrawn. The fluid was of a whitish yellow color, had the appearance of milk, and after standing presented upon its surface a white layer of cream of the thickness of a millimetre. It exhibited under the microscope minute fat globules. Subsequently, after the disappearance of all the symptoms of the hydro-pneumothorax, œdema supervened, radiating from the puncture, and extending over the entire right side of the trunk and to the middle of the thigh. After puncture a milky fluid flowed guttatim from the œdematous part, at the rate of 100 cm. per hour. The fluid reaccumulated in the pleural cavity, and during the third tapping the patient expired."

Sectio cadaveris by Prof. Langhaus. "Upon right side of thorax moderate infiltration of cellular tissue and muscles with nearly clear fluid. Diaphragm of left side as high as 5th intercostal space; of right side convexed and bulging downward. Right pleural cavity contained 7000 ctm. of a milky whitish-yellow fluid; pleura transparent, no injection anywhere; no discoloration or thickening. Towards the mediastinum milk-white deposits, easily removed; most copious upon the

* Quincke, Deutsch. Archiv. fur Klinisch. Medicin., 1875, Bd. xvi., p. 121. Leipzig.

upper portion and at the apex of the pleural cavity. Subpleural cellular tissue at sternal end of first rib and the adjacent part of sternum contained a white milky fluid, but no lesion of the pleura could be found in that region. This limited extravasation did not extend to the thoracic duct. The duct, from its mouth to the point of emergence from behind right subclavian, was filled with coagulated blood. The lower portion could not be dissected out. Left pleural cavity contained 100 cm. of nearly clear serous fluid. Sixth, seventh and eighth left ribs broken in axillary line. Right lung compressed, atelectatic, without other changes; ribbon-like adhesions with lateral thoracic walls. Heart, liver and kidneys normal. In spleen small coagulated hemorrhagic spots. Mesentery and mucous membrane of intestines without chyle. In pelvic cavity and between intestinal convolutions a small quantity of a whitish fluid. Chemical examination of fluid proved it to be animal chyle.

Aspiration.	Day of Injury.	Quantity.	Specific Gravity.	Fatty Matter.
I.....	10	1800 ctms.	1020	1.092
II.....	19	3000 "	1017	1.263
III.....	21	1000 "	1016	1.078
Pleural contents.		7000 "	1016	
Fluid œdema...	14	100 in one hour.	1019	

No. I., deprived of albumen, reduced CuO in alkaline solution upon boiling; not during rest at a low temperature. No. II. did not reduce CuO upon boiling."

Quincke claims this to be a case of rupture of a chyle vessel, most probably the thoracic duct in the pleural cavity. The character of the fluid, its repeated reproduction with nearly identical properties, leave no doubt of the presence of chyle.

Case 45.—Chylous ascites caused by parasites—hæmatozoa.* The widow of a missionary, aged 39, who had resided ten years in Surinam, observed, a year after returning home (1872), increased tension of the abdominal walls and the protrusion of a tumor from the vulva. The vulvar tumor consisted of a cystocele and incomplete prolapsus uteri, caused by the pressure of the chylous effusion in the peritoneal cavity. After a course of ineffectual medication, which was assiduously prosecuted until September 1874, she was tapped, and two litres of a buttermilk fluid was evacuated. Under the microscope this fluid exhibited "an

* F. Winckel, Deutsch Archiv. f. Klinish. Med., 1876., Bd. 17, p. 303.

enormous number of small filiform entozoa in very active serpentine and whipping motion, each with a rounded head, a sharply-pointed tail, and upon the head 4 to 5 cilia, by means of which they appeared to obtain nutriment from the surrounding parts." In some was observed a central tube extending from the head to the tail. They were 0.01 mm. in width and 0.2 mm. in length.* "After the tapping the patient recuperated, but soon there followed a swelling of the left leg similar to a phlegmasia alba dolens, and equally tense and painful; urine was normal in color and specific gravity, did not contain any albumen. No tumor could be recognized in the abdominal cavity. The liver, kidneys, and spleen seemed normal. No fever at any time, but the patient sometimes felt cool and presented moderate appearances of anæmia. The swelling of the leg gradually subsided, but a pain in the veins near the groin remained for some time." She continued in fair health until the summer of 1875, when there was a slight return of the ascites. From this time it continued to increase, and in August, 1876, she was again tapped, 19 quarts of a similar fluid being evacuated; but the relief was only partial, and two days afterwards, during an attempt at defecation, she was suddenly seized with a violent pain in the abdomen and expired in great agony in 30 minutes. Previous to the last tapping the right pleural cavity "showed exudation without previous pleuritic symptoms."†

Of this series of cases, there were six instances of effusion of a chylous fluid into one or both pleural cavities. In three of these cases the fluid poured directly from the thoracic duct, in one of which (Bassius) the aperture in the walls of the duct was discovered after death, and in the other two (cases of Guiffart and Quincke), the rupture was the result of external violence. It is not, however, certain that the vent which emitted the fluid in Quincke's case was in the duct. In Curling's case (No. 34), the lymph concretion which occupied the right pleural cavity was discovered in the body of a patient, whose right lower extremity had been amputated at the hip joint, two months previous to death, for malignant disease of the thigh. In the cases

* "I showed specimens to Drs. Osterloh, Kruger, Franke, Fehrmann, Lobeck, Virchow, Leisering and others, and all responded to the question, What are these entozoa? the ready answer, 'Nescio.' "—Winckel, p. 304.

† Winckel refers to a statement made by the patient, that physicians in Surinam characterized her case as nothing unusual, and related a case from which "two casks full" of a similar fluid was evactuated.

of Rokitansky and Ormerod (No. 37 and 40), the chylous fluid was effused into the pleural and peritoneal cavities; in the former in consequence of obstructed heart circulation, and in the latter as the result of the interruption of the blood current in the left subclavian vein. These cases, with those of Hoffmann and Bonet (30 and 31), furnish eight instances of lesions, produced by accident or disease, either in the duct or some of its larger affluent branches, in or about the thorax, sufficient to emit the fluid in quantities incompatible with vigorous health, and certainly endangering life if not causing death; whereas among the cases of chylous ascites there was but one (42), and probably a second (Poney's), in which the chylous fluid found its outlet through an aperture in the walls of the thoracic duct. With the exception of the cases of Rokitansky and Ormerod all the cases belong to a class of casualities, which do not admit of any generalization, and are only instructive in suggesting the occurrence of an improbable contingency which may happen under circumstances very various and unforeseen. In both of the cases reported by Quincke (43 and 44), there was found, both in the pleural and peritoneal cavities, chylous fluid, though the post mortem examinations determined the cases as one of effusion into the pleural cavity (44), and the other of chylous ascites (43). In both cases the anatomical lesions were clearly made out; in 44 the laceration of the duct permitted the escape of the chyle into the pleural cavity, and in case 43 chyle retention was caused by an inflammatory thickening of both folds of the mesentery, by which the lacteals were narrowed or completely occluded. The lymphatic glands were small and free from chyle retention, but the chyle vessels were "injected exactly to the union of the intestine with the mesentery." The flow of chyle was obstructed, engorgement of the vessels ensued, rupture occurred, and the fluid poured into the peritoneal cavity. But how explain the presence of chyle in the peritoneal cavity in case 43, and in the pleural cavity in case 44? In both instances the phenomenon is, perhaps, partially explicable upon the supposition that portions of the effused fluid traversed the lymph vessels of the diaphragm, but in the case of laceration of the duct within the thorax, it is possible that stasis of chyle ensued in the abdominal portion of the duct, in consequence of the loss of the influence of the suction power of the heart upon the movement of the contents of the thoracic duct.

This latter view is, however, negatived by the absence of chyle retention in the chyle vessels of the mesentery and intestines.

Of the 18 cases of chylous ascites, in two (22 and 39) the orifice through which the fluid was discharged was found in the walls of the receptaculum chyli;* in 39 the rupture occurred in consequence of stenosis of the thoracic duct near its outlet, and in 22 from ossification of the wall of the receptaculum and filling of its cavity with "bony concretions." In 5 cases (25, 26, 27, 28 and 43), and probably in cases 37 and 40, the rupture took place in the chyle vessels of the mesentery. In 4 of these cases (26, 27, 28 and 40), and in the cases of Abell, Hoppe-Seyler and Wilhelm (33, 38 and 42), in which no post mortem examination was had, abdominal tumors were discovered either by inspection of the cadavers, or by palpation during life, and the probability is that the rupture was the result of compression, either of the thoracic duct, which in some of the cases was very much dilated, or of the lacteal vessels. In two other instances the duct was compressed by tumors situated in the thorax, near its entrance into the left subclavian vein. These tumors were usually glandular, and consisted of hypertrophied and degenerated lymph or mesenteric glands, co-existing in two cases with an enlarged liver, and in two other instances with cancerous formations.† In a single instance (45) the ascites was ascribed to the presence of a parasite in the lymph vessels, which was first discovered by Lewis in his investigations into the nature and cause of chyluria, and which he believes penetrates the walls of lymph vessels, thus establishing apertures through which the contents are discharged into the bladder in cases of chyluria, and, as is supposed to have occurred in Winckel's case, into the peritoneal cavity in cases of chylous ascites. It is not, however, necessary to assume the presence of the *filiaria* in 16 of the 18 cases of chylous ascites previously cited; for in all of them, excepting the cases of Monro (24) and Winckel (45), conditions were present which satisfactorily explain the occurrence of the effusion of a

* Hasse (Path. Anat. Syd. Soc. Ed., p. 10) refers to a case of dilatation of the receptaculum, observed by Rokitansky, and another by Albers, but the references cannot be verified.

† Mascagni and Soemmerring observed dilatation of lymphatics about cancerous tumors. Lebert has many times observed the lymphatics of the mesentery dilated, sometimes filled with cancerous matter, sometimes simply dilated by stagnation and by an obstacle to the circulation of the lymph or chyle. Loc. cit.

chylous fluid. It is, nevertheless, worthy of notice that in Winckel's case, in which the "filiform entozoa" were discovered, there was a co-existing condition of the left lower extremity similar to phlegmasia alba dolens, and in Quincke's case of peritoneal dropsy (43), in which the chyle retention was satisfactorily accounted for by the condition of the mesentery, previously described, there was also present an œdematous condition of the right leg and forearm and elephantiatic formation, which was, presumably, due to disturbances of the lymphatic circulation of the parts thus affected. In Chevalier's case,* the enormous elephantiatic development of the right lower extremity followed an attack of phlegmasia alba dolens, and in a number of cases of lymphorrhœa similar developments have supervened, both in the immediate vicinity of the fistulæ, and in parts remote from the cutaneous apertures. Unfortunately Winckel lost the opportunity of studying the connection of these parasites with the co-existing disturbances of the lymph circulation so markedly present in the limb of his patient, and, for the present, it and the analogous condition present in Quincke's case must be regarded as coincidences.

In 3 cases (35, 36 and 41) the chylous ascites was ascribed to obstructed pulmonary circulation; in 2 (37 and 40), to interrupted cardiac circulation, and in cases 26, 27 and 39 to obstructed chyle circulation in consequence of stenosis of the thoracic duct at or near its entrance into the left subclavian. These, together with the cases of Worms and Oppolzer, and others to be introduced, present important considerations, relating especially to the influence of the cardiac and pulmonary circulation upon the movement of the chyle and lymph, which will be discussed further on.

From an anatomical stand-point, the cases of effusion of a chylous fluid into the serous cavities may be divided into three groups—chylous ascites, chylous hydrothorax, and chylous hydrocele; and in a pathological aspect into two classes—effusions of chyle, and effusions of a fatty fluid. To complete the anatomical groups, the cases, few in number, in which a chylous fluid has been found in the cavity of the tunica vaginalis testis, will be cited.

Case† 46.—"Galactocele. G., of high stature, vigorous, and of

* See case No. ij., Amer. Jour. Obst., vol. x., p. 8.

† Aug. Vidal (de casis), Traite de Pathologie externe. etc. 5th ed., vol. v., 1861, p. 180.

bilio-sanguine temperament. His previous health had been perfect. His father died young with pleurisy, and mother of some uterine affection. Up to his fifteenth year he was a dyer; afterwards a soldier in Africa. He had several times contracted gonorrhœa, but without any affection of the scrotum, which had never been the seat of any lesion. The genital organs were normal. About eight months previous, while quietly in bed, he suffered from marked heaviness in the scrotum, and observed for the first time an enlargement, which finally became so large as to impede motion. The two tumors had the form of hydrocele; their lower and larger extremities equalled the fist of a child seven years old. There was no fluctuation; the position of the testicle could be easily made out by methodical pressure, but there was no transparency. The spermatic cords were healthy. His breasts were like those of men generally. His food had always been animal; he drank but little milk, but much wine, though not to excess. His virility was perfect and decided. After the puncture and evacuation of a milky fluid, it was discovered that the testicles were under size, though the penis was in size corresponding to the age of the patient. There was no enlargement of the prostate or vesiculæ seminales. Analysis of the fluid by M. Grassi: Water; a substance differing from albumen, but very analogous to it, if not identical with casein; a fatty body presenting the physical characteristics of butter; sugar, chloride of sodium, traces of lime, probably the chloride. The fluid was alkaline and coagulated spontaneously. Examined under the microscope with a high power, there was seen a multitude of very small transparent globules, some spherical, others irregular, but all having the appearance of globules of butter. Boiling did not produce coagulation, as is ordinarily the case with hydrocele fluid."*

Case† 47.—"Hydrocele, with contents simulating chylous urine. C., æt. 25, potmaker, admitted November 9th, with hydrocele of the right tunica vaginalis of the size of a large orange; stated to

* Vidal refers to the case which Lebert observed in the clinic of Schoulein at Zurich, in 1833, as analogous, but it more properly belongs to the cases denominated by Manson "lymph scrotum," and will be referred to under that heading. He also refers to a case of milky tumor in the breast of a man observed by Velpeau, and to a butyric tumor in the superior maxillary, observed by Maisonneuve. See Sichel's letter and the synopsis of Lebert, La Lancette Francaise, Gaz. d. Hopitaux civils et Militairis, No. 127, T. x. 2d series, p. 508. 1848.

† T. Ruthnum, Madras Quar. Jour. Med. Sci., 1862–4, p. 421.

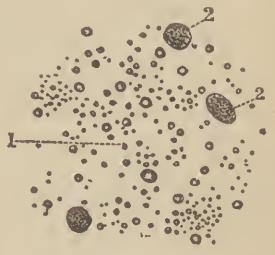
have reappeared after an operation 20 days previously, which was followed by an injection of equal parts of tinct. iodini and water."

"Contents were of the color of milk, with a greenish yellow tinge, thick, and measuring 13 oz. in amount. Coagulated spontaneously. No pus or mucus found. Cured by injection of iodine."

*Case** 48.—Case of milky fluid from the tunica vaginalis. Galactocele. "The fluid exhibited presented all the physical characters of ordinary milk, and was obtained by tapping from the tunica vaginalis. The patient was a German, æt. 42, a healthy looking man. He had been thrice tapped within the last twelve months, and a similar fluid had been drawn off on each occasion. In all its external characters and in its history, the case resembled ordinary hydrocele. Fluctuation was so palpable that no examination to ascertain transparency was made. The fluid was alkaline, had a specific gravity of 1019, so closely resembled milk as to be undistinguishable from it by the naked eye, and emitted a peculiar odor, due to sulphuretted hydrogen—the result of partial decomposition. The milky appearance was due to the presence of fat, which having been dissolved by ether left the liquid transparent, resembling ordinary hydrocele fluid. Heat and nitric acid caused a copious deposit of albumen, and the aqueous part contained sugar, and a protein substance resembling casein in its reaction. The inorganic ingredients consisted of lime, soda, and potash in combination with phosphoric, sulphuric and hydrochloric acids."

"The specimen, when first examined microscopically,† consisted of a colorless fluid, in which floated many very small globules, resembling milk globules but smaller (see 1, fig. 20). A number of minute granules and a few large cells filled with oily particles (see 2, fig. 20), not unlike colostrum corpuscles."

[Figure 20.]



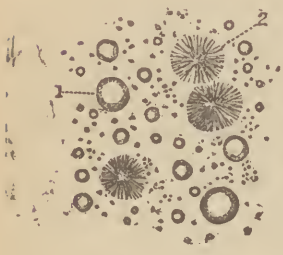
"Upon the surface of a portion of the fluid a month old a curd formed, somewhat like cream, but

* Ferguson, Trans. Path. Soc. Lond., vol. xvi., p. 184, 1865, Meeting Dec. 6th, 1864.

† Synopsis of report of Dr. Geo. Harley and Mr. Francis Mason.

too pale and deficient in fatty matter. The scanty deposit consisted of some very large oil globules (see 1, fig. 21), and scattered stellate crystals of margaric acid (see 2, fig. 21). Spermatic filaments were carefully looked for, but none were detected. The lactescent and the ordinary hydrocele fluid differed but little except in the presence of oleaginous matter in the former. By removing the fatty matter from the milky fluid, it assumed the appearance of the other, and by adding animal oil to the ordinary hydrocele fluid it became lactescent."

[Figure 21.]



*Case** 49.—"Chylocele. W. H. W., a native of Mobile, Ala., aged 22 years; five feet and eleven inches in height; 157 pounds in weight; robust in health; of a bilious temperament; black hair and eyes; dark complexion; presented for treatment October 18th, 1874. He had had hydrocele, and gave the following history of his case: Some eight years ago he had first discovered an enlargement of his scrotum, which slowly increased in size, causing him to seek medical advice; but it was not until four years after that date that he was tapped, and a quantity of 'white fluid' drawn off; then again the sack rapidly refilled, and on three several occasions he resorted to the same operation." "No relief being obtained, he came to consult me. Thinking I was to deal with an ordinary case of hydrocele, I introduced a trocar, and drew off eight ounces of a thick white fluid having all the appearance of milk. The sac was dense, firm and elastic, presenting all the density of the ball of an ordinary Davidson's syringe when the ball is empty; the testicle was slightly enlarged, yet no appearance of any disease of the gland itself."

"I submitted the fluid for examination to Dr. James Tyson—the following is the result of his examination." "The fluid is alkaline in reaction; S. P. G. 1.015, highly albuminous, and to be made up, as determined by the microscope, of innumerable molecules, which are mere points under power of 400 diameters, together with a limited number of small granular cells somewhat smaller, but otherwise resembling the colorless corpuscles of the blood floating in a serous fluid. Its physical characters are precisely those of chyle; chemically I find it almost completely

* C. H. Mastin, Amer. Med. Weekly, Louisville, Ky., vol. ii., p. 617.

dissolved by ether, and after evaporation of the latter to leave a cream-like mass. There were no spermatozoids. The fluid is not only in its physical but in its chemical characters comparable to chyle, and I believe its origin to be similar to that of chylous urine, so called, which is probably due to the leakage of a lymph vessel in the bladder. * * * Our fluid was not examined for sugar, but even with sugar present, I should compare the fluid with lymph or chyle rather than milk, for it contains: (1) the molecular base with very few oil (milk) globules; (2) the leucocytes or chyle corpuscles; (3) the albumen."

* * * * * * * *

"Very sincerely yours, "JAMES TYSON.

October 24th, 1874.

"After my first operation (October 18th, 1874) I did not see the patient until April, 1875, and on the 5th operated by making an incision through the integuments down on the tunica vaginalis. I evacuated eight ounces of the same kind of fluid which had been discharged by my first operation. I now opened the sac freely for the distance of two to three inches. I found it very much thickened, dense in structure, hard, firm, and about four millimetres in thickness. Examining carefully the cavity, I found it smooth, polished, and pearly white; at its upper portion just where it begins to be reflected over the testis, I discovered a small, round, granular-looking mass about the size of an ordinary English pea; this I sliced* off with a pair of scissors, and at once recognized the patulous mouths of three or four small vessels (vessels which did not bleed), and which, from all appearances to the naked eye, I believe were the mouths of lymphatics."

"I dissected them back for a short distance, to see whether they communicated with either the cord or the gland, but found they passed into the cellular tissue around the upper portion of the testis."

"I concluded to tie the bundle *en masse*, with a small and very strong silk ligature, so as to shut off communication from the tunica vaginalis, and then bring the ends of the ligature to the outside. I then carefully excised all the front wall of the tunica, and with four or five delicate silk sutures coaptated the edges of the sac, so as to close up the cavity, leaving one end of each

* Unfortunately this "mass" was lost. A careful microscopic examination would have determined its nature beyond any doubt.

suture free. I brought them to the outside, and then having passed through the sac a small gum drainage tube, I closed the incision in the integuments with four pin sutures, and ordered the parts to be constantly wet with a lotion of lead water and arnica. He then took a full dose of quinine, 15 grains, with 40 drops of McMunn's Elixir."

The case progressed rapidly, and on the fourth day the integuments had firmly united by primary union, and on May 1st the patient was discharged entirely well. The patient's general health had been excellent, nor had he been the subject of any disease strumous, phthisical, or other, either hereditary or acquired.*

Dr. Mastin was fortunate enough to discover the varicose and ruptured lymph vessels, which gave exit to the fluid which accumulated in the cavity of the tunica vaginalis, and it is probable that a similar condition was present in the other three cases.† Assuming such to be the explanation, simple ligation of the opened vessels ought to have been sufficient to have effected a cure, yet the complete obliteration of the cavity was certainly the most effectual method to prevent any recurrence. The "smooth, polished and pearly white" appearance of the free surface of the tunica was probably due to the retention of the altered fluid in the lymph vessels and spaces of the serous membrane. The Doctor adds that the vessels "did not bleed," meaning that no blood escaped; but he does not seem to have observed the escape of fluid through the orifices, but inferred, and correctly, that the accumulated fluid had been discharged into the cavity through the ruptured vessels. Dr. Tyson's chemical and microscopical examination established the chylous nature of the fluid, but it cannot be even supposed to be chyle, which by a retrograde movement had found its way from the lacteals or other chyliferous vessels into this cavity. The patient, as like-

* The following extract from a letter bearing date Nov. 20th, 1876, from Dr. Mastin, furnishes the latest information concerning this patient.

"I saw and examined the patient some four weeks ago, and find that he continues *perfectly well;* there has been no return of the disease, and his testicle is apparently as sound as that of any man—he says 'it is good for any practical uses.' I am unable to detect the least disease about it, for in every respect it is perfectly normal, and I consider the operation a perfect success."

† "It seems to me that the case of galactocele described by Vidal was nothing more than the opening of a lymphatic varix into the cavity of the tunica vaginalis." Lebert, Traite d'Anatomie Pathologique, T. 1, p. 584 et. seq. 1857; Paris.

wise the patient of Vidal, had had a previous attack of gonorrhœa,* accompanied, probably, with inflammation attacking a single gland or confined to a very limited area of lymphatic structure, but sufficient to obliterate one or more afferent vessels, thus interrupting the onward movement of the lymph, and producing dilatation and rupture of the distal extremity of the vessels or of the lymph spaces of a very limited area. The two instances do not establish the causal connection of the previous attacks of gonorrhœa, but a number of cases have been reported in which dilatation, sometimes followed by rupture, of the lymph vessels of the integument of the penis, especially about the prepuce, has followed gonorrhœa, balanitis, and much less important inflammations, and very trifling abrasions.

To Dr. Mastin is undoubtedly due the honor of first having observed a lymphatic varix located on the surface of the tunica vagialis, though Lebert, as early as 1855, had suggested the probability of its occurrence in cases of chylous hydrocele. Varices have been very frequently observed in the superficial and deep-seated integumentary lymphatic plexuses, but very rarely, if at all, upon the serous membranes. Morton in 1689, and Mascagni in 1787, observed varices of the pulmonary lymphatics; Caldani, in 1791, described a varix of the lymph vessels of the heart; Walther in 1787, and Sandifort in 1780, recorded cases of dilatation of the lymph vessels of the small intestines; in the latter case the varix resulted from obstruction of the lacteals caused by intussusception. Soemmerring described dilatation of the lymphatics of the duodenum and of the intestines in hernia. He also refers to instances in which he had observed the lymphatics of the liver and spleen "filled with a whitish material," and Lebert asserts that he had frequently seen the lymphatics on the surface of the liver and lungs dilated. It may be that in some of these cases the varices were located in the serous coverings of the organs. Schreger and Tilesius saw a case of dilatation of the lymphatics of the conjunctiva.

It is, perhaps, not possible to determine the class to which the varix in Dr. Mastin's case belonged. After snipping off the "mass, he recognized the patulous mouths of three or four small vessels, which did not bleed." The presumption is that it was

* Phillipe-Aime David refers to a case of double hydrocele observed by M. Denis, in a patient who carried in each groin a tumor which extended into the inguinal canal, and was mistaken for a double hernia. Inaug. Thesis, Paris, 1865.

cylindrical, and that two vessels were involved, which, when the protruding varicosity was removed, left four orifices. It was not ampullary, for it is not probable that the corresponding intervalvular sections of two parallel vessels would have been simultaneously distended in consequence of obstruction to the current of the lymph limited to an area which would only involve two capillary vessels; nor was it vesicular,* for in that event it would have been confined either to the distention of lymph spaces or of the terminal ends of capillaries, and presented itself in a group of vesicles, very readily distinguished, and when snipped off would have brought to view one or two very small openings through the bases, and within the excavation produced by the elevation of the outer wall of the lymph space, or distention of the terminal end of the capillary.

Ferguson invites attention to the fact that in his case, the evacuated fluid differed only from ordinary hydrocele fluid in the presence of oleaginous matter, but the analyses of Grassi and Tyson characterize the fluid in the cases of Vidal and Mastin as lymph, its opacity and milky appearance being due to the presence of an unusual proportion of fat. This, as will be shown further on, is characteristic of lymphangiectases and of lymphorrhagic discharges.

Vidal observed the absence of transparency, a test which does not seem to have been employed by either Ruthnum, Ferguson or Mastin, but neither of them suspected the character of the fluid previous to its evacuation. The diagnosis must be determined by the unmistakable evidences of the presence of fluid and the opacity of the tumor.

* See ante pp. 312, 313 and 314, for description of the vesicular formations, and Amer. Jour. Obts., p. 16, vol. x., for description of the small openings through bases of the vesicles.

(To be continued.)

A STUDY OF THE NATURAL HISTORY OF YELLOW FEVER, AND SOME REMARKS UPON THE TREATMENT BASED UPON THE SAME; WITH CASES AND TABLES OF OBSERVATIONS UPON THE TEMPERATURE AND URINE.

BY GEO. M. STERNBERG, M.D,
Surgeon U. S. Army.

In a paper published in the *American Journal of the Medical Sciences* (July, 1875), from a study of the graphic temperature

charts which I was at that time able to obtain, I arrived at the conclusion that "there are three well defined types of yellow fever, characterized chiefly by a difference in the duration of the initial fever and of the violence of the symptoms in inaugurating an attack." In the "simple type," in which the duration is two days, and in the "duplex," in which it is four days, there is commonly a severe chill at the outset of the attack, and the temperature very quickly attains its acme. In the "quadruple type," as shown by Dr. Faget's tables of cases from the Memphis epidemic of 1873, the temperature does not reach its acme until the third day, or if the acme is reached sooner, the temperature is maintained at this point until the third day, when defervescence commences. (Loc. cit. p. 110–111.)

The following table of temperature observations taken during the recent epidemic at Fort Barrancas, Fla. (1875), includes all the non-fatal cases of which I have complete notes. From a careful study of this table, I am led to believe that my announcement of three well defined types, founded upon the duration of the initial fever, was premature. It is true that the table shows three cases in which the duration was exactly, or very nearly, forty-eight hours, and thirteen cases in which the duration was four days; but there were also six cases in which the normal temperature was first reached at the expiration of six days, and several others in which no complete remission occurred until the eleventh day. As all these cases occurred during the same epidemic, it may perhaps be more correct to formulate our result differently. Instead of speaking of three or more "*types*" of the disease under consideration, I think the following general statement will more correctly cover the facts in the case, viz., *yellow fever is a continued fever of a single paroxysm and of indefinite duration, but having a tendency to terminate at the expiration of two, or four days, or a multiple thereof.*

In the table I have, for convenience, arranged the first 26 cases according to the duration of the initial fever. I propose to study each group separately and to give the clinical history of one or more cases in each, to be followed by such general and explanatory remarks as seem necessary.

Observations on the Temperature in Thirty-six Non-Fatal Cases of Yellow Fever, at Fort Barrancas, Fla., during the Epidemic of 1875.

Case No.	Sex.	Age.	Chill.	1st day.			2d day.		3d day.		4th day.		5th day.		6th day.		7th day.		8th day.		9th day.		10th day.		
				Time of Seizure.	Mor'g temp.	Eve'g temp.	Mor'g temp.	Eve'g temp.	Mor'g temp.	Eve'g temp.	Mor'g temp.	Eve'g temp.	Mor'g temp	Eve'g temp.	Mor'g temp.	Eve'g temp.	Mor'g temp.	Eve'g temp	Mor'g temp.	Eve'g temp.	Mor'g temp	Eve'g temp.	Mor'g temp.	Eve'g temp.		
1	M	54	No.	During night	103°	101°	101°	100.5°	98.5°	99°	98.6°	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2 days durat'n.
2	M	5	Yes.	9 P. M.	.....	.....	102.4	101.8	101	99.6	98	100°	98.5°	98°	98°	98.8°	09°	98.2°	100°	99°	98.6°	.....	.....	.....	
3	M	4	No.	8 P. M.	.....	.....	103	103	101	100.1	97	99	.....	.....	98.2	98.5	.....	.....	.....	.....	.....	.....	.....	.....	
4	M	27	No.	Evening	.....	104.5	103 2	103.6	102.5	102.5	100	101.5	100	99	99.2	99	99	99.5	99	99.2	98.8	99°	.....	.....	
5	M	24	Yes.	During night	100	103	105	.....	102.5	102	102	102	98.5	100	98	100.5	99.5	100	99	100	98.5	100.5	98.4°	99°	
6	M	24	.....	Morning.	.....	102.5	101	102	100.8	102.5	100.5	99 9	98.8	99.5	98.8	99	98.8	99	98.6	100	98.5	98.5	99.5	99.5	
7	F	9	.....	11 A. M.	.	102	102	101	103	102.5	100	100	98	101	100.2	98	98.5	98	98	.....	.....	.....	.....	.....	
8	F	24	No.	10 A. M.	.....	102	101.5	102	102.8	102	101	.....	98.5	99	98.5	99	98.5	98	98	09	98	98.5	.....	.....	
9	F	3	.....	Morning.	103	103.2	102	103.5	100	103	100.5	101	99	98	98.5	98	98	98.6	.....	.....	.....	.....	.....	.....	4 days durat'n.
10	M	8	.....	Morning.	104	101.8	100	.....	100.5	101.8	100.2	100	07.8	100	98	.....	.....	.....	.....	.....	.....	.....	.....	.....	
11	F	30	Yes.	2 A. M.	104	102	101	103	100	99.8	99	100	98	98.5	98.5	99.4	98.8	98.4	98.6	.....	.....	.....	.....	.....	
12	M	35	Yes.	6 P. M.	.....	103	100	102	100	101.8	99.2	100	98.2	99	98	98.5	98.2	98.5	98.2	99	98	98.8	.....	.....	
13	F	10	No.	Evening.	.....	103.5	101	101.7	101	101.8	100	100	99	98	97	98.5	98.5	99.8	98	99	98	99.6	.....	.....	
14	M	33	No.	10 P. M.	.....	.....	101	102	101	103	101	101.5	100	102	98.5	101	100	101.2	98	98.5	98.6	99.2	98.4	.....	
15	F	27	Yes.	Morning.	.....	.....	.....	.....	102.2	102	102.2	102	99	100	99	98	98.1	.....	98	98	99	98.6	98.2	.....	
16	F	30	Yes.	2 A. M.	102	101.2	100	100	102	100	99	98.8	98.2	98.5	98	.....	.....	.....	.....	.....	.....	.....	.....	.....	
17	M	32	.....	Midnight,	105	104	104	104.5	104.5	103	101	102	100	102	99.8	100	98.4	99	98.4	99.5	98.5	101	100	101.5	
18	M	24	.....	Morning.	105	105	104	105	105.5	105.5	103	103	100	101.8	100	101	99	100.5	99	99.4	99	99.5	99	100	
19	M	31	.....	3 P. M.	.....	106	104.5	104.5	102.8	103	102	103	101	102.3	100.5	101	99.5	98 2	98.4	100	99	98.5	99.5	100	6 days durat'n.
20	M	24	Yes.	5 P. M.	.....	103.5	102.5	104.5	104.5	105	103	103.8	102	102.2	102 5	103.5	100.6	101	98.5	100	100.5	100.5	100.5	100.5	
21	M	29	Yes.	2 P. M.	.....	104.5	103.5	104.5	102	103	101	102.8	102.5	104.3	102.8	103	100	100	99	100.5	98.5	100.5	98.5	99	
22	M	28	.....	7 A. M.	.....	103.5	104	.....	103	102.5	102	102	101	100	100	100.3	98.2	99	100	98.5	98	98 5	98.6	.....	
23	M	2	.....	7 P. M.	.....	.....	103.5	102	103	103.5	100	101	101	102	100	101	100.4	103	100.2	100	99.4	98	98	98 6	8 days durat'n.
24	M	7	....	8 A. M.	103.3	104	102	104.4	103.8	103	103	101	101.3	101.5	100.5	102	100	101.2	99	101	98	100	100	100.2	
25	M	40	Yes.	12 M.	.....	102	100	103	102.5	1.2	100	101.2	101	101	99.5	101 5	100.5	102.5	101.5	102.3	102	101.8	101	100.6	10 days durat'n.
26	M	27	No.	7 P. M,	.....	106	102	104	104.5	105	102.8	104	101.5	101	100.5	102.5	101	101	100.4	101.5	101	100.8	99.5	99.5	
27	M	24	No.	Morning.	105	103.5	101.5	102.5	101.8	103	99.2	101.8	100.5	101.5	100.5	101	99.8	102.2	99.5	101	99.8	99.4	100.5	101	
28	M	30	Yes.	11 P. M.	101.5	104	102.5	103.2	101.5	101.5	100.3	101.4	100.4	99	98.5	100.5	99.2	100.4	100	100	99.6	100.5	99.5	99	
29	M	28	Yes.	4 P. M.	.....	.....	104	104	101.5	102	.....	102.5	100	103	100	103.5	102.3	105.5	103	104 5	102.5	104	102.5	102 8	
30	M	33	No.	5 P. M.	.....	102.5	102	104	104.5	104	102.5	102	103	103.4	102	104.7	99.5	101.8	99.6	100.4	99.5	102.8	102	102.4	
31	M	27	Yes,	9 A. M.	.....	105	103.2	103	102.8	105	102.5	103	102	1 3.4	100.8	102.5	100	102.2	100	100.2	99.5	101	101	102	
32	F	32	No.	Morning.	.....	.....	103		102.2	02.2	101.5	99.8	100	99.8	100	99.2	99.8	100.1	100.3	100.2	99	100	98	99.8	
33	M	16	No.	Evening.	.....	.....	103	103.4	102.2	101	98.8	100	99	101	99.8	100	100	100.3	101	101.8	101	100	98	.....	
34	M	32	No.	Evening.	.....	.....	103.4	104.5	103	103 4	101.8	103	102	101.5	99.8	99.6	99	100	99.5	100.5	98.5	99.5	98.5	98.5	
35	M	22	.....	Morning.	101.5	103.5	101.5	104	102.8	104.6	102 8	103.5	102.5	102.5	101.5	102.5	99.8	100.5	99.5	100	99.5	99	99.5	99	
36	M	3	.....	8 P. M.	.....	.....	101	102	100	100.2	100	99.8	97	98.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	

CASE FIRST.

Private *John Davis*, aged 54, alleges that he had yellow fever in Charleston in 1856. Was at this post during the prevalence of yellow fever in 1873, at which time his wife and two children suffered from the disease and were nursed by him; taken sick early in the morning of July 22d. Headache, pain in back, and fever. Had a hot mustard footbath at 8 a. m. First seen by Dr. Sternberg at 11 a. m.; temperature 103°; eyes glistening; tongue slightly coated; skin moist. 6 p. m.—Temperature 101°; urine free.

July 23d. 7 a. m.—Temperature 101°; feels comfortable. To remain quiet in bed and have ice water, or warm tea (weak black tea or orange leaf tea), as preferred, ad. lib. Evening temperature, 100.5; skin moist; pulse 57.

July 24th. Slept well; feels comfortable; slight hemorrhage from nose during the night; temperature 98.5°; pulse 66. *Remark:* complete remission at the expiration of 48 hours from time of seizure. To have chicken broth. Evening temperature normal.

July 25th. Morning temperature, 98.5°; slept well; to have chicken broth or milk as preferred. Evening temperature 99°.

July 26th. Morning temperature, 98.6°; to have chicken broth and toast.

July 27th. Patient up and walking about.

CASE SECOND.

Wm. Carroll, aged 5, born in New York, was at this post during the prevalence of yellow fever in 1873; taken sick at 9 p. m., July 24th. Slight chill; headache; fever. To have Ol. ricini ℥ss. and hot mustard foot-bath.

July 25th. Morning temperature 102.4°; pulse 120. To have Ext. Ergotæ fl. ʒij.; ice cold cloths to the head, and body to be sponged with cold water (under the bed clothing) every half hour. Evening temperature, 101.8°; pulse 110; perspires freely; urine free; tongue coated; oil operated twice; not much thirst; sleeps most of the time; headache relieved.

July 26th. Morning temperature 101°; pulse 100; is doing well; ordered iced milk. Evening temperature, 99.6°; pulse 88; tongue cleaning; skin pleasant.

July 27th. Morning temperature, 98°. *Remark:* complete

remission at expiration of 48 hours from time of seizure. Pulse 76; tongue clean; skin moist; milk diet. Evening temperature, 100°; pulse 78.

July 28th. Temperature normal. Liberal diet allowed. (*Note.*—Case treated and notes taken by A. A. Surg. Mandeville, U. S. A.- *Remark:* A full dose of fl. Ext. Ergot was administered at the outset of this case upon theoretical grounds (vide article by present writer in *New Orleans Med. and Surg. Journal* of July 1875). There is no evidence that the natural course of the disease was influenced either favorably or unfavorably by this medicine.

Case Third.

James Moran, aged 4 years, born in New York; taken sick at 8 p. m. July 25th; no chill. Ordered ol. ricini ℥ss., and hot mustard foot-bath.

July 26th. Morning temperature 103°, pulse 125; slept well last night; bowels moved several times; does not sweat much; tongue coated; eyes bright. Ordered cloths dipped in ice-water to head and body, to be sponged with ice-water under the bed-clothes. Evening temperature 103°; pulse 126; face flushed; head hot; sweating profusely; continue sponging.

July 27th. Morning temperature 101°; pulse 100; ordered light diet. Evening temperature 100 1°; pulse 104.

July 28th. Morning temperature 97°; pulse 100; tongue clean; skin moist; ordered iced milk and chicken broth. Evening temperature 99.°

July 29th. Doing nicely; temperature normal.

Remarks. The above are typical mild cases of yellow fever; the first in an adult who had previously suffered an attack of the disease; the other two in healthy children. Many such cases occur in every extensive epidemic, especially in creole families and among the colored population. Those who have gained their experience mainly in the treatment of such cases often speak of yellow fever as a comparatively harmless disease, and ascribe its fatal effects to some fault of the patient, or of the nurse, or of the doctor. That fear or imprudence on the part of the patient, carelessness of the nurses, or over active medication, may and do swell very materially the mortuary tables, I have no doubt. But on the other hand, it seems to me foolish to deny that yellow fever is an extremely malignant disease,

which often proves fatal in spite of the best directed efforts of all concerned. Statistics offered in support of any particular plan of treatment can only be valuable for purposes of comparison, when we know the class of patients and the circumstances in which they were placed. In the same city, and during the same epidemic, some practitioners will have a very different class of patients from others; and to compare the results of private practice among acclimated persons with those obtained among soldiers and sailors treated in hospital, or on shipboard, would evidently be unfair.

In all the above cases a complete remission of the fever occurred at the expiration of forty-eight hours from the time of seizure. These cases were under the care of A. A. Surg. Wm. Mandeville, U. S. A.

CASE FOURTH.

Private Tweedy, aged 27, taken sick on the evening of July 26th. No chill; pain in back, headache and general feeling of malaise. Temperature at 10.30 p.m., 104.5°; pulse 120. To have dose of castor oil and hot mustard foot-bath.

July 27th. Morning temperature 103.2°; pulse 80. Evening temperature 103.5°; pulse 88; perspired freely all day; headache and pain in back less severe.

July 28th. Morning temperature 102.5°; pulse 84; no sleep last night; slight headache; perspiring freely. Evening temperature 102.5°; pulse 83.

July 29th. Morning temperature 100°; pulse 80; no headache; perspiring freely. To have chicken broth. Evening temperature 101.5°; pulse 77; feels comfortable.

July 30th. Morning temperature 100°; pulse 65; continue broth. Evening temperature 99°. *Complete remission at end of four days.*

July 31st. Morning temperature 99.2°; pulse 58. Slept well; to have beef tea and toast.

Remark. The case progressed favorably, with but slight reactionary fever (see table). Reported by A. A. Surg. L. F. Salamon, U. S. A.

CASE FIFTH.

Private Locker, aged 24; taken sick during the night of July 19th. Slight chill; headache; pain in loins.

July 20th. Morning temperature 100°. To have mass. hyd. grs. x. at once. Quiniæ sulph. grs. vi. *ter die*; pulv. seidlitz at 4 p. m.

(Remarks. One of the first cases, diagnosis not yet established.) Had three passages during day; temperature at midnight 103°.

July 21st, 7 a. m. Temperature 105°; tongue slightly coated in centre; urine ℥ix., acid, s. g. 1022, non-albuminous; pulse 88; respiration normal; eyes glistening; face flushed (diagnosis of yellow fever first made this a. m.). To have weak black tea or ice water, as preferred, ad. lib.

July 22d, 7 a. m. Temperature 102.5°; tongue coated in centre; pulse 72; skin moist; feels better; urine ℥xii., acid, s. g. 1024, non-albuminous.

6 p. m.—Temperature 102°; urine ℥iii., acid, s. g. 1025, non-albuminous.

July 23d, 7 a. m. Temperature 102°; feels better; urine ℥xii., s. g. 1025, acid, non-albuminous. 6 p. m.—Temperature 102°; urine ℥xviii., s. g. 1010, acid, albuminous.

July 24th. Feels better; slept some; morning temperature 98.5°. *Complete remission at end of four days from time of seizure.* Urine ℥x., s. g. 1023, acid, albuminous. To have chicken broth ℥ii. alternately with whiskey toddy, a tablespoonful every two hours. 6 p. m.—Temperature 100°; urine ℥ix., s. g. 1020, acid, albuminous.

July 25th, 7 a. m. Temperature 98°; slept well; skin moist; urine ℥x., acid, s. g. 1023, non-albuminous. To have chicken broth ℥ii alternately with whiskey toddy ℥i every two hours. Evening temperature 100.5; pulse 56; urine ℥xi., s. g. 1019, alkaline, non-albuminous.

July 26th. Morning temperature 99.5°; pulse 54; continue broth and brandy toddy.

Remarks. This case continued to progress favorably; solid food (toast and soft boiled egg) was first allowed on July 29th. Observations upon the temperature and urine were continued until August 3d. The reactionary fever (see table) was marked but not excessive. No albumen in the urine after the 6th day. Case reported by Surg. G. M. Sternberg, U. S. A.

Case Sixth.

Private Schwab, aged 24; taken sick at Fort Pickens on the

morning of July 23d; admitted to hospital at 11 a. m. To have ol. ricini ℥ii. and hot mustard foot-bath. ℞—Ext. ergot, fl. ℥ss. at 2 p.m. Evening temperature 102.5°; bowels moved twice; headache, pain in loins. To have ice water applied to head, and ice water or weak black tea, as preferred, as a drink, ad. lib.

July 24th. Slept part of night; bowels moved; temperature 101°. 6 p. m.—Temperature 102°; bowels moved several times during day.

July 25th. Did not sleep; no headache; pain in back; temperature 100.8°; skin perspiring; bowels moved. To have ice water ad. lib. Urine ℥x., s. g. 1023, acid, non-albuminous. Evening temperature 102.5°; pulse 58.

July 26th. Morning temperature 100.5; pulse 56. To have chicken broth and whiskey toddy every two hours, alternately. Evening temperature 99.9; pulse 50; urine albuminous, s. g. 1015.

July 27th. Morning temperature 98.8°. *Complete remission at expiration of four days.* Feels well. To have chicken broth, milk and toast. Evening temperature 99.9°.

Remarks. Convalescence progressed favorably and there was no reactionary fever. The initial fever was mild in character, but the temperature did not fall to the normal until after the expiration of four full days. It can not, therefore, be claimed that the fluid ext. of ergot, administered at the outset, had any effect upon the duration of the fever. Case reported by Surg. G. M. Sternberg, U. S. A.

CASE SEVENTH.

Ida Malone, aged 9 years, born in N. Y. Taken sick at 11 a. m., July 23d. Ordered ol. ricini ℥ss. and hot mustard foot-bath. Evening temperature 102°; pulse 110; asleep when visit was made.

July 24th. Skin moist; eyes very bright; slept well; oil did not operate; urine passed freely; temperature 102°; pulse 98. Evening temperature 101°; pulse 93; skin moist; sleeps soundly.

July 25th. Morning temperature 103°; pulse 76. Saw her at 5 a. m.; had not passed any urine; ordered mustard poultice to be applied over lumbar region; at 8.30 had passed urine freely, s. g. 1020, slightly albuminous. Evening temperature 102.5°; pulse 69; complains of hunger; allowed chicken broth.

July 26th. Morning temperature 100°; pulse 54; skin moist; tongue coated. To have chicken broth or iced milk every two hours. Evening temperature 100°; pulse 60.

July 27th. Morning temperature 98°. *Complete remission at end of four days.* Pulse 66. Ordered milk toast. Bowels not open. ℞—ol ricini ℥ss.; conjunctivæ yellow; skin moist; tongue clean. Evening temperature 101°; pulse 60.

July 28th. Morning temperature 100.2°; has been crying on account of her aunt's death; pulse 60 and feeble. Ordered spts. vini, gal. ℥vi., aqua ℥x., a tablespoonful every two hours. Skin yellow. To have liberal diet. Evening temperature normal.

July 29th. Morning temperature 98.5°; pulse 60. To have soft boiled egg and crackers. Case reported by A. A. Surg. Mandeville, U. S. A.

Case Eighth.

Mrs. Anthony, aged 24. Taken sick at 10 a. m., July 20th. No chill; headache; has taken a dose of magnes. sulph., which operated freely; bilious vomiting at 5 p. m. Temperature at 6.30 p. m. 10[illegible].

July 21st, Morning temperature 101.5°, pain in loins; headache; eyes glistening; tongue slightly coated; skin moist. Evening temperature 102°. To have ice water or pounded ice ad. lib.

July 22d. Morning temperature 101°; urine free; feels better; pulse 80; eyes glistening. 6 p. m.—temperature 102°

July 23d. Temperature at 7 a. m. 101°; urine free; skin moist; feels better.

July 24th. Morning temperature 98.5°. *Complete remission of fever at expiration of four days.* Pulse 72; urine free; skin pleasant. To have chicken broth. Evening temperature 99°; pulse 76.

Remarks. Case progressed favorably; no reactionary fever; stimulants given on sixth day. Case reported by A. A. Surg. Mandeville.

Case Ninth.

Mary Anthony, aged 3 years, born in New York. Taken sick July 24th, early in the morning. Eyes bright and glistening; temperature 103°; pulse 105. Ordered castor oil and mustard foot-bath; to be sponged off every half hour; to have ext. ergot

fl. ʒi. Evening temperature 103.2°; pulse 120. To be sponged under the bed clothes, with cold water, every half hour. Child quiet; face flushed; eyes bright.

July 25th. Morning temperature 102°; pulse 120°; slept well; urine free; has "strawberry" tongue. Ordered ext. ergot fl. gtts. xl. Evening temperature 103.5°; pulse 134; sleeps most of the time; sweats profusely; urinates frequently.

July 26th. Morning temperature 100°; pulse 122. Ordered iced milk, occasionally. Child quiet; urinates freely. Evening temperature 103°. pulse 120; continue nourishment.

July 27th. Temperature 100.5°; pulse 105; skin moist. Continue diet. Evening temperature 101°; pulse 110; quiet.

July 28th. Morning temperature 99°. *Remission at the expiration of four days.* Evening temperature 98°. The case progressed favorably and there was no reactionary fever. Reported by A. A. Surg. Mandeville.

CASE TENTH.

John Moran, aged 8 years. Taken sick July 25th. Ordered oil and mustard foot-bath, also ext. ergot fl. ʒi. Temperature 104°; pulse 98. Ordered to be sponged. Evening temperature 101.8°; pulse 122; sweating freely; tongue furred, urinates freely.

July 26th. Morning temperature 100°; pulse 92; slept well during latter part of night; bowels operated once; tongue clean; face natural. To have chicken broth ʒii., every two or three hours, or milk.

July 27th. Morning temperature 100.5°; pulse 74; sweating profusely; urinates freely; tongue pretty clean; continue nourishment. Evening temperature 101.8°; pulse 110; tongue pretty clean.

July 28th. Morning temperature 100.2°; pulse normal; is doing finely. Ordered chicken broth and iced milk. Evening temperature 100°; pulse 111.

July 29th. Morning temperature 97.8°; pulse 100; tongue clean; skin pleasant; continue diet. Evening temperature 100°

July 30th. Liberal diet allowed; notes discontinued. (*Note*—Case reported by A. A. Surg. Mandeville.)

The remaining cases in this group do not differ materially from those already given, and I pass on now to the cases of six days duration. I have six cases in this group, all adult males,

and all of a far more serious nature than those previously reported. In one the temperature reached 106°, in one 105.5°, and in one 105°. In all it remained high during the first three days of the disease (vide paper previously referred to loc. cit. p. 110, 111).

Case Seventeenth.

Private Max Rosenberg, aged 32 years. Admitted to hospital at 12.30 a. m, Temperature 105°; headache; pain in back and loins. To have ol. ricini ℥iss, and a hot mustard foot-bath. 7 a. m.—Temperature 103°; tongue heavily coated; eyes natural. To have warm tea or cold water ad. lib. 6 p. m.—Temperature 104°; pulse 70; respiration normal; skin perspiring; face flushed; eyes glistening; bowels moved twice. To have small pieces of ice, or ice water.

July 22d. Temperature 104°; pulse 64; eyes glistening; tongue coated in centre with red margins; in a profuse perspiration; bowels moved once. 6 p. m. Temperature 104.5°; urine during day ℥ix., s. g. 1025, acid, non-albuminous.

July 23d. Morning temperature 104.5°; feels better; no headache; pain still in back; urine ℥ix., s. g. 1020, acid, albuminous. 6 p.m.—Temperature 103°; urine ℥ix., acid, s. g. 1020, albuminous; complains of pain in his stomach. Apply mustard poultice at 7.30 p. m. At 8 p. m. feels much relieved.

July 24th. Temperature 101°; slept some and feels better; urine ℥viii., s. g. 1024, acid, albuminous. Continue ice water or pounded ice ad. lib. 6 p. m. Temperature 102°; urine ℥xii., s. g. 1024, albuminous.

July 25th, 7 a. m. Temperature 100°; urine ℥xv., s. g. 1023, acid, non albuminous. To have chicken broth, ℥i., every hour, alternately with whiskey toddy, ℥ss. Evening temperature 102°; pulse 50.

July 26th. Morning temperature 99.8; pulse 46; urine ℥viii., s. g. 1020, non-albuminous. To have iced milk and brandy toddy. Evening temperature 100°; pulse 52; perspiring freely all day.

July 27th. Morning temperature 98.4°; pulse 46. to have iced milk and milk toast; continue brandy toddy. Evening temperature 99°.

July 28th. Morning temperature 98.4°. Observations upon

the temperature and urine were taken until August 2d, but as convalescence progressed favorably it is unnecessary to detail them. (*Note.*—Case reported by Surg. Sternberg, U. S. A.)

CASE EIGHTEENTH.

Corp. Berger, aged 24 years. Taken sick at 9 a. m., July 21st. Temperature 105°. To have ol. ricini ℥iss. and a hot mustard foot-bath; warm tea or ice water as preferred ad. lib. 6 p. m.—Temperature 105°; pulse 110; tongue heavily coated; is perspiring freely; face flushed; eyes congested. ℞—Hyd. chlor. mite et quiniæ sulph. aa grs. x., at once.

July 22d, 7 a. m. Temperature 104°; tongue slightly coated; bowels moved twice; pulse 80; eyes congested; urine ℥iv., s. g. 1020, acid, non-albuminous; feels but little better. 6 p. m.—Temperature 105°. 9 p. m.: ℞—Quiniæ sulph. grs. xv.; temperature at 10 p. m. 105.5°. 11 p. m.—Feels a little better.

July 23d. Temperature at 7 a. m. 105.5°; urine ℥viii, s. g. 1020, acid, albuminous; feels no better. To have ice water or pounded ice ad. lib. 6 p. m.—Temperature 105.5°; headache, and is very restless.

July 24th. Morning temperature 103°; urine ℥xiv., acid, s. g. 1020, albuminous (highly). Feels better; slept some; vomited two or three times. To have pounded ice ad. lib. 6 p. m.—Temperature 103°.

July 25th. Morning temperature 100°; urine ℥xx., s. g. 1020, acid, albuminous; slept pretty well, and feels better. To have chicken broth ℥i., alternately with whiskey toddy ℥ss., every two hours. Evening temperature 101.8°; skin moist; pulse 70.

July 26th. Morning temperature 100°; pulse 64. Continue chicken broth and brandy toddy. Evening temperature 101°.

July 27th. Temperature 99°, pulse 60. To have iced milk or chicken broth and brandy toddy. Evening temperature 100.6°.

July 28th. Diet—milk, broth, and toast. Convalescence progressed favorably, and notes were taken upon the temperature and urine until August 3d, on which day boiled chicken was allowed for dinner. (*Note.*—Case reported by Surg. Sternberg.)

Remarks. In this case quinine was administered at the outset as an antipyretic. It failed entirely to produce any appreciable effect, and the headache and restlessness from which the patient suffered during the night following its administration were ascribed to its influence. I do not think I gave the medicine in

large enough doses to fairly test its power as an antipyretic. It has been administered at the outset of yellow fever by army surgeons and others in doses of 40 grs., and even more, and favorable results have been claimed for it in these doses. I must confess that I have been influenced by the verdict of Southern physicians with whom I have conversed in regard to the value of this medicine in large doses, and have never fairly tested it myself. I have, however, frequently given it in doses of ten to fifteen grs., and my experience agrees with that of Dr. Bemiss as expressed in the following quotation from a recent paper: "It does not cure the disease, nor does it, according to my experience, even shorten its course, although some excellent physicians have attributed to it some merit as an abortive remedy. It does, in a certain proportion of cases, increase gastric irritation and irritability, and in another proportion, probably smaller however, its physiological effects are sources of nerve disturbance, especially insomnia." (Vide *N. O. Med. and Surg. Journal* for September, 1876, p. 211.) In such cases as the one last reported antipyretic treatment at the outset of the disease is clearly indicated. The fatal tendency of these cases with a high thermometric range, is clearly shown by the following table which I reproduce from a previous paper in this Journal.

Cases in which the temperature was—	No. of Cases.	No. of Deaths.	Percentage of Deaths to Cases.
107° and above, - - -	2	2	100
106°—107° - - - -	6	6	100
105°—106° - - - -	16	10	63
104°—105° - - - -	39	10	25
103°—104° - - - -	49	1	2
102°—103° - - - -	15	0	0
101°—102° - - - -	9	1	1
Total, - - -	136	30	22

Hereafter, if called upon to treat such cases, I should thoroughly test the virtues of the cold bath. I have several times resorted to this method, and always with excellent results; but I have been restrained from giving it as thorough a trial as I believe it deserves on account of the widespread prejudice in the South against any such treatment, which is by many believed to be dangerous in the extreme. This belief is well founded at

a later stage of the disease. When defervescence is taking place, and the powers of vital resistance are at a low ebb on account of the fierce onslaught of the disease, as is shown by the slow, soft pulse and great prostration, it is perilous in the extreme to allow the patient to be chilled or even to make the slightest exertion, such as sitting up, or even turning over, in bed.

The danger is twofold. Fatal collapse may result, or visceral congestions may be induced by the sudden checking of the cutaneous transpiration. But at the outset there is no such danger, while the pyrexia is often threatening. In these cases, therefore, I hope for brilliant results from the bold and free use of the cold bath. The main objection to this treatment is the necessary disturbance to which the patient is subjected in putting him in and taking him out of the bath. Care should be taken that he be fatigued as little as possible. Where the pyretic action is moderate, sponging under the bed clothing with cold water, or with an evaporating lotion, as is extensively practised in New Orleans, will probably answer the purpose.

CASE NINETEENTH.

Private Francis Nye, aged 31 years. Taken sick in Camp at Fort Pickens at 3 p. m., July 22d. No chill; headache, pain in back and loins; skin dry; eyes glistening; tongue heavily coated; temperature 106°. To have ol. ricini ℥iss. and a hot mustard foot-bath. 9 p. m.: ℞—Ext. ergot fl. ℥ss. 10 p. m.—Temperature 105.5°.

July 23d. Morning temperature 104.5°; feels somewhat better. 6 p. m.—Temperature 104.5°; urine ℥xiii., and s. g. 1020, non-albuminous; bowels moved once; feels comfortable.

July 24th. Morning temperature 102.8°; slept some; no pain; urine ℥xxiii., s. g. 1020, acid, non-albuminous. 6 p. m.—temperature 103; urine ℥viii., s. g. 1030, acid, non-albuminous.

July 25th. Morning temperature 102°; skin moist; feels better; slept well; urine ℥viii., alkaline, s. g. 1020, non-albuminous. Evening temperature 103°.

July 26th. Morning temperature 101°. To have chicken broth ℥i. and whiskey toddy ℥i. every two hours. Evening temperature 102.3°.

July 27th. Temperature 100.5°. Continue chicken broth or iced milk and toddy. Evening temperature 101°.

July 28th. Morning temperature 99.5. Continue broth, milk

and toddy. Evening temperature 98.2°; feels very well. Convalescence progressed favorably, and solid food was allowed on the 3d of August. *Note.*—Case reported by Surg. Sternberg, U. S. A.

Remarks. It is difficult to say whether the favorable progress of this case was influenced by the administration of a full dose of ergot at the outset. That the medicine did not abbreviate the duration of the febrile action is apparent. Whether the free secretion of urine and the absence of albumen are to be ascribed to a beneficial action of the ergot in relieving renal congestion, it is difficult to say. A more extended experience is necessary before this point can be decided. That the hyperæmia of the brain and consequent headache were relieved in this case and in others in which ergot was administered, is the conviction of the writer. The pyretic action at the outset of this case was threatening, having reached 106°, and the favorable result without complications of any kind is in marked contrast with the usual course of similar cases.

Case Twentieth.

First Serg't Franklin, aged 24 years. Taken sick in camp at Fort Pickens; chill, headache, fever. Admitted to hospital at 5 p. m.; temperature 103.5°; eyes glistening. To have ol. ricini ℥i. and a hot mustard foot-bath.

July 25th. Temperature 102.5°; bowels moved thrice; is perspiring freely; headache. To have ice water or seltzer ad. lib. Evening temperature 104.5°; pulse 88.

July 26th. Morning temperature 104.5°; pulse 86; violent headache. (*Remark.*—Cloths dipped in cold water were applied in this and in all cases where they were indicated for the relief of headache. The persistence of this symptom in this case in which no medicine was given is in contrast with its speedy relief in the preceding one in which ergot was given.) Evening temperature 105°; headache continues. ℞—Potassæ bromidi ℈i.

July 27th. Morning temperature 103°; headache relieved; slept well last night. To have chicken broth. Evening temperature 103.8°; headache. ℞—Potassæ bromidi ℈i.

July 28th. Morning temperature 102°; slept well; no headache; feels better. Continue diet. Evening temperature 102°. ℞—Potass. bromidi grs. x. at bedtime.

July 29th. Morning temperature 102 5°; delirious last night;

feels weak this morning; bowels not opened for four days. ℞—Enema, ℥i. castor oil. To have beef tea. Evening temperature 103.5°. ℞—Potass. bromidi ℈i. to produce sleep.

July 30th. Morning temperature 100.6°; did not sleep last night; perspiring freely. To have beef tea, milk and brandy. Evening temperature 101°.

July 31st. Morning temperature 98.5°. Continue diet, soft boiled egg for dinner.

Remark. Notes were taken until August 6th, but as convalescence progressed favorably it is unnecessary to detail them. (*Note.*—Case reported by A. A. Surg. Salomon.)

CASE TWENTY-FIRST.

Castor, officers' servant, negro, aged 29 years. Taken sick at 2 p. m. Chill; headache; fever. Admitted to hospital at 6 p. m. Temperature 105°. To have ol. ricini ℥ii., and hot mustard foot-bath. 9 p. m.: ℞—Quiniæ Sulph. grs. xv. Temperature at 10 p. m. 105°. 11 p. m.—Feels a little better.

July 23d. Morning temperature 103.5°; feels better. 6 p. m.—Temperature 104.5°; urine ℥xii., s. g. 1025, acid, non-albuminous; bowels moved six times.

July 24th. Temperature 102°; urine ℥xii., s. g. 1015, acid, non-albuminous. 6 p. m.—Temperature 103°; urine ℥v., s. g. 1020, acid, slightly albuminous.

July 25th. Temperature 101°; urine ℥xiv., s. g. 1020, alkaline, non-albuminous; feels better. Evening temperature 102.8°.

July 26th. Morning temperature 102.4°; pulse 92. Evening temperature 104.3°.

July 27th. Morning temperature 102.8°. To have chicken broth. Evening temperature 103°; tongue dry. To have iced champagne.

July 28th. Morning temperature 100°; tongue presents a better appearance. To have milk and chicken broth. Evening temperature 100°; feels better.

July 29th. Morning temperature 99°. To have beef-tea and iced milk. Evening temperature 100.5°.

Remark. Further progress of case satisfactory. Soft boiled egg allowed July 31st, and boiled chicken on August 3d. Note made on August 2d: eyes very yellow. (*Note.*—Case reported by Surg. Sternberg and A. A. Surg. Salomon.)

Case Twenty-Second.

Private Bracken, aged 28 years. Taken sick in camp at Fort Pickens, at 7 a. m. Pain in head and back. 2 p. m.—Temperature 102.4°; pulse 90, soft; eyes suffused; tongue slightly coated. ℞—Ol. ricini ʒiss., and hot mustard foot-bath. Temperature at 6 p. m. 103.5°. To have ice water or pounded ice ad. lib.

July 23*d*, 7 *a. m.* Temperature 104°; skin dry; feels no better. To have hot mustard foot-bath. Evening temperature not noted; skin dry; has passed no urine since morning. ℞—Ext. ergot fl. ʒss.

July 24th. Morning temperature 103°; urine s. g. 1025, albuminous; first part of night restless, latter part slept very well; tongue heavily coated; skin dry; conjunctivæ injected; pulse 96. To be sponged every half hour under the bed clothing with cold water. Evening temperature 102.5°; pulse 98; very restless. ℞—Pot. bromidi ℈i., to be repeated in two hours if necessary; continue sponging of body.

July 25*th.* Morning temperature 102°; pulse 85: skin moist; urinates freely, s. g. 1020, trace of albumen. Evening temperature 102°; pulse 90; sweating has ceased; very restless. ℞—Pot. bromidi ʒss., to be repeated in two hours. Urinates freely.

July 26*th.* Morning temperature 101°; pulse 90; tongue clearing up some; urine slightly albuminous, s. g. 1020; sweat during the night. To have chicken broth or iced milk every two hours. Evening temperature 100°; pulse 88; skin moist; urinates freely; continue diet and give spts. vini gal. ʒvi., aquæ ʒx. a tablespoonful every three hours.

July 27*th.* Morning temperature 100°; pulse 78; conjunctivæ injected; skin moist; urinates freely. Continue diet with milk toast. Evening temperature 100.3°; urine s. g. 1021, slightly albuminous. ℞—Ol. ricini ʒi.; discontinue toddy.

July 28*th* Morning temperature 98.2°; pulse 75; oil operated well; has constant oozing of blood from gums. Continue chicken broth and iced milk, every two hours. Evening temperature 99°; pulse 70. Ordered Liebig's beef tea.

July 29*th.* Morning temperature 100°; pulse 69. Ordered crackers and soft boiled eggs, and iced milk ad. lib. Evening temperature 98.5°; pulse 65.

July 30*th.* Morning temperature 98°; is doing nicely.

Remark. Convalescence progressed favorably, and observa-

tions were discontinued on August 4th. (*Note.*—Case reported by Surg. Sternberg and A. A. Surg. Mandeville.)

CASE TWENTY-FIFTH.

Private Herron, aged 40 years. This case was a mild one throughout, as seen by reference to the temperature observations in the table. The temperature did not fall to the normal until the evening of the 11th day; the urine was non-albuminous and of high specific gravity throughout, with the exception of a trace of albumen on the 4th day.

CASE TWENTY-SIXTH.

Private Hill, aged 27 years. In this case also the duration was 10 days, the temperature not falling to the normal until the morning of the 11th day. The urine was of a high specific gravity throughout, and was slightly albuminous on the 3d, 5th, 8th, 9th and 10th days.

CASE TWENTY-SEVENTH.

In this case the duration appears from the table to have been three days, if we consider the temperature noted on the morning of the fourth day to have been a complete remission; if not, the case must be considered as of ten days' duration. The commencement of the attack in this case was not well defined. The man came to my house during my absence on the morning of July 22d. Not finding me he went away, and upon my return home I went in search of him; found him at the stable hitching up to go out with the ambulance. He said he had suffered from headache all night, but did think it would amount to much as he had often had it. His face was flushed, eyes suffused, and a thermometer placed in his axilla showed a temperature of 105°. He was at once sent to the hospital and put to bed. His case ran a favorable course, and exhibited no peculiarities worthy of note.

CASE TWENTY-EIGHTH.

This case might have been grouped with those of four days' duration, although it exceeded that period by a few hours. The

three stages—"initial fever," "stage of calm," and "reactionary fever"—are well marked.

Case Twenty-Ninth.

I shall give this case in full, as it presents some marked peculiarities, both as regards the temperature curve and the urinary secretion. My explanation of the phenomena presented is that the case was one of simple yellow fever until the fourth day, but that the decided evening exacerbations which occurred from the 5th to the 9th were due to a malarial element (paludal), and were of the nature of ordinary remittent. Private Murphy, aged 28 years, taken sick at 4 p. m., July 20th. Had chill, headache, fever; admitted to hospital during the night. Temperature 104°. To have ol. ricini ℥iss. and a hot mustard foot-bath.

July 21st, 7 a. m. Temperature 102°; tongue slightly coated; eyes suffused. To be well covered up in bed, and have cold water or weak black tea ad. lib. 6 p. m.—Urine ℥xii., acid, s. g. 1020, non-albuminous. Temperature 104°; pulse 86; face flushed; skin perspiring. To have ice water or pounded ice ad. lib. ℞—Pulv. seidlitz at 8 g. m.

July 22d. Morning temperature 101.5°; pulse 80; feels better; tongue coated in centre, with red margins; in a profuse perspiration; bowels moved six times. 6 p. m.—Temperature 102°; urine ℥iv., s. p. 1027, acid, normal.

July 23d. Slept pretty well and feels better; temperature not noted; urine ℥iv., s. g. 1020, normal. 6 p. m.—Temperature 102.5°; urine ℥iv., acid, normal.

July 24th. Rested well, feels better; temperature 100.1°; urine ℥viii, acid, s. g. 1020, normal. Continue ice water. 6 p. m.—Temperature 103°; urine ℥viii., s. g. 1020, slightly albuminous.

July 25th, 7 a. m. Temperature 100°; urine ℥xxii., neutral, s. g. 1004, normal. To have chicken broth ℥ss. and whiskey toddy ℥ss., alternately every two hours. Evening urine ℥xvi., alkaline, s. g. 1010, normal; temperature 103.5°; pulse 73.

July 26th. Morning temperature 102.3°; pulse 69; urine ℥53., s. g. 1000. Continue chicken broth and brandy. Evening temperature 105.5°; pulse 78; urine ℥48., s. g. 1004, acid, non-albuminous.

July 27th. Morning temperature 103°; pulse 76; urine ℥42, s. g. 1000, acid, non-albuminous. Continue chicken broth and

milk. Evening temperature 104.5°; urine ℥50, s. g. 1001, alkaline, non-albuminous.

July 28th. Morning temperature 102.5°; urine ℥52, s. g. 1001, non-albuminous. Evening temperature 104°; urine 48, s g. 1003, non-albuminous. Continue diet.

July 29th. Morning temperature 102.5°; urine ℥36, s. g. 1003, alkaline, non-albuminous. Diet—beef tea and milk. Evening temperature 102.8°. Says he feels better than he has since he was taken sick; urine ℥36, s. g. 1005, alkaline, non-albuminous.

July 30th. Morning temperature 102°; feels well; urine ℥48, s. g. 1002, alkaline, non-albuminous. Continue beef tea and milk. Evening temperature 101°; urine ℥48, s. g. 1002.

July 31st. Morning temperature 101.5°; urine ℥52, s. g. 1002, acid, non-albuminous. Evening temperature 102°; urine ℥49, s. g. 1002.

August 1st. Morning temperature 101°; urine ℥24, s. g. 1002. Evening temperature 101.5°; urine ℥36, s. g. 1003.

August 2d. Morning temperature 100.5°; urine ℥16, s. g. 1000, alkaline. Continue diet with addition of soft boiled egg. Evening temperature 100°; urine ℥15, s. g. 1000, alkaline.

August 3d. Morning temperature 99°; urine ℥24, s. g. 1010, acid. Evening temperature 99°; urine ℥18, s. g. 1010, alkaline. Convalescent. (*Note.*—Reported by Surg. Sternberg and A. A. Surg. Salomon.)

CASE THIRTIETH.

Serg't Ware, aged 33 years. In this case fl. ext. ergot ℥ss. was given on the evening of the second day without any noticeable effect. The urine was highly albuminous on the 3d, 4th and 5th days, although the quantity remained ample and the specific gravity was high. On the fourth day lime water was given in doses of a tablespoonful to relieve nausea, and with good effect. An incomplete remission which occurred on the morning of the seventh day (99.5°) might perhaps have permitted the classification of this case with those of six days' duration, and the febrile movement after that date may be looked upon as reactionary.

CASE THIRTY-FIRST.

As this is an extremely interesting case, on account of its severity and several complications which arose during its pro-

gress, I give it in full. If the incomplete remission (99.5°) on the morning of the 9th day can be admitted as terminating the first stage, this case may be classed with those of eight days duration. Private Burroughs, aged 27 years. Admitted, from camp at Fort Pickens, at 2 p. m., July 23d. Had a chill at 9 a. m.; headache; pain in back and shoulders, 3 p. m. ℞—Ext. ergot fl. ʒss. (The patient had taken oil before he left the camp.) Temperature at 7 p. m. 105°; bowels moved three times. To have ice water applied to head and pounded ice ad. lib.

July 24th. Slept some last night, and feels better; slight headache; temperature 103.5°; urine ʒii, acid, s. g. 1027; highly albuminous. 6 p. m.—Temperature 103°; urine ʒiv., acid, albuminous.

July 25th. Slept a little; pain in head and back; temperature 102.8°; skin moist; urine ʒviii., s. g. 1020, alkaline, albuminous. Evening temperature 105°; pulse 86; no urine.

July 26th. Morning temperature 102.5°; pulse 76; urine ʒ14, s. g. 1020. To have chicken broth every two hours. Evening temperature 103°; pulse 75; feels easy; urine ʒiv., s. g. 1020, highly albuminous.

July 27th. Morning temperature 102°; pulse 68; urine ʒ4, acid, s. g. 1019. To have iced milk and chicken broth. Evening temperature 103.4°; has been vomiting through the day, "premonitory black vomit," consisting of flocculi of disorganized blood in a clear serous liquid. ℞—Ext. ergot fl. ʒi. Urine ʒiv., s. g. 1020, non-albuminous.

July 28th. Morning temperature 100.8°; urine ʒxii, s. g. 1020, acid, albuminous; slept well last night; vomiting ceased; complains of pain in stomach; stomach acid. ℞—Sodæ bicarb. grs. x.; diet—chicken broth. Evening temperature 102.5°; urine none; mouth very sore; gums bleeding; bowels constipated. ℞—Ol. ricini, ol. terebinth aa ʒss. per enema.

July 29th. Morning temperature 100°; urine ʒxviii., s. g. 1020, acid, albuminous; feels better; no nausea; tongue dry; skin and conjunctivæ yellow. To have champagne and beef tea. Evening temperature 102°; feels better; urine ʒiv., s. g. 1018, slightly albuminous.

July 30th. Morning temperature 100°; urine ʒvi.; s. g. 1018, albuminous. Continue treatment. Evening temperature 100.2°.

July 31st. Morning temperature 99.5°; urine ʒvi., s. g. 1016, albuminous; bowels constipated. To have enema of ol. ricini ʒi.

and ol. terebinth ℥ss. Diet—beef tea, milk and milk toast. Evening temperature 101°; urine ℥viii., s. g. 1017, albuminous; hemorrhage from nose. ℞—Ext. ergot fl. ʒi. Tongue dry. To have champagne.

August 1st. Temperature 101°; urine ℥xii., s. g. 1016, albuminous; hemorrhage from nose continues. Apply tr. ferri perchlor. Inclined to delirium. Continue champagne and diet. Evening temperature 102°; urine ℥xviii., s. g. 1015, albuminous; restless. ℞—Chloral hyd. grs. x.

August 2d. Morning temperature 100.5°; urine ℥v., s. g. 1013, albuminous; slept well since 12 m.; feels much better. Continue diet and champagne. Evening temperature 101°; urine ℥viii., s. g. 1017, albuminous; delirium resembling delirium tremens. ℞—Chloral hyd. ℈i.

August 3d. Morning temperature 100°: delirium during night. Learned that patient had just recovered from a long fit of intoxication when taken sick. Feels well this morning, no delirium. To have soft boiled egg and toast. Evening temperature 100.5°; quiet all day, but delirious in evening. ℞—Chloral hyd., et pot. bromidi aa grs. xv., to be repeated in four hours if necessary.

August 4th. Morning temperature 99.5°; urine non-albuminous; slept well all night. Evening temperature 101°; quiet all day.

August 5th. Morning temperature 100°; slept well. To have boiled chicken for dinner, and champagne ter. die. Evening temperature 101.5°.

August 6th. Morning temperature 100.4°. Evening temperature 99.8°. Convalescence progressed favorably and notes were discontinued August 10th. (*Note.*—Case reported by A. A. Surg. Salomon.)

CASE THIRTY-FIFTH.

Bugler Myler, aged 22 years. A protracted and trying case, marked by a high evening temperature on the 1st, 2d, 3d and 4th days, and a comparatively low morning temperature. This is an exceptional temperature curve for the outset of a case of yellow fever, and leads to a suspicion of a remittent element. The urine was albuminous from the 1st to the 12th day. It, however, retained a high specific gravity, and was sufficient in quantity. Fluid extract of ergot ℥ss., was administered at 2 p. m., on the first day, without any apparent effect in modifying the course of the disease. Frequent vomiting occurred on the

third day, and was controlled by the administration of bismuth sub. nit. ʒss., repeated every hour. Slight hemorrhage from the nose occurred on the seventh day. The patient became jaundiced on the eighth day, and the urine was colored with bile on the following day. Sponging the body, under the bed clothes, with cold water, was practiced with beneficial results.

The remaining cases represented in the table presented no peculiarities calling for especial comment.

We pass now to the consideration of fatal cases Unfortunately my notes of a number of these were lost during my own sickness.

Case One.

Serg't Evans, aged 28 years. Taken sick July 26th. Morning temperature 104.5°; pulse 100; no chill; skin dry; eyes clear; no suffusion; no headache; feels comfortable. To have ol. ricini ʒiss., and hot foot-bath. Evening temperature 105.2°; slight headache; eyes suffused; conjunctivæ injected.

July 27th. Morning temperature 103.5°; pulse 90; urine ʒviii., s. g. 1025, non-albuminous; perspiring freely. To have ice water or pounded ice ad. lib. Evening temperature 104.5°; urine ʒxii., s. g. 1023, albuminous; slight headache; pain in back; tongue slightly coated.

July 28th. Morning temperature 103.2°; urine ʒxii. s. g. 1012, albuminous; slept well last night, and feels better this morning; eyes very red (a bad prognostic, G. M. S.); perspires freely. Evening temperature 103°; urine ʒx., s. g. 1026, non albuminous; pulse 80.

July 29th. Morning temperature 102.5°; pulse 73; urine ʒxii., s. g. 1003, albuminous; slept well; tongue clean; no headache; eyes less congested. To have beef tea ʒi., every hour. Evening temperature 103°; pulse 88.

July 30th. Morning temperature 103.5°; pulse 84; urine ʒviii., s. g. 1025, albuminous; eyes slightly yellow; tongue clean. To have beef tea as before. Evening temperature 102° urine ʒviii., s. g. 1022, albuminous; delirious. ℞—Chloral hyd. grs. x.

July 31st. Morning temperature 101.8°; pulse 95; urine ʒxii., s. g. 1026, albuminous; slept well all night. To have champagne and beef tea. Evening temperature 104.5°; pulse 102, and weak; mind wandering. To have champagne freely.

August 1st. Morning temperature 101.2°; pulse 102; urine ʒviii., s. g. 1032, albuminous; very nervous. ℞—Pot. bromidi

grs. x., every four hours. Evening temperature 102°; pulse 110, and weak; urine ℥viii., s. g. 1030, albuminous. To have brandy and ice.

August 2d. Morning temperature 101.5°; mind wandering. ℞—Chloral hyd., et pot. bromidi, aa grs x. Evening—very low; extremities cold; pulseless. Died August 3d, at 8 a. m. (Case reported by A. A. Surg. Salomon.)

Remarks. Death seems to have resulted in this case from exhaustion due to failure of the heart, probably, from the direct paralyzing influence of the yellow fever poison upon its nerves (vide previous paper in this Journal, loc. cit. p. 113). The indication in such cases is clearly to support the heart's action by stimulants. Unfortunately they are often not retained by the stomach, or if retained are inefficient. I have given iced champagne or brandy per enema in these cases, but without apparent benefit. Perhaps the hypodermic administration of brandy and of sulphuric ether might be more effectual. I would be glad to see this method fairly tested.

A recent writer in the *N. O. Medical and Surgical Journal* (July, 1876, p. 21), makes some remarks upon the treatment of these cases which I consider so judicious that I shall quote them. "If the patient's tongue does not clear off and nourishment begin to be craved by the close of the third 24 hours after the attack, I have found it necessary to be with my patient between midnight and morning of the third night; for if they sink at all, that is the time that the sinking period will come on. The patient must be closely watched, and if the pulse has a downward tendency, and you hear the patient sigh, you may know the heart's action is flagging, and stimulants are required to tide them over these sinking hours. If the pulse gets below 80 beats per minute, put a teaspoonful of pulverized ice in a wine glass and a teaspoonful of brandy without sugar; after stirring it a minute or two give it to the patient. If this does not increase the pulse in fifteen minutes repeat the dose; if it does not agree with the stomach, try champagne in tablespoonful doses in the same way. I have found some cases where the above stimulants were not tolerated, where ale, porter or beer would be borne, given in small quantities at a time, and will be sufficient. Some persons, physicians as well as nurses, are so anxious that they overdo the matter of stimulants, and give so much as to produce burning in the stomach and induce gastritis, but if the pulse is watched there

will be little danger of this. Should the pulse get above 100, suspend all stimulants and sponge off the hands and arms of the patient with cold water, until the pulse gets down to about 90, then let him rest. (*Remark.* The thermometer is a much better guide.—G. M. S.) It is extremely important to guard against sinking, and I venture to assert that at least two-thirds of all deaths occur for want of proper attention during the 3d and 4th nights. Most physicians make their visits during the day, when their attention is of little or no moment, and sleep at the very time when their patient is sinking and dying. It is very seldom that the sinking time comes on at any time during the 24 hours except between midnight and 5 a. m."

I never fully appreciated the importance of sustaining patients by proper stimulants during the night until I had suffered an attack of the disease myself. My own case was characterized by great debility, and on several occasions towards evening and during the night I had attacks of deathly syncope, the approach of which I recognized in time to summon assistance, after which I became unconscious until awakened by fanning, chafing of my hands and feet, and the administration of iced brandy. Later in the disease, I found it necessary to take milk punch several times during the night to sustain my strength. After taking a liberal quantity, I would go to sleep and rest quietly for two or three hours, when I would wake up bathed in perspiration, and feeling prostrated to an alarming degree—a feeling which was promptly relieved by a repetition of the stimulants.

Case Two.

Private Sheehy, taken sick at 4 p. m. July 26th. Evening temperature 104.8°; pulse 112; had slight chill, headache; eyes suffused; conjunctivæ injected. ℞—Ol. ricini ℥iss. and hot mustard foot-bath.

July 27th. Morning temperature 104.6°; pulse 98; oil acted well; skin moist, perspiring freely. (*Note.* In this and all other cases, ice water or pounded ice, when the stomach was irritable, was allowed ad. lib.) Evening temperature 105.5°; pulse 96; headache; ordered iced cloths to head. (*Note.* More active antipyretic treatment was indicated.)

July 28th. Morning temperature 104.8°, pulse 86; no headache; tongue very red; skin hot and dry. ℞—Liq. am. acetatis

℥ss. every two hours. Evening temperature 105°; pulse 100; perspiring freely.

Remark. It is a peculiarity of yellow fever that the temperature often remains high while the patient is dripping with perspiration, and the efforts often made by nurses, or physicians who dispense with the use of the clinical thermometer, to "break the fever" by the use of warm drinks and an uncomfortable load of blankets, are not only futile but pernicious. The opposite policy of giving iced drinks, keeping the patient lighty covered, and sponging the surface with cold water or evaporating lotions, or even plunging him into a cold bath is far more rational, more agreeable to the patient, and I am convinced will save many lives.—G. M. S.

July 29th. Morning temperature 103.5°; pulse 98; tongue parched and cracked; no urine. To have champagne. Apply turpentine stupes to loins. Evening temperature 103.5°; tongue very dry and red; no urine. Continue champagne and turpentine stupes. ℞—Spts. etheris. nit. et. liq. am. ac.

July 30th. Morning temperature 102°; pulseless; suppression continues; sinking rapidly; died at 4.30 p. m. (*Note.* Case reported by A. A. Surg. Salomon.)

Remarks. I do not recall a single case of recovery from yellow fever after complete suppression of urine had occurred. For the relief of this complication, I have resorted at different times to every measure that seemed to hold out any prospect of success (except the hypodermic injection of ergotine, which I should very much like to see tried). I have seen no benefit from diuretics, or from dry cups and counter irritants applied to the loins. I had hoped for better results from a mode of practice recommended by Professor Joseph Jones, but was doomed to disappointment in this also. The practice consists in throwing into the rectum a slush of pounded ice, with a view to relieve congestion of the kidneys by the direct action of cold. When suppression is simply threatened, as shown by pain in the back and scanty secretion of urine, much benefit often results from treatment The application of turpentine stupes, strong mustard poultices or dry cups to the lumbar region, is often followed by prompt relief. I commonly give also a simple diuretic mixture e. g. ℞—Spts. nit. dulcis ℥ss., tr. digitalis ʒi., aquæ ℥iii. ℿ. Sig. A tablespoonful every two hours. I believe it to be worth while to try the virtues of fl. ext. ergot in full doses in these cases,

when the stomach will admit of the absorption of medicine. But, unfortunately, in most of these cases there is great gastric irritability, and it is useless to give any medicine per orem; the hypodermic administration of the medicines indicated is therefore worthy of trial.

Case Three.

Private Spaulding, aged 26 years. Taken sick during night of July 26th. No chill.

July 27th. Morning temperature 104.5°; pulse 118; headache; eyes injected. ℞—ol. ricini ℥iss., and hot mustard foot-bath. Evening temperature 104.4°; urine ℥iv., s. g. 1035, acid, non-albuminous; tongue clean; perspiring freely; feels easy except slight headache.

July 28th. Morning temperature 103.8°; pulse 94; bilious vomiting last night, but feels better this morning; no nausea; urine ℥iv., s. g. 1031, slightly albuminous. Evening temperature 104.8°; pulse 96.

July 29th. Morning temperature, 104°; pulse 96; urine ℥viii., s. g. 1025, slightly albuminous; perspiring freely; vomited a little last night. To have champagne. Evening temperature 104°, pulse 85; vomiting ceased; hemorrhage from nose; urine ℥viii, s. g. 1025, albuminous.

July 30th. Morning temperature 102°; pulse 90; urine ℥vi, s. g. 1025, slightly albuminous; bowels acting freely; slight hemorrhage from nose. To have chicken broth. Evening temperature 103.5°; has been vomiting. To have iced champagne. Urine ℥vi., s. g. 1031.

July 31st. Morning temperature 102°; pulse 84; urine ℥viii., s. g. 1020, albuminous; hemorrhage from nose last night. ℞—Ext. ergot fl. ʒi., beef tea ℥i, every hour. Evening temperature 101.4°; pulse 78; urine ℥v, s. g. 1020, albuminous; nose bled to-day; feels very weak. To have champagne.

August 1st Morning temperature 101°; pulse 98; urine ℥viii., s. g. 1018, albuminous; hemorrhage from nose continues. Apply tr. ferri perchlor. Evening temperature 102°; pulse 80; gums bleeding. Chlorate of potass and iron mouth wash. Urine ℥xiv., s. g. 1015, albuminous.

August 2d. Morning temperature 100.5°; urine ℥xviii., s. g. 1019, albuminous; bleeding from gums ceased. To have milk punch. Evening temperature 101.5°; violent epistaxis. ℞—

Ext. ergotæ fl. ʒi., every hour until relieved. Urine not collected.

August 3d. Morning temperature 101°; urine ℥xviii., s. g. 1019, albuminous; bleeding from nose ceased for a while during night; commenced again on picking his nose. ℞—Ac. galliei ϑi., aquæ ʒi. M. A tablespoonful. Evening temperature 100.5°; urine ℥xiv., s g. 1015, albuminous. Gallic acid controlled epistaxis, but it was renewed on his picking his nose. Gallic acid to be repeated.

August 4th. Morning temperature 100.5°; urine ℥xxiv., s. g. 1013, albuminous; nose bled all night; very weak. Hypodermic injection of ergotine grs. iii. To have milk punch. Evening temperature 101; urine ℥v., s. g. 1011, albuminous; pulse feeble; *epistaxis ceased after hypodermic injection*; very weak and pallid. Hiccough during day; stopped by champagne.

August 5th. Morning temperature 102.5°; feels stronger this morning; pulse fuller; breathing labored; no more hemorrhage urine ℥xiv., s. g. 1010, non-albuminous. To have milk punch and beef tea. Evening temperature 100°; urine ℥vii., s. g. 1010, albuminous. Is very weak, sinking. Died at 1 a. m.

(Case reported by A. A. Surg. Salomon.)

Remark. A good example of a hemorrhagic case in which death finally resulted from exhaustion. It is worthy of note that the epistaxis ceased after the hypodermic injection of 3 grs. of ergotine, after all other means had failed to arrest it.

Case Four.

Hospital Steward W. E. Hill, aged 26 years. Taken sick during the morning of July 28th; no chill; general feeling of malaise; took mass. hyd. grs. x. last night; had a hot mustard foot-bath this morning. Temperature 100.5°; pulse 86; face flushed.

July 29th. Morning temperature 100.8°; pulse 72; urine ℥viii., s. g. 1028, non-albuminous; perspiring freely; feels cheerful; don't care for any nourishment. To have orange leaf tea ad. lib. Evening temperature 100°; complained of pain in abdomen, relieved by application of flaxseed poultice; urine ℥vi., s. g. 1030, non-albuminous.

July 30th. Morning temperature 101.5°; pulse 91; urine ℥viii., s. g. 1025, non-albuminous.

July 31st. Morning temperature 102°; pulse 82; urine ℥vi., s. g. 1027, non albuminous; slept well, but feels weak. To have chicken broth and arrowroot. Evening—Feels stronger; temperature 101.8; pulse 90; urine ℥iv., s. g. 1025, non-albuminous.

August 1st. Morning temperature 101.5°; pulse 90; urine ℥v., s. g. 1027, non-albuminous. Evening temperature 101°; pulse 78; urine ℥v., s. g. 2030.

August 2d. Morning temperature 101; urine ℥iv., s. g. 1030, non-albuminous. Continue diet. Evening temperature 99.5°; urine ℥vi., s. g. 1027, non-albuminous.

August 3d. Morning temperature 106°. Relapse, produced by exposure to cold during the night; the night was chilly, the thermometer having fallen to 65°, and the patient having thrown off his bed clothing, was chilled. To have a hot mustard foot-bath and orange leaf tea ad. lib. Urine ℥vii., s. g. 1028, non-albuminous. Evening temperature 104°; feels better; perspiring freely; urine ℥v., s. g. 1025, non-albuminous.

August 4th. Morning temperature 104.5°; feels very well; skin moist; urine ℥vii., s. g. 1026, non-albuminous. Evening temperature 106°. To have hot foot-bath. No action from bowels. To have ol. ricini ℥i., ol. terebinth ℥ss., per enema. Urine ℥vi., s. g. 1023, non-albuminous.

August 5th. Morning temperature 104.2°; urine ℥xii s. g. 1025, non-albuminous; feels better; is perspiring freely. Evening temperature 105°; urine ℥vi., s. g. 1020, non-albuminous.

August 6th. Morning temperature 103°. ℞—Potass. bromidi ʒss. every hour. Urine ℥x., s. g. 1017, albuminous. Evening temperature 102.6°; urine ℥viii., s. g. 1018, albuminous. Has taken six doses of bromide; very drowsy.

August 7th. Morning temperature 101.5°; urine ℥xviii., s. g. 1014, albuminous. Very weak. To have champagne freely and beef tea. Evening temperature 102.5°; urine ℥xi., s. g. 1015, highly albuminous. Is a little stronger; pulse fallen. Champagne does not agree, was vomited twice, ale to be substituted. Continue chicken broth.

August 8th. Very listless and inclined to sleep all the time. Morning temperature 101.8°; urine ℥v., s. g. 1010; albuminous. Evening temperature 104°; still inclined to sleep and mind wanders. ℞—Liq. am. acetat. ℥ss., every hour. 9. p. m.—Took a sudden change for the worse; pulse hardly perceptible; sinking fast; died at 9.45 p. m.

(Case reported A. A. Surg. Salomon, under direction of Asst. Surg. Harvey E. Brown, U. S. A.)

Remarks. This is a characteristic case of fatal relapse occurring as a result of improper exposure in a case which at the outset was of the mildest character. Hospital Steward Hill had been unremitting in his attention to the sick, until he was himself prostrated by the disease, and my regret at his death is intensified by the reflection that it was not due to the malignancy of the disease, but to carelessness on the part of his nurses.

Case Six.

Private Allen, aged 26 years. Taken sick during night of July 29th, with severe chill and headache.

July 30th. Evening temperature 105.6°; eyes watery; conjunctivæ injected; tongue slightly coated. Ordered castor oil and hot mustard foot-bath.

July 31st. Morning temperature 105°; pulse 106; oil acted well; perspiration very slight; eyes less injected. ℞—Liq. am. acetatis ℥ss., every two hours. Evening temperature 105°; pulse 100. Continue liq. am. ac. and repeat hot mustard foot-bath. Urine ℥vii., s. g. 1026, acid, albuminous.

August 1st. Morning temperature 104.5°; pulse 100; perspiring freely; slight epistaxis last night; urine ℥xii., s. g. 1019, alkaline, albuminous. Evening temperature 105.5°; pulse 120; hot mustard foot-bath, and liq. am. acetat. ℥ss. every two hours.

August 2d. Temperature 100°; pulseless; unconscious; sinking rapidly; died at 8.30 a. m.

(Case treated and reported by A. A. Surg. Salomon.)

Remarks. This case shows the futility of trusting to diaphoretics and hot foot-baths for the relief of a threatening degree of pyrexia. According to my present belief, it would have been a very suitable one for the use of the cold bath. The man seems to have died from exhaustion due to the extreme pyretic action. The notes do not show that he had either black vomit or suppression of urine, and on the morning preceding his death, the amount and specific gravity of the urine showed a satisfactory performance of the renal function.

Case Seven.

Corporal Moran, aged 43 years. Taken sick in camp at Fort Pickens, July 25th. Took magnes. sulph. ℥i. and hot foot-bath

at 10.30 a. m. Temperature 104°; pulse 60 and bounding. ℞— Ext. ergot fl. ℥ss. Evening temperature 103°; pulse 80; sweating profusely; face very much flushed; tongue coated; breathing very much labored. To have ice water and pounded ice ad. lib. Evening temperature 103.5°; pulse 80.

July 26th. Morning temperature 102°; pulse 79; slept well; urine s. g. 1015, loaded with albumen. Evening temperature 103°; pulse 63. Has not passed urine since morning. Ordered turpentine stupes to loins; tongue very much coated; perspires freely.

July 27th. Morning temperature 100°; pulse 60; complains of sick stomach. Ordered iced champagne, which was not retained. No urine since yesterday morning; catheter introduced and three ounces obtained, s. g. 1005, highly albuminous. Ordered turpentine stupes to loins, and champagne p. r. n. Evening temperature 101°; pulse 58; skin yellow; breathes and talks with difficulty; complete suppression of urine; died at 11.45 p. m., without black vomit; was as yellow as gold.

Remarks. In this case the pyretic action was not excessive, and yet it proved quickly fatal. Many such cases occur in every epidemic; and, so far as I can judge, in the present state of medical science they must be classed among the inevitably fatal cases. Very many of these cases occur among persons whose vitality is weakened by the excessive use of alcoholic liquors, by the malarial cachexia, by debilitating chronic diseases, by age or recent illness. In the above case the man was in apparent good health when taken sick, but he had been addicted to the excessive use of alcohol. Whether in these cases the vitality of the corpuscular elements of the blood is destroyed primarily by the direct action of the poison, or is a secondary result from the arrest of nutritive processes and from retained excrementitious products, is a question of great interest which the writer has attempted to discuss elsewhere, but without arriving at definite results. (Vide article on "The Modus Operandi of the Yellow Fever Poison"—*N. O. Med. and Surg. Journal*, July, 1875.) It seems probable, however, that the vitality of the red corpuscles may be directly destroyed, and the yellow staining of the tissues which occurs in these quickly fatal cases is no doubt due to the general diffusion of hæmo-globulin from disintegrated blood corpuscles. In these cases complete suppression of urine is an almost invariable symptom, and black vomit commonly occurs.

When the "black vomit" is not ejected before death, it will commonly be found in the stomach upon post mortem examination.

CASE EIGHT.

Rose Moran, aged nine months. Taken sick July 24th, at 8 a. m. Temperature 103.6° To have ol. ricini and hot foot-bath.

July 25th. Temperature 104.2°; pulse too rapid to count. ℞—Ext. ergot fl. gtts. xxv.; apply ice water to head (not done). Evening temperature 106°; pulse too rapid to count; breathing with great rapidity and difficulty; head intensely hot; apply ice water to head; congestion of lungs; died at 8.45 p. m. (Case reported by A. A. Surg. Mandeville, U. S. A.)

CASE NINE.

Richard Moran, aged 5 years. Taken sick August 1st, at 6 a. m. ℞—Ol. ricini ℥ss. and mustard foot-bath. Temperature at 8 a. m. 102°; sweating freely; quiet. Evening temperature 104°; sweating profusely; pulse full and rapid. To be kept well covered. (The wind is blowing hard, and it has been raining all day; thermometer stands at 80.)

August 2d. Morning temperature 103°; slept well during latter part of night; sweating profusely; urinates freely. Evening temperature, 105°; very restless. ℞—Liq. am. acetat. ℥ss. every four hours.

August 3d. Morning temperature 103°; sweating freely; tongue coated; face flushed; eyes suffused. To have champagne ℥i. every hour. Evening temperature 103°; sweating profusely; urinates freely; took champagne during day.

August 4th. Died at 6 a. m. Was rational to the last; had no black vomit or suppression of urine. (Case reported by A. A. Surg. Mandeville, U. S. A.)

CASE TEN.

Private Freundacher, aged 29 years. Taken sick in camp at Fort Pickens, at 3. p. m. July 23d. Had ol. ricini yesterday, which operated three times. Ordered ol. ricini ℥ss. and hot foot-bath. Evening temperature 105°; pulse 98. Saw patient at 2 a. m; is very restless. Ordered to be sponged under the bed clothes with cool water every half hour (directions not carried out).

July 24th. Morning temperature 104°. Eyes bright; tongue coated; slept but little; urine albuminous, s. g. 1020; bowels moved five times; stools watery; pulse 85; sweats freely; not much thirst. ℞—Ext. ergot ʒss. Evening temperature 102°; pulse 80; urinates freely; sleeps most of the time. Continue sponging.

July 25th. Morning temperature 101°; pulse 64; urine free, eyes bright; did not rest well; bowels loose; slight nausea, Discontinue sponging, and give iced Seltzer water every half hour. Evening temperature 102.5°; pulse 88; very restless. ℞—Pot. Bromidi ʒss., to be repeated in two hours.

July 26th. Morning temperature 101°; pulse 96; tongue clearing up; slept but little; urine albuminous, s. g. 1010, headache gone. Ordered chicken broth or iced milk every two hours. Evening temperature 100°; pulse 90; complains of tenderness at epigastrium. Ordered mustard poultice to abdomen. To continue iced milk.

July 27th. Morning temperature 99.8°; pulse 75; has no desire for food and took a little milk toast; skin moist; eyes still bright; slight hemorrhage from nose. To have iced champagne. Evening—epistaxis continues. ℞—Battley's liquor ergotæ ʒii. at once, and repeat if necessary. Evening temperature 100.2°; pulse slow and weak; "black vomit" three times since morning; has had several hemorrhages from nose. ℞—Liquor ergotæ ʒi.

July 28th. Hemorrhage from nose and black vomit during night; towards the last has had complete suppression of urine. Died at 7.50 a. m.; body as yellow as gold. (Case reported by A. A. Surg. Mandeville, U. S. A.)

Remarks. This is a characteristic case, in which death resulted from congestion of the stomach and kidneys, resulting in black vomit and suppression of urine. The frequent watery passages during the first two days are indicative of hyperæmia of the mucous membrane of the intestines. The tenderness at the epigastrium on the third day was indicative of commencing congestion of the mucous membrane of the stomach. This is a symptom to be carefully watched for and promptly met by the application of sinapisms to the epigastrium, and the administration of pounded ice, brandy and ice, or iced champagne in small quantities. All nourishment must as a rule be withheld, as the stomach is incapable of absorbing it. For the congestion of the

kidneys, sinapisms or turpentine stupes to the loins are probably the best treatment.

The administration of ergot in this case for the relief of epistaxis can hardly be considered a fair test of the value of the medicine, as it was probably not absorbed by the stomach. It may be that ergotine administered hypodermically would have given better results.

CASE ELEVEN.

Mrs. Ann Malvern, aged 40 years. Taken sick July 23d, at 9 p. m.; slight chill and pain in back.

July 24th. Morning temperature 101.3°; pulse 89; Ordered oil and foot-bath. Evening temperature 101.5°; pulse 88; intense headache; urinates freely Ordered ice water to head.

July 25th. Morning temperature 103.5°; pulse 90; slept but little; headache relieved. To have Seltzer water occasionally. Evening temperature 102.2°; pulse 58.

July 26th. Morning temperature 103°; pulse 70; tongue much coated; very weak; slept pretty well during night; bowels inclined to run off pretty freely. Ordered iced milk. ℞—Bismuth subcarb. ʒiii., div. in chart. No. viii., one after each passage; body to be sponged under bed clothes with cold water. Evening temperature 101.2°; pulse 86; diarrhœa better; very weak; took some chicken broth.

July 28th. Died at 5.50 a. m.; had no black vomit at any time, but a severe diarrhœa constantly. (Case reported by A. A. Surg. Mandeville, U. S. A.)

Remarks. Death evidently resulted in this case from prostration induced by the paralyzing effects of the poison and the exhausting diarrhœa, induced no doubt by hyperæmia of the intestinal mucous membrane. It is in the treatment of such cases that physicians in private practice have an immense advantage in the superior intelligence of experienced nurses, or in the watchful care of anxious friends during the critical hours of the night and early morning. In such an epidemic as occurred at Barrancas, the over-worked doctor could not possibly spend much time with his patients during the night, and the nurses, mainly ignorant and indifferent negroes induced to undertake the responsibilities of nurses by the offer of exceptionally high wages, very often failed to attend to his injunctions and made futile the best considered plan of treatment. It is especially in

such cases as the above that negligence is apt to occur, the attention of nurses being drawn off by cases apparently more threatening, and the poor patient being allowed to die of exhaustion, when, perhaps, frequently repeated doses of brandy or champagne might have tided her over the critical period.

Observations Upon the Urine.

At the outset of the epidemic at Fort Barrancas, I determined to secure as complete observations as possible upon the amount and specific gravity of the urine with reference to the settlement of two points. First—*What should be the amount of urinary salts excreted each day during the progress of case of yellow fever?* Second—What is the effect of the pyretic action upon the excretion of urinary salts, and does their amount increase *pari passu*, with the increase of temperature? The answer to the first question has an important bearing upon therapeutics and prognosis. The second has reference to a general study of the process of fever.

To decide the first question, I select those cases in which the complete (or nearly complete) absence of albumen shows that the renal function was not interfered with by congestion of the kidneys. It was, of course, impossible to attempt any quantitative analysis of the urine during an epidemic in which, owing to its rapid development, the powers of the well were taxed to the uttermost in caring for the sick. But I have taken the amount of urine passed during the twenty-four hours, considered in connection with its specific gravity, to be a true index of the solids secreted. As 1000, the specific gravity of water, is a constant factor in this estimate, I have eliminated it from the calculation, and shall take the product of the amount in fluid ounces multiplied by the specific gravity—1000—as an index of the total solids excreted in the twenty-four hours. That is, amount $\times$ s. g.—1000 = total solids. It is estimated by physiologists (vide Flint's Physiology, Vol. Secretion, p. 189), that a healthy adult should secrete 50 fluid ounces of urine, having a specific gravity of 1020, during the twenty-four hours. Eliminating 1000 from the second factor, we have ($50 \times 20 = 1000$) one thousand as the index of total solids excreted in twenty-four hours.

Taking the average of five cases of yellow fever in which the urine was free from albumen, I obtain the following figures.

	Amount × s. g. — 1000.
In healthy adult, - - -	1000
Second day of yellow fever, - -	364
Third " " " " - -	414
Fourth " " " " - -	421
Fifth " " " " - -	357
Sixth " " " " - -	317
Seventh " " " " - -	336
Eighth " " " " - -	349
Ninth " " " " - -	296

(*Note.* I could not obtain a sufficient number of observations to determine the amount on the first day, as the urine was commonly voided with the stools, resulting from the action of ol. ricini administered at the outset of the case.)

The above figures are considerably below those previously obtained from a series of eleven cases which occurred at Fort Barrancas in 1873 and 1874 (vide *N. O. Med. and Surg Jour.*, Sept., 1875), but do not differ materially from the following table, which is the result of the average of sixteen cases, in twelve of which the urine was albuminous during the progress of the disease.

TABLE No. II.

	Amt.	S.G.		
Normal in adult male.....	50	20	=	1000
1st day of yellow fever.....	8	23	=	184
2d " " " "	11.5	25	=	287
3d " " " "	16	28	=	448
4th " " " "	18	22	=	396
5th " " " "	19	22	=	418
6th " " " "	20	22	=	440
7th " " " "	22	21	=	462
8th " " " "	22	19	=	418
9th " " " "	23	16	=	368
10th " " " "	28	13	=	364
11th " " " "	37	11	=	407
12th " " " "	41	13	=	533

This would seem to show that the presence of albumen in the urine is not alone a sufficient indication of deficient excretion of urinary solids. And, indeed, in some cases (e. g., that of Serg't Ware, previously reported, Case No. 30), the quantity remained

considerable and the specific gravity high, while the urine was highly albuminous. The figures given, then, may be taken as representing approximately, the normal quantity of urinary solids which should be secreted daily during the progress of an attack of yellow fever; and if the amount falls materially below these figures, defective excretion may be premised, and treatment and prognosis be governed accordingly. By reference to Table No. II., it will be seen that the product of amount × s. g. is tolerably uniform from the third to the 12th day, and that this uniformity is preserved by a falling off in the specific gravity to compensate for the daily increase in quantity shown in the column headed Amount. This uniformity in the product while the factors constantly change, is shown in a very marked manner in the case of Private Murphy, previously reported (Case No. 29). In this case the quantity of urine passed on the seventh day was 101 fluid ounces, while the specific gravity was only 1002. This excessive quantity and small specific gravity continued up to the fifteenth day of the disease, when the patient was considered convalescent and observations were discontinued.

To ascertain the product of amount × s. g. in patients convalescent from yellow fever at a later date, I had the urine passed by sixteen convalescents, on full diet, who had been out of bed from ten to twenty days, preserved and measured. The result was that the average of amount × s. g. for the sixteen cases was 491—a product but little in excess of that obtained during the continuance of the fever when the patients were in bed. The only exercise taken by these convalescents was to walk about the hospital and garrison.

In my paper referred to (loc. cit.), I endeavored to ascertain what influence, if any, the degree of pyrexia has upon the production of urinary solids during an attack of yellow fever. No definite results were obtained, and I am not able to throw any additional light upon this point after a careful study of the cases at present under consideration. In some cases characterized by a high temperature, the product of amount × s. g. was extremely low, probably from defective excretion. Table No. II. shows that the average product of amount × s. g. was a little less on the 9th and 10th days after the remission of the fever than on the preceding days during its continuance. But on the 1st and 2d days, when the febrile action is at its height, this product is less than on subsequent days.

Practical Observationa on Ophthalmia Neonatorum. Burns. A simple process by which motes and other foreign bodies may be removed from the eye, and the means by which the Reduction of Strangulated Hernia by Taxis is materially facilitated.

[*Letter to Editor.*]

BY L. A. DUGAS, M.D., LL.D.,

Professor of Surgery in the Medical College of Georgia.

Believing it to be a duty to lay before the profession such results of our practical observations as may be deemed useful, I beg leave to discharge this obligation by means of this informal letter to you.

OPHTHALMIA NEONATORUM,

or the purulent ophthalmia of new-born infants, is so common, and so often followed by blindness more or less complete, that any plan of treatment calculated to diminish its destructive tendency cannot be otherwise than eminently worthy of publication. I have been long in the habit* of relying entirely upon the antipyogenic properties of the chloride of soda, known as Labarraque solution, and find that the French article is much better than that manufactured in our country. The printed directions which accompany the French solution are calculated to mislead one disposed to use it as an antipyogenic, inasmuch as they are designed for its use as an antiseptic, which requires a much stronger solution. From a very large use of it, I am prepared to say that for lessening suppuration and healing ulcerated surfaces, a solution of half an ounce of French chloride of soda in a quart of water will be generally found to be of the right strength. If the American chloride of soda be used it will usually require fifty per cent. more.

For the treatment of ophthalmia neonatorum, you may rely upon this solution exclusively. Let the eyelids be separated as much as possible without violence, and pour upon the eye a stream of the solution sufficiently bold to wash away all purulent matter thoroughly. In winter this ablution should be made tepid. The eye, or eyes, as the case may be, should then be covered with a doubled bit of linen about the size of a dollar coin, and kept wet with the solution. Every three or four hours the eyelids should again be separated and the ablution freely re-

* Southern Med. and Surg. Journal, p. 81, vol. for 1836.

peated, until the suppuration and inflammatory condition have entirely ceased, which will usually require a week.

This treatment has been uniformly successful in my practice when called in sufficiently early; leaving no blemish nor defect of vision.

When the tumefaction of the lids is such as to prevent their separation, the lotion should be used with a glass syringe inserted at or near the external canthus.

I have found Labarraque's solution to be the best remedy I have ever tried for

Burns.

I believe that its great value in the treatment of these accidents was first pointed out by Lisfranc, very soon after its admission into the Materia Medica. It possesses the rare virtues in such cases of immediately arresting all pain, and also of preventing suppuration when the whole thickness of the skin has not been destroyed. From half an ounce to one ounce, to a quart of water will be usually of the proper strength, and the affected surface should be covered with old linen which is to be kept wet with it, and not to be removed for 24 or 48 hours, according to circumstances, as it is important to avoid tearing away the cuticle. In cold weather, and when the burn involves a large surface so as to render wet applications objectionable, I am in the habit of mixing the chloride with linseed oil in the proportion of ½ oz. or 1 oz. to 8 oz. of oil, and using this in lieu of the aqueous mixture above described. As a guide in regulating the strength of either of these prescriptions, I will observe that whenever the application gives pain instead of relief it is too strong, and should therefore be weakened.

As an illustration of the effects of this remedy, I will cite a a case which came under my observation many years ago. I was requested to go in haste to see a child about two years of age, who had plunged his hand in a pot of boiling soup for the purpose of taking out some of the floating vegetables. I found the child in his mother's lap screaming with pain, while his hand was being held in a basin of water. I had provided myself with an ounce of Labarraque's solution, which I immediately emptied into the basin. This was no sooner done than the child ceased crying, and was asleep before I could procure the bandages necessary to dress it. The cuticle was loosened over the entire

hand up to the wrist, so as to make it difficult to save it. This was, however, done by first wrapping each finger with a roller bandage loosely applied, and then by doing the same for the remainder of the hand. This was all done without awakening the child; and the mother was requested to keep the dressings wet night and day for 48 hours. The child suffered no more pain, and at the end of the two days, on removing the dressing, we had the satisfaction of finding the cuticle still entire, without a vestige of suppuration. The child was well in three days. Cases involving a deeper destruction of tissue would of course require more time.

I am aware that many prefer the use of spirits of turpentine or other terebinthinates, but the painfulness of the application constitutes a serious objection to them, however beneficial they may ultimately prove to be. In deep seated injuries, the antipyogenic properties of the chloride are invaluable, and cannot be equalled by any other remedy, so far as my observation goes.

A SIMPLE PROCESS BY WHICH MOTES OR OTHER FOREIGN BODIES MAY BE REMOVED FROM THE EYE.

The removal of motes or fragments of foreign bodies from the external surface of the eye is an operation we are frequently called upon to perform. Railroad employees and travellers, workers in metals and stone cutters, are those most frequently claiming our services. The natural sensitiveness of the external eye is usually very much increased when we are consulted, so that the intolerance of light makes it difficult to examine the eye thoroughly. With a little careful manipulation, however, we may succeed in finding the foreign body upon the cornea, the ocular conjunctiva, or beneath the eyelids. Wherever found, it it is more or less difficult to remove by the procedures usually recommended by written authorities, and which you know, according to them, consists simply in its removal by means of one or other form of instrument while the eyelids are held open. No directions are given for the purpose of rendering the eye motionless during the operation; and yet it is extremely difficult for the surgeon, as well as painful to the patient, to dislodge the foreign body while the eye is instinctively avoiding every approach of the instrument. In order to surmount this difficulty, I have for many years been in the habit of placing the end of

my index finger upon the eye just within the canthus, and retaining it there until I have removed the object. The contact of the finger produces a sensation which, while not decidedly painful, is yet sufficiently decided to engross the attention of the patient, and to prevent his moving the eye at the approach of the instrument or on its contact with the ocular surface.

By this plan the foreign bodies may be removed from the surface of the eye as readily as from any other part, and without the risk of scratching or otherwise injuring the organ by repeated and unsuccessful attempts to take it by surprise, if I may use the expression, by sudden thrusts of the instrument used for the purpose. I am in the habit of using Scarpa's cataract needle, and find it better adapted to the purpose than any other instrument, whether the mote be imbedded or in simple contact.

A young man, accompanied by his father, came from one of our upper counties to get me to remove a thorn sticking in his cornea. It seems that he was walking in the garden and passing by a rose vine, when a branch coming in contact with his eye, one of the thorns plunged into the cornea and was left there by the onward movement of the young man. He applied to the physicians of the neighborhood, one after another, who made unsuccessful attempts to remove it with pocket knives, bistouries, lancets, etc. When he arrived here, I found him badly scarred and very despondent. By putting the end of my finger upon the eyeball so as to keep it quiet, the thorn was at once removed without any difficulty whatever. I may add that the delighted father exclaimed: "How strange it is that no one else thought of this simple method of proceeding!"

I am not prepared to say that no one else has ever resorted to this method, but I have not seen it recommended in print, although I have been teaching its advantages very many years to the classes of the Medical College of Georgia. It is more than probable, however, that other surgeons have used it, and, like myself, omitted to publish their experience.

Means by which the Reduction of Strangulated Hernia by Taxis is materially facilitated.

Lisfranc, the distinguished Parisian surgeon of the early part of this century, was justly celebrated for his large endowment of practical common sense and personal independence. He was

therefore prompt in the detection of the useful, and bold in denouncing error. The use of the knife for the relief of strangulated hernia had become so common, especially after Dupuytren and Physick had demonstrated how easy it is to cure the artificial anus occasionally consequent upon this operation, that Lisfranc deemed it his duty to take a stand against the abuse on all suitable occasions. He boldly asserted that a large portion of the cases subjected to the knife could have been reduced by taxis, if the surgeon had been judicious and persevering in his efforts; that he had been in extensive surgical practice many years, and consequently had seen a large number of cases of strangulated hernia; and that he had never failed to reduce the hernia when no adhesions existed, and when he was called upon before it was too late to try taxis: he had therefore operated with the knife very rarely. His repeated declaration that *all cases* of strangulated hernia unattended with adhesions may be reduced by taxis, made a strong impression upon my mind, and an experience of nearly half a century has but confirmed me in the conviction of the correctness of his position. I may now say that the only cases in which I have ever used the knife in strangulated hernia were those in which this was complicated with adhesions; that I have reduced by taxis every other case I have ever treated; and that death never occurred after such reduction but in one case, which I will relate.

I have frequently been invited to perform the operation, or to witness it by others who had failed to reduce, and, in every instance, I succeeded in effecting the reduction without the knife. These declarations are now made among my friends, who can appreciate their value, but have never been published, lest they might be questioned by those who do not know me. I have now no petty ambition to subserve, and feel it a paramount duty to make public the results of long experience without fear of the shafts of envy or malice.

You will now naturally infer that there must be some peculiarity in my mode of taxis, and I will therefore proceed to describe it. In the first place, I should observe that I never resort to the various means advised for the relaxation of the muscles, such as blood-letting, antimonials, tobacco, etc., because I am satisfied that all the relaxation possible about the inguinal canal and rings can be obtained by position, by flexion of the limbs and trunk, and therefore without injury to the stamina. The

patient should then be placed upon a couch of such elevation that the surgeon, comfortably seated, may reach the tumor with the right hand without fatigue. The shoulders of the patient should be moderately elevated upon pillows, so as to insure a semi-flexed position of the trunk while the knees and thighs are also semi-flexed. We have then a complete relaxation of all the muscles interested. The tumor is then grasped with the fingers and thumb in such a manner as to make gentle compression and motion in every direction, for the purpose of driving out of the intestinal noose the gases and liquids it may contain and thereby reducing the size of the tumor. No violence should be used, and therefore no pain be induced. The surgeon must be well armed with patience, and with the conviction that the reduction can be made neither by violence nor by haste. The patient should be especially directed to be entirely passive, and to avoid any contraction of the abdominal muscles, or expulsory efforts. After fruitless efforts have been continued fifteen minutes the surgeon may need rest, and he may then invoke the aid of the patient, inasmuch as most of them have acquired some experience by reducing former descents without professional aid. The patient should then be asked to try his own method while the surgeon is at rest, and the result will often be successful. You will find that the patient never gives himself any pain, and usually resorts to gentle motion back and forth of the tumor. If he fail, a chair should be turned down on his bed in such manner as to constitute an inclined plane, upon which he should be placed, with his head down and his pelvis at the highest point. The legs should be flexed, and supported by an assistant. By this position, the gravitation of the abdominal contents will powerfully assist and sometimes complete the reduction in ten or fifteen minutes. The surgeon should hold up the tumor, move it to and fro, and by pressure from above downwards endeavor to drag the intestines away from the constricted canal. If he fail, let the patient try again.

By repeated and persevering attempts success will most certainly be secured. It is singular that so obvious a procedure as placing the patient upon an inclined plane should not oftener be advised by systematic writers. If any have recommended it, the fact has escaped my observation.

In one of the worst cases I ever had I left my patient upon the inclined plane to go for my instruments, but on returning,

found the reduction had been effected spontaneously. Chloroform is much extolled, but I have never resorted to it. I prefer that the patient should be able to complain if I give pain, and I can obtain all desirable relaxation by position, as already observed.

The fatal case to which I have referred was that of a very aged man who had been suffering all day. At 10 o'clock at night I was requested by the attendant to operate, but on reaching the patient, I drew him up on an inclined plane and effected reduction in a short time. We left him apparently doing well, but in an hour or two afterwards he died. No post mortem examination was made, and I am therefore unable to say what killed him.

The only other case of hernia that proved fatal in my hands, was that of an octogenarian lady with an old adherent crural hernia, which became violently strangulated. I lost no time in trying taxis, but immediately cut down and made an artificial anus. She gradually gave way, and died in about three weeks after the operation.

MALIGNANT CARBUNCLE---CARBUNCULUS CONTAGIOSUS.

(A Paper read before the New Orleans Medical and Surgical Association, Saturday evening, December 30th, 1876.)

BY J. HY. WIENDAHL. M.D., OF NEW ORLEANS.

Mr. President and Gentlemen:—I will read a few items, the result of the study which I have made upon this, the subject of this evening's discussion. We find the malady mentioned in French works, under the names of Pustule Maligne, Anthrax, and Feu Persique; in the German as Anthrax Carbuncle and Milzbrand (Inflammatory Death of the Spleen).

For much which I will state, I am indebted to the remarkable treatise of Professor Bolinger, of the Veterinary School of Munich, reported in Ziemssen's Cyclopœdia; to Rayer on Skin Diseases; to Richerand's Nosographie Phylosophique; to Marjolin's article in the French Dictionary of 21 volumes, and to Dr. T. Holmes' Surgery. I have prepared my article in this wise on account of the great interest which I found in the study, and in order to establish the sources from whence I summed up this

article, far more than from any personal experience which I could bring forward; the disease not being very common in our locality, and knowing that however familiar these might be to the majority, I hoped they would yet be productive of new interest.

In treating of anthrax carbuncle (its German nomenclature), it would be impossible to do justice to the subject without referring to its origin, and likewise relating also its effects upon domestic animals—the chief, and probably the only source from whence it is transmitted to man.

Anthrax of Animals.

History has, from earliest date, handed down notices of the disease amongst animals; and probably, of all contagious affections of the brute and bird creation, it is the longest known. The first allusion to it is the one recorded in holy writ, in Exodus ix.—an affection is there mentioned which would produce "boils breaking forth with blains upon man and beast."

According to the researches of Hensinger, the Greek and Roman veterinarians designated it under a variety of names. Its common appellation, however, is Anthrax by the Greeks, and Carbunculus by the Romans, whilst the Arabians call it Atshac—Hamrah, or Persian fire.

In the middle ages it was confused under a multitude of names and forms. But Chabert, in 1780, brought order out of confusion, gave it its classification and nomenclature, and, says Bollinger, even to this day, almost a century after, they are preserved in all their essential particulars, not only in France, but also in other countries.

The contagiousness of anthrax was proven, in the eighteenth century, by the numerous observations of Andouin, Chaignebrun, Fournier, Bertin and others. Many important studies and researches have been made by very diligent observers, and various opinions advanced, with regard to the nature, seat, and cause of this disease. Dekafond denied its contagiousness, and attributed the disease to over-nourishment and to the chemical conditions of the soil.

Gerlach, in his study of the sheep plague in 1845, proved the identity of the latter with anthrax, established its contagiousness experimentally, and concluded that the contagious principle was volatile and of great tenacity; the immediate cause being, primarily, a poisoning of the blood, which (poison) in

idiopathic cases is derived from the intestines, but makes its entry through different channels in cases due to inoculation.

Heusinger, in 1850, pronounced anthrax to be a malarial neurosis, the malarial poison primarily attacking the ganglionic nervous system. The vessels of the spleen becoming paralyzed and the spleen perishing—hence the name milzbrand—then follow similar vascular paralyses, local points of stasis, extravasations of blood, and local points of death in the different organs.

Virchow agrees with Heusinger in regard to the malarial nature of anthrax, and is inclined to consider a septic ferment the cause of anthrax.

Pollender was the one, however, who in 1849 brought the researches to their proper course, and to him is due the honor of finding in the blood of cattle suffering from anthrax a countless mass of fine rod-like bodies, which in figure and appearance resembled vibriones, and in their micro-chemical behavior were seemingly of a vegetable nature.

Independently of Pollender, Branell, in 1857, found the same little bodies in the blood of men, horses and sheep, which had died of anthrax, and also found that they were present during life in the blood of diseased animals, and believed them possessed of diagnostic value.

This discovery then called forth the investigations of many laborers in the field, and many and various were the theories, until Davaine, in 1863, pronounced the rod-like bodies to be bacteria—later, bacteridia, in contradistinction to the bacteria of putrefaction, which possess the power of motion, whilst blood without the bacteridia is not infectious.

These bacteridia are destroyed by decomposition, but when dried may be preserved for months and even years. These are numberless in the diseased body. Davaine counted from eight to ten million in a single drop, and with the millionth dilution of such a drop produced anthrax by inoculation.

ETIOLOGY.

It is an acute infectious malady, which breaks out commonly in an epizootic or enzootic manner, and is not infrequently sporadic in herbivorous animals and swine, and is transmissible to many other animals, as well as to mankind.—(B.)

It prevails in localities favorable to the production of malarial

fevers. Situations rich in decaying vegetable matter, moisture joined to vegetable decomposition, especially ground-moisture;—moisture in the soil, seems especially to furnish the requisite conditions for the generating of the anthrax poison. Exceptions, however, may occur. For instance, malarial districts may exist without concurrence of anthrax, whilst also there may be absence of the prevalence of malaria in localities where anthrax is prevalent. Bollinger explains, however, this somewhat apparent conflicting action, by stating that only such soil containing or impregnated with the element of anthrax poison is capable of producing the disease, whenever that elementary poison or ferment exists in that very condition which is requisite to producing the results of the prevailing poison (of anthrax).

Physical Condition.

Koranyi Langyel and Nicolai are of the opinion, that even in man anthrax attains its greatest intensity in those months wherein the temperature reaches its maximum. Anthrax localities have been transformed into freedom of the disease by draining, clearing, cultivation and improvement, etc.

The specific condition of anthrax is transmissible in a high degree. It is not contagious like small-pox, but more like pyæmia and septicæmia. Its poison is most often transmitted by diseased and dead animals—by their blood, their butchering and burying. Their hides, wool, hair, bristles, hoofs, horns and flesh; their secretions, excrements—particulary excrements—all these should be feared as vehicles of contagion. Butchers and farriers may contaminate by carrying particles of the infected body or materials, such as dried blood, wool and hair, covering, etc.

Dogs may convey the disease, by feeding off the flesh of dead animals so affected; instances are recorded where their bites produced the disease in sheep, after feeding on such infected food. Flies, house flies—particularly the blue bottle flies, whose excrements have been inoculated after feeding on infected material. Davaine produced the disease by means of the feet and proboscis of flies contaminated with diseased blood: all doubtful cases of doubtful origin should be attributed to inoculation by flies. Drinking water may be a source of infection by trickling through infected soil.

Bollinger produced effective inoculation through the media of vaginal mucus and milk.

Certain animals are not liable to the infection, especially the carnivorous and omnivorous, and birds of like peculiarities; but the herbivorous are particularly susceptible, such as sheep, horses and the lesser kind, such as rabbits, etc.

The feeding on diseased flesh is doubtful with regard to its infection, as the virus may be destroyed by the gastric juice. Those instances where inoculation has taken place may be attributed to abrasions of mouth or fauces, or to the bacteria entering into the air passages.

Nature of Anthrax Poison.

Bacteria in the blood and organs of diseased animals may be easily overlooked on account of their smallness, and also if they are in small numbers and scattered, or when existing only locally. In such instances the microscope discovers them to be present in their primitive state, in a spherical form (bacterial germs).

The blood of embryos of diseased mares and sheep in the hands of Brauell and Davaine, was unsuccessful, and did not produce the disease by inoculation. Fruitless efforts have been made to isolate bacteria by filtration with filtering paper, or earth cylinders, yet the placenta appears to be a physiological filter, not allowing the bacteria to reach the fœtal circulation. (B.) We are struck here with the dissemblance that is often met with in syphilitic mothers and in variola.

Pasteur has proven that the existence of bacteria depends upon the presence of oxygen, and thereupon called aerobia. Deprived of this element they die. By the action of the schizomycetes (bacteria and vibriones), a rapid oxydation takes place in organic bodies, the products of which are water and the more simple organic compounds—the oxygen, of which the fungi absorb a considerable quantity. In this process they extract this element from the air, when the latter has free access to them; otherwise they procure it from the organic substance itself—the muscles, etc. An experiment by Davaine, which seems to uphold this view, is the sealing up of anthrax blood, in five glass tubes, to the entire exclusion of air (consequently oxygen); the bacteria died in a few days, and inoculation with such blood was ineffective.

Another example in proof of this opinion, and advanced by B.,

is that, in that very common form of anthrax of domestic animals known as the apoplectiform, the bacteria are present in such vast numbers in the blood, and their enormous increase in the same by virtue of their extreme need of oxygen, and their great chemical affinity for the same, they absorbing it with such greed and in such large quantity, thus impoverishing the red corpuscles, that even during life are found prevailing the following symptoms, namely, dyspnœa, cyanosis, clonic spasms, dilated pupils, finally depressed temperature, and the appearance of asphyxia, parallel symptoms to those of carbonic acid poisoning, thereby explaining the above detailed mechanism from the speedy results of a lack of oxygen and an excess of carbonic acid.

Post mortem examinations reveal changes similar to those found after death, in cases resulting from want or absence of oxygen and overloading of the blood with acid, namely, engorgement of the venous system, dark, tarry character of the parenchymatous organs, hyperæmia of the lungs.

Death by this poison is, according to Preyer, a death by suffocation, the lightning-like action of the bacteria in such instances producing the same effect as poisoning by hydrocyanic acid.

To those little organisms (the bacteria) is due the disease, and without these there is no infection.

The period of incubation in domestic animals is from four to five days—somewhat less for smaller animals.

Anthrax bacteria are deprived of their power of development by cooking, and by a temperature of 140° Fahrenheit.

Davaine produced effective inoculation with dried blood of 20 months old.

The cutaneous carbuncles occur in animals in many regions; they are cool, of very large dimensions, not circumscribed, yielding to pressure, emphysematous, and producing a creaking sensation under the hand.

The diagnosis of the blood gives a negative result, when the blood is taken during an intermission or remission, or during convalescence, and inoculation is ineffective. Autopsy, however, confirms the disease.

In the blood, besides this presence of bacteria, we find the white corpuscles to be greatly increased, and the red corpuscles manifest a tendency to adhere together in heaps.

The penetration of anthrax bacteria through the loose and

thin mucous membranes of the animal body is easy to comprehend, in view of their minute size, and of the fact that even hard substances (egg shells) oppose no obstacle to the passage of analogous substances, as well as finally of this fact, that bacteria of decomposition penetrate immediately and rapidly from the cavity of the intestine into the organs of the body and spread themselves in all directions.

Geographical Area.

It is common in Hungary, on the lower Danube, in several departments of France, in Germany and in Saxony. It is found in Lapland, Siberia and Russia, in the West Indies, and at times in this locality and in our country parishes. I recollect instances cited by Dr. Cartwright, formerly of Natchez, Miss. It sometimes prevails in our forests amongst the wild deer, and is known as the black tongue and charbon.

The various forms of carbuncular fevers, where the fatal course is attained without local outbreak, are the apoplectiform, the maniacal, and finally the intermittent.

The carbuncular erysipelatous with pustules, are the horse typhus, tongue anthrax, rectal carbuncle, the carbuncular disease of cattle, anthrax carbuncle and sloughing erysipelas of sheep, and quinsy (mouth or gum anthrax) and the sloughing erysipelas of swine.

Anthrax Carbuncle in Man.

In the history of this malady in man, I will endeavor not to abuse the time of the Association by the rehearsal of facts already mentioned and common to both man and animals.

There are two kinds of external infection, which appear under special forms—the primary, anthrax carbuncle; the second, anthrax œdema.

The primary—anthrax carbuncle, or malignant pustule—is a contagious and gangrenous inflammation of the skin, characterized at its outset by a vesicle filled with a clear, bluish, or serosanguinolent fluid, beneath which is found a small lenticular induration, always upon a livid or dark base, soon surrounded by an areolar tumor of a phlegmono-erysipelatous nature. Gangrene soon invades the tumor, and spreads rapidly from its centre to its circumference.—Royer.

The disease usually runs its course with an incredible rapidity, and produces symptoms of the most grave and serious nature.—R.

It is the belief to-day, that the disease in many is derived from the contact of infected material, from affected animals or individuals (Thomassin, Kessel), by the handling of carbuncular tumors, hides, working in leather, wool, hair, horns, etc. Those most frequently attacked are farriers, butchers, tanners and shepherds, or those whose occupations bring them most in contact with domestic animals.

The parts usually affected are those portions of the body which are generally uncovered, such as the face, hands and arms, and those other parts of the body which have been in contact with the virus.

Etiology.

It is generally believed that malignant pustule does not spontaneously originate in man, notwithstanding the opinion to the contrary of Bayle, Richeraud, Davy la Charie, Nicolaï and others.

Direct inoculation is necessary to produce the disease. Man has but a moderate predisposition to the malady. In this respect he resists it, like the carnivorous animals, which take it with more difficulty than the herbivorous.

The period of incubation varies from a few hours to five or six days. Its invasion sets in by a mild irritation, which is soon followed by a red spot similar to a flea bite, which rapidly developes itself into a vesicle that soon bursts of itself within 24 or 36 hours after the invasion, if not already ruptured on account of the itchy sensation produced by it; then a small, hard, circumscribed base of the size of a pea, of an uneven surface, is formed beneath the vesicles. Firstly isolated, they soon fill with a sanious serosity, and finally unite with one another. The central point then becomes brownish, very tough and painful, and turns into gangrene. The inflammation soon spreads, the skin in the vicinity appears red and bright, the subcutaneous cellular tissue becomes swollen, tense and emphysematous-like, gangrene then sets in rapidly, the parts affected become deadened, and gangrene makes alarming invasion in the tissues.

The disease may assume two different types. In the first it may take a purely local nature; if so, it limits its progress. An inflammatory circle of vivid redness forms around the eschar;

the engorgement of the tissues with its outspread limits diminishes in equal proportions; the afflicted experience a mild and soothing heat, accompanied by throbbing in the parts; the pulse rises or upholds itself; strength returns, the eschar is thrown off, and repair takes place.

In the second act, if on the contrary, the disease is to have a fatal issue, general symptoms of a grave nature set in; the pulse becomes mean and small, attended with anxiety; debility; parched tongue, and brownish decomposed feature; dry skin; eyes deadened; moral dull and gloomy; syncope, cardialgia, and obscure delirium—precursors of death.

The periods of development of malignant pustule are of an irregular nature; that of incubation varies from one to two hours, or several days. The *second*, that of *development* of the *primitive vesicle*, is from 24 to 30 hours. The *third*, that of the *central nucleus*, and the appearance of the areolar tumor, is usually of but a few hours. Finally, the *fourth period*, that of gangrene, and of local and general symptoms of a more or less grave nature, varies from one to several days, according to the manner of termination of the disease.

Its progress is at times so rapid that death has occurred in from 18 to 24 hours. In other cases, on the contrary, the spread of the gangrene has limited itself almost from its onset.

With regard to situation of parts affected, that of the face seems to present the greatest danger, on account of the proneness in that locality to assume an inflammation of a phlegmono-erysipelatous nature. This engorgement extends itself at times even up to the neck and anterior parts of the chest. On the *lids* it produces an enormous and very painful tumefaction of those parts of the face, and deep-seated cephalalgia and delirium; at times loss of the eye, and always a deformity or ectropion of the eyelids. The chin, lips, and lobes of the nose seem in some respects not to suffer the same amount of destruction of the tissues, and do not comparatively produce as marked deformities.

On the *neck* a phlegmono-erysipelatous inflammation sets in, which produces difficult deglutition and respiration, besides hemorrhages of the nose and tumefaction of the face. On the *chest*, it is always followed by an inflammation of the cellular tissue, which spreads even beneath the axilla. On the *hands*

and *feet*, the phlegmono-erysipelatous inflammation takes the totality of the limb.

Gastro-intestinal irritation is sure to supervene when from a local origin the constitution is affected by the poison; at least it is one of the first symptoms noticed.

Differential Diagnosis.

When malignant carbuncle has attained large dimensions, and the supervention of gangrene, this inflammation can only be confounded with the gangrenous inflammation of the labiæ and cheeks, especially that gangrenous state of the mouth peculiar to children and also with pestilential charbon. Phlegmonous erysipelas, not being contagious, is not preceded by a vesicle or pustule, and it becomes gangrenous only by excess of inflammation. It differs from the gangrenous affection of the cheeks, in this, that in the last the gangrenous inflammation begins with the mouth and extends from thence to the skin, and is not contagious.

From the single carbuncle it differs in this, that this is a circumscribed necrotic inflammation of the skin, in which a number of furuncles occur so near each other that the intervening skin sloughs, while the anthrax or malignant carbuncle proceeds from a sharply-defined centre, and extends widely; there is also an early superficial eschar, which is surrounded by raised vesicular border, the centre somewhat depressed, the slough more dense, the swelling only very slightly sensitive, and the development speedier than in simple carbuncle. The latter has no raised vasiculated border; its centre prominent; the slough less tough; the tumor painful; the neighboring œdema redder, or of a livid color; the entire process more indolent. In a word, whilst malignant carbuncle selects uncovered parts, simple carbuncle chooses the skin of the back and neck, and in its natural state is riddled superficially by numerous purulent openings.

It differs from the furuncle in this, that this has no vesicle at its apex, and is not immediately followed by a diffuse inflammation.

From the bites of insects, in that the latter have a small yellowish spot on the summit of the papule, which is wanting in the former.

These inflammations (says Royer) cannot be confounded with any other phlegmasiá of the skin; they only begin by a raised

vesicle, upon a central hard base, which soon runs into gangrene, and around which is rapidly formed a phlegmono-erysipelatous areola; and again Bourgeois, cited by T. Holmes, absence of pus and freedom of pain are characteristics of malignant pustule.

ANTHRAX ŒDEMA.

The second variety—the malignant anthrax œdema (l'œdeme maligne) of Bourgeois—affects preferably the eyelids, though latterly discovered to attack other parts of the body; this form differs at its outset from the malignant pustule, in that the eschar and primary vesicle are wanting. We find here a somewhat pale, yellowish or greenish swelling, which in the eyelids has often a translucent aspect. Some cases of this type have been observed after the eating of infected flesh, and in which there did not appear any developement of a carbuncle.

The eating of diseased flesh produces many symptoms similar to those produced by the poisonous effects of the eating of mushrooms. They generally manifest themselves as early as eight hours after. Those evidences are ushered in by chilliness, debility, headache, general feeling of malaise, loss of appetite, restless sleep, great debility and depression, after which, but often not until eight or ten days, anthrax carbuncle appears, but by preference on the arms, forearm and forehead. In fatal cases the œdema, with superadded gangrene, spreads rapidly over the whole extremity, collapse rapidly supervenes with dyspnœa, loss of consciousness, and finally death. Sometimes, in from 24 to 48 hours, the gravest symptoms set in, and after two or three days' duration, ending in death, without the formation of a pustule externally on the body.—(Leube and Müller.)

INTESTINAL ANTHRAX.

This form of disease is far from being a settled question, though history records evidence of its being considered and recognized by the oldest observers as a true and distinct type of the malady.

Bollinger remarks, that the relative rarity of anthrax carbuncle in man, not being observed even in many years, is probably the cause why the uncommon forms were forgotten, and is why the disease is almost exclusively connected with its cutaneous development.

Attention was, however, aroused to this fact by the observations of Von Whall and Von Recklinghausen, in 1863 and 1864, and recently by Waldeyer, Leube, E. Wagner and W. Müller.

Absolute fatality seems to be the order in this type—the only recorded exception is the case reported by Leube. Twenty-four hours seems to terminate the course of this terrible malady, or within the 2d, 3d, 5th or 7th day, with symptoms of cyanosis, asphyxia, and extreme collapse.

Local manifestations may coexist with the interval, but from the data of a great number of cases furnished by Münch, and observed in Moscow, the conclusion may be drawn that pure cases of anthrax without carbuncle of the integument constitute altogether one-third to two-fifths of the cases.

Abdominal anthrax bears a striking concordance to the acute forms of anthrax in cattle (carbuncular fever).—B. The symptoms characteristic of the disease often are debility, depression, pains in the limbs, malaise, cephalalgia, and singing in the ears, soon followed by disturbances in the intestinal canal. The patient complains of loss of appetite and gastralgia; there is moderate swelling of the abdomen, slight difficulty of swallowing, with an increase of general symptoms; vomiting commonly sets in, followed by more or less painless bloody discharges from the intestines, in consequence of which the affected soon fall into a cholera-like collapse. Generally there is dyspnœa, cyanosis, great restlessness, excitement or somnolence, loss of consciousness; others are anxious, and complain of much pain about the head, sometimes of griping of the bowels. The breathing is hurried and difficult, the pulse small and rapid, the temperature slightly elevated. Convulsions occur at times, tetanic spasms of the upper extremities, opisthotonous, and great dilatation of the pupils. On the skin is frequently found small carbuncles—a diffuse phlegmon or gangrene; hemorrhages of the mouth and nose; the escaped blood shows a lack of coagulability.

Treatment.

The course of the disease can generally be arrested by energetic local treatment.

The disease once diagnosed, should be scarified crucially, and canterized with a firm hand; and to be effective, these scarifications should comprise the vesicle of the pustule and base without extending beyond the diseased parts. At the onset the vesicle

should be opened, and the serosity be absorbed by lint or sponge. The means of cauterization may be either concentrated carbolic acid, caustic potash, fuming nitric acid, or the actual cautery.—(Royer.) Bollinger recommends the unconditional extirpation of the carbuncle with the knife, followed by cauterization. Simple cauterization does not usually answer as well as when extirpation or incision has preceded it.

Favorable termination has resulted, after energetic local treatment, even when the symptoms had reached a formidable degree; in such cases the general symptoms disappear with local infiltration.

Cauterization is stated by Renault to be of no benefit to animals, even after 12 minutes of incubation.

The disease retains its local character longer in man than in animals. In man, says Bourgeois, it retains it from 48 to 60 hours. The slough being able to produce septic infection, should be covered with a dressing of chlorine water, or better, of carbolic acid in solution. The latter should be followed by poultices containing a little carbolic acid, in order to separate the slough. In this stage, local stimulation is indicated, etc.

General symptoms existing, quinine in large doses would be useful; and, says Bollinger, carbolic acid having proved serviceable in animals, the latter might be serviceable internally simultaneously with quinine.

In other respects, the treatment should be tonic and sustaining, the diet strengthening and easy of digestion. When considerable œdematous swelling exists and threatening gangrene, deep incisions, penetrating into the yellow infiltrated connective tissue, and the disinfectant used.

In the intestinal form, the internal treatment same as for general symptoms occurring after external infection—quinine, carbolic acid, bark, iron and other tonics, and appropriate diet. Diseased flesh having been eaten, a powerful emetic would be indicated.

Before closing this paper, I will state that I selected its subject with the expectation of finding therein a clue to the disease of which a case has recently been reported by Dr. Castillanos, and which Professor Logan saw in consultation with the attending physician. The sudden fatality of the case had awakened in me a desire to report the concurrence, within the past four or five years, of a series of cases occurring in that locality which

probably bear some affinity to the case mentioned above; but the explanation given by Dr. Logan, with regard to the frequent fatal termination of carbuncular inflammations of the face, depending upon the structural peculiarities of the facial veins seems to classify the cases differently; but nevertheless, with your permission, I will report the following cases, and will endeavor before terminating to bring forward the opinion of Dr. T. Holmes and others, relative to this peculiar form of facial carbuncle.

In July, 1871, J. Abadie, a French butcher, residing about 150 yards from the above, went into the open fields of Gentilly, and there skinned a cow which had died of an unknown disease. From six to eight days after this he was taken ill with fever; at the same time (according to the report of his wife) there occurred *two* small pimples or small boils on the anterior part of his forearm. His physician being called in, opened these boils, from which there escaped nothing but blood, nor at any period did there exist any pus. He was treated for fever. He, however, being apprehensive that these were the cause of his ailment, expressed his belief that they originated from the poisoned stings of flies, but was answered that should that be the case, that they would have already caused his death. Being opened, they were poulticed and he was treated for fever. During the whole course of his disease he was extremely restless and delirious, and was unable to sleep or keep his bed, and finally died suddenly on the 3d or 5th day of his illness. His physician attributed this sudden fatality to the abrupt atmospherical changes occurring about that time.

Second Case. Fourteen days after the butcher's death, I was called to a respectable Creole lady, Mrs. J., who resided on Esplanade street, about *two and a half squares* from the butcher's house and stable, and found her attending to her usual household duties, but complaining of a sore arm, on the forepart of which, namely, over the radial end of the anterior part of the arm, was what one at a casual glance would have taken for a common furuncle, but which upon close inspection, would have seemed to be a large, raised and empty vesicle, beneath which when raised with the point of the lancet, was discovered a hard, indurated, and blackish base, rough to the friction of the lancet point. The whole body of the boil was as large as a white bean, and was only of 24 *hours growth*, the lady having only perceived a small pimple or phlyctnæa the previous morning. That portion

of the arm was slighty swollen (but not very painful), with red lines leading even up to the bend of the arm, showing progressive inflammation of the lymphaties. Aroused by the history and general report in the vicinity of the death of the butcher by charbon, I at once applied caustic potash, wiping away the destroyed and softened tissues during the cauterization, until I thought I had removed the whole diseased body—applied warm poultices of slippery elm, moistened with aromatic wine, to the pustular sore, and painted the whole forearm with collodion, which I was, however, obliged to remove on the following morning, on account of the increased swollen state of the arm, and made nevertheless new applications of the same. Fever supervening, I gave her quinine for several days, followed by bark and generous diet. On the 11th or 12th day the eschar came away, and I considered her cure complete.

Third Case. A singular coincidence about this time was that, about two or three weeks after this I was called to see a German woman, Mrs. K., a charentiêre or sausage maker's wife, living also in the Third District, but some 10 or 12 squares in a straight line from the above cases, who, while plying her calling, had slightly scratched her arm, about the middle of the forearm, with her sausage meat chopping knife. Upon this wound, which was but an abrasion of the epidermis, there was inoculated (whatever its nature, septic or what?) a virus, which produced a vesicle of the size of a large, fully-ripened variola pustule, transparent and vesicular (but of muddy white), with an indurated base, the arm being very painful and swollen. Knowing that those plying this trade often bought of refused meat from our stalls, and often also meat kept on ice, and which not being marketable, did well enough in sausage shape—and being sometimes almost putrescent, might give rise to septic infections, I at once cauterized similarly to the case of the first mentioned lady, and with the same emollient, stimulating and protective dressings, together with tonic internal treatment, and in a few days she was well. I must here remark that neither of the two patients kept the bed a single day, but on the contrary, attended to their duties as usual.

FACIAL CARBUNCLE.

Dumeril describes it as a multiple furunele of the face, and Bourgeois as the agravated furunele: in his work on Malignant

Pustule, he considers it not uncommon to meet with a fatal termination when carbuncle occurs about the mouth or face, and that this disease is to be distinguished from the malignant pustule by its painfulness, the presence of pus and character of the swelling, the absence of pus and character of the swelling—the absence of pus being characteristic of malignant pustule, whilst malignant pustule is free of pain.

Dr. T. Holmes says that the facial carbuncle seems to depend on the structural peculiarities of the part affected or essential nature of the disease. The facial vein differs from the external veins in being less flaccid in its walls and more patent in its canal, and communicating at its lower dependent end with the jugular, and by its upper with the sinuses of the brain, thus affording unusual facilities for the escape of the morbid material from the canal into the general circulation; or death may occur from pyæmia, from purulent infection of the blood either originating in facial phlebitis, as evidenced by the swelling and induration in the course of the veins, or spreading upwards through the orbit of the cavernous sinus, where pus may be found in it, it may be the general circulation is contaminated through the facial and external jugular veins. Its constitutional effects bear the same relation to carbuncle as scarlatina maligna to scarlatina simplex.

The constitutional symptoms early in the disease indicate great depression of the vital powers. That carbuncle may form on the face and yet produce no unusual constitutional disturbance, is a matter of common observation.

ON URINARY CALCULI.

BY JOHN DELL'ORTO, M.D.

(Read before the N. O. Medical and Surgical Association.)

Mr. President—In offering the following sketch on urinary calculi, I must premise that I claim no originality in the views contained therein, it being a simple exposition of the most important and modern theories, that I have collected from their respective authors, and endeavored to present to the Association under such a form as to make the subject both useful and attractive.

By urinary calculi, I mean those peculiar calcareous concretions formed in the reno-vesical apparatus of the human organism.

William Prout and Magendie call them *lithiasis*, or gravel, when they are very small, and easily evacuated by the urethra; stones, when they are of a larger size, and are detained in the bladder. The latter are in a majority of cases the consequence of the former, and both may be products of the same disease, that is of a very serious pathological condition of the whole system, recognized as such, since the commencement of medical science, a few centuries before our era.

I do not intend, Gentlemen, to give you this evening a full and complete history of this subject; it would be a work far superior to my abilities, and besides, too long for a simple conference. I only desire to speak of the pathogeny of calculi.

A great desideratum still exists in our profession in respect to the etiology of urinary calculi. In order to trace, so far as we are able, their origin in the human system, we must take our point of departure from this physiological fact, that we have in our economy organs which are purposely made to purify the circulating blood from what is either superfluous or dangerous to the health of the individual, and eliminate it through proper channels. Many glandular organs contribute to carry out this process; but the principal are, the gastro-hepatic apparatus, or organs of assimilation, among which the liver holds the most important place—the skin, and the kidneys.

That the liver is not only a secreter of bile, but a blood forming, and also a blood destroying or purifying organ, seems to be proved by the late experiments of modern physiology, as well as by pathological observations.

Dr Charles Murchison, of London, says,* that there is little doubt in these days that the albumen and the fibrin become largely disintegrated in the liver.

Lehmann and Claude Bernard have demonstrated, that while portal blood contains much fibrin, blood from the hepatic vein contains little or none; and that the blood on emerging from the liver is far richer in white blood corpuscles than the blood before it enters the liver.

Brown Séquard has calculated, that no less a quantity than

* Lectures on Functional Derangement of the Liver, London Lancet, June-July, 1874.

86½ ounces of fibrin is daily lost to the blood in its passage through the digestive organs and the liver.

There is also strong evidence for believing that the liver contributes in a great degree to the destruction of albuminous matter derived from the food, and to the formation of urea and other nitrogenous products which are poisonous to the blood, and must in consequence be eliminated by the kidneys. This assertion seems to be confirmed by clinical facts.

We see every day cases of simple derangement of the liver in which the urine presents deposits, or sediments, mainly caused by an imperfect formation of urea in that organ. Deposits of lithic insoluble acid, or lithates, are very common in bilious remittent fevers and others.

When a large portion of the liver has been destroyed by disease, such as cancer, atrophy, all traces of urea may disappear from the urine.

According to the views of some modern physicians on the cerebral symptoms, which supervene in cases of protracted jaundice, and I say, *perhaps even* during the last stage of yellow fever, it seems that they are not due to the saturation of the system with bile, but to the non-elimination of urea on account of a diseased liver.

The importance of the skin as a blood-purifying organ is not less than that of the liver. Its very extensive surface covering all the external parts of the body, and continuous with the mucous membrane of the internal cavities; its numerous arterio-venous vessels and lymphatics, as well as vaso motor nerves, and finally its constant exposure to external modifying agents, render it an organ of exhalation, secretion, and absorption, of great importance, upon the regular functions of which mainly depends the health of man. Through the perspiration, compounds of nitrogen are daily eliminated from the blood and tissues.

With regard to the kidneys, I am of the opinion of those physicians who believe that their office is simply secretory. The problem lately discussed among physiologists, whether uric acid is formed in these organs or elsewhere, has not yet been solved. Kidneys seem to complete the work of depuration, to which I have already alluded, by draining away from the system any excess in the aqueous constituents of the blood, and evacu-

ating also certain products which are in part secreted by the liver.

From what I have stated, it is evident that these three apparatus are intimately connected with one another in their functions, so that any derangement in one is liable to reflect upon the rest, on account of an increased labor enforced upon them by the natural law of compensation, and through which a partial disintegration is brought about leading to many forms of diseases.

Modern chemistry teaches us, that urine voided by a person in health always exhibits acid properties, which are not due to a free acid, but to certain alkaline bases that are not exactly neutralized, and exist in states of supersalts, such as acid phosphate of soda. According to Dr. Bence Jones, soda is set free in the stomach during digestion, and finds its way into the blood, and thus into the urine. Whenever urine deviates from its natural condition, it becomes subject to calcareous deposits.

The causes which produce such a change in the elements of urine may be reduced to three:

1st. Mechanical obstacles to the regular course of the urine through its proper channels, by virtue of which, urine being detained longer than usual, its chemical constitution gets gradually altered by simple mechanical reactions, so as to favor the precipitation of its most solid principles, and constitute a nucleus around which successive concretions and incrustations are formed. These obstacles may be produced either by tumors existing outside of the urinary organs, and exercising pressure on them, or by a diseased condition in the interior of the same organs, as paralysis of the bladder, strictures of the urethra, coagula and foreign bodies introduced into the bladder. Though these causes seem to act at first mechanically, they produce slowly an irritable condition of the kidneys that finally impairs their functions.

2d.—*Traumatic Nephritis.* A powerful stroke against the kidneys has been found in several cases as the only cause of calculi, on account of the immediate congestion of these organs, and consecutive disorders in their functions. We read in the annals of medicine a few observations of this kind; the most remarkable is that of a gentleman, who was operated upon for a large stone in the bladder, the formation of which was ascribed to a kick from his horse upon the region of the kidneys.

3d.—*Constitutional causes.* These have been acknowledged by all authors to be, in general, the source of calculi, and therefore to them more especially will I call your attention.

Many strange theories have been proposed on this subject, since a very remote age. Let us pass in review the most important.

William Prout, a great authority in this question, says that when a free acid is present in the urine, a neutral, very soluble lithate of ammonia is decomposed, and a lithic insoluble acid is slowly thrown down and deposited as red sand in three different forms, viz., amhorphous pulverised sediments, regularly crystalized, or gravels and true calculi. There is in such case a diathesis, which he calls lithic. This diathesis is the most common and frequent, because lithic acid constitutes five-sixths of all the renal concretions and vesical calculi that are recently descended from the kidneys.

When, on the contrary, there is a deficiency of acid in the urine, and a tendency to alkalescence of the same, phosphatic deposits are thrown down under the form of white gravel. The morbid condition of the system that characterizes this tendency of the urine to alkalescence, is called by Wm. Prout "phosphatic diathesis."

There is another diathesis, nearly as frequent as the lithic, and more common than the phosphatic, called "oxalic" in which there is a tendency to the formation in the kidneys of the oxalate of lime, or mulberry calculus.

These three kinds of diathesis are, according to William Prout, produced in the constitution by disturbance in the functions of the organs of assimilation, and in the functions of the kidneys.

Morgan admitted a peculiar hereditary disposition as the remote cause of calculi. This is only a hypothesis, that needs facts to be adopted, unless he means a gouty hereditary condition of the blood. There is, in fact, a connection between gout and diseases of urinary calculi, which is proved by numerous observations. Very often urinary calculi appear after protracted attacks of gout. In the autopsy of the old gouty persons, calcareous concretions in the kidneys are commonly found. Sir Everard Home extirpated from the heel of a gouty gentleman, a tumor that weighed four ounces; the analysis of its contents

made by William Prout demonstrated that it was almost entirely composed of uric acid.

Magendie attributes them to the exclusive use of animal food, and corroborates his opinion by the experiments made in lower animals, according to which he proved, that the urine of those who had been nourished with strictly animal food contained a great quantity of lithic acid deposits, while none were to be found in the urine of those which had been fed on purely vegetable substances.

This theory of Magendie had for a long time enjoyed a great renown in France. It may be just and true with regard to lithic acid calculi, because it is easy to understand, that (the base of these calculi being nitrogenous) the excess of nitrogenous food would favor their formation, but it fails to give any satisfactory explanation for other kinds of calculi, such as phosphates, and carbonates of lime, which are increased by the use of vegetable food and decreased by animal diet. Dr. Scudamore, of England, has seen calculi more frequent in certain districts of the county of Essex among the poorest classes of the people, who are fed only with vegetables, and drink hard beer.

Civiale, another great authority on this subject, has observed no difference, and says, that uric acid calculi may appear in persons who use animal food, as well as in those who eat but vegetables. In his precious collection of calculi, there is a most beautiful specimen of lithate deposit from a gentleman who lived exclusively on vegetables. The formation of calculi do not depend, according to this distinguished observer, upon the quantity of nitrogen introduced into the economy through animal food, but upon the perturbation caused in the digestive organs either by excessive or improper nourishment, whether it be of vegetable or animal nature.

From the exposition of these theories you can see, Gentlemen, that, although some seem to be contradictory to others, they all agree on one point—that calculi may be produced by derangement in the functions of the digestive organs.

But this is not the only cause; there is another and very important one, viz., the derangement in the functions of the skin.

The temperature of the atmosphere must have a great influence upon the formation of calculi, since it has been proved by many authorities that such concretions are very seldom met with in warm climates, the inhabitants of which are continually dis-

posed to a regular, healthy perspiration; while on the contrary, the calculi seem to be more frequent in countries where the temperature is damp, wet, chilly and variable, as in England, certain departments of France and Germany, and the northern part of Italy. Dr. Scott, who resided several years in East Indies, never saw any urinary calculi. The same observations were made by Dr. Godfrey in Manilla, Lambert in Guadaloupe, and by many other practitioners. During my eight years of traveling through South and Central America, I do not remember to have seen a single case of calculi, while I had the opportunity to observe several when a student in the University of Turin. In fact, Piedmont, immediately surrounded as it is by the Alps, and lying near the sources of two important rivers, is, of the whole peninsula, the region where such diseases are often found. The venerable and eminent teacher of clinical surgery and operations of that school, Professor Riberi, had made a peculiar study of this subject, and after having related in his works several hundred cases, comes to the conclusion that urinary calculi are developed during two different and well marked periods of like, in infancy before twelve years, and in advanced age after fifty.

Calculi in infancy are more frequent among the poor, who are badly nourished, ill clad, and reside in damp, unhealthy abodes; on the contrary, after the age of fifty they are more frequent among the richest class of society, especially people of sedentary habits, and subject to gout. These observations of a physician who has seen so many cases in a long practice of over fifty years is not without some importance.

Can there be any relation between scanty and improper nourishment of the lower classes of society, and succulent, highly nitrogenous aliment of the higher classes? Can there be any relation between disorders caused by an imperfect action of the skin due to the deficiency of necessary coverings among the poor, and disorders caused by inertia of the skin due to sedentary and inactive habits among the rich? I believe that really such a relation exists. That proverbial saying, "extremes meet," is in many instances very true in our profession; seemingly opposite causes very often produce in the human organism the same pathological effects. High living, as well as poor living, a diet excessive in amount, as well as a poor, unduly stimulating nourishment, may cause at last the same phenomena, such as difficult digestions, hyperæmia of the stomach, congestions of the liver,

abnormal disintegration of albuminous matter, imperfect oxidation of the elements of bile and blood—so that slowly a morbid condition of the whole system results, which finally leads to lithuria and calculi. Charles Murchison designates this constitutional state by the name of *lithæmia*.

That the retention in the blood of nitrogenous principles not eliminated by the skin, causes a general diseased condition of its mass and severe disorders in the kidneys, and consequently alterations in the elements of the urine, has been lately splendidly demonstrated by Dr. L. Dunclan Buckley, in his paper on Relation of Urine to Skin Diseases, published in the *Archives Dermatology*, October, 1875,* and the conclusions which he arrived at, are so important for the subject we are studying, that I deem it necessary to quote them as they are:

1st. The urine represents the state of the blood, as well as the integrity of the kidneys, and conversely the state of the secretion from the skin, and is therefore of very great importance in the study and treatment of diseases of the skin.

2d. The circulation in the blood of excrementitious substances, uric, hippuric, and oxalic acids, and urea, given experimentally, has been followed by eruptions on the skin.

3d. Uric acid is found in the blood of gouty patients, also in blisters raised upon them. It has also been found contained in the vesicles of eczema. Urate and phosphate of soda have been recovered from the contents of pemphigoid bullæ in a case of psoriasis. Hippuric acid has been demonstrated in the scales of ichthyosis.

4th. Urea is a normal ingredient of the sweat, has been recovered in a notable quantity from the perspiration of a gouty patient in a Turkish bath, and has also been found to be excreted in quantity on the skin in certain fatal cases of chronic kidney disease. Urate of soda has been found crystallized on the skin of eczematous legs in gouty subjects.

5th. The rate of secretion of the urine varies greatly with the state of the cutaneous surface, cold applications increasing, and warm diminishing it. Daily bathing increases the total solid constituents in the urine, the urea and uric acid being increased. Profuse sweating diminishes the quantity, raises the specific gravity, increases the urates and chlorides. Complete suppression of exhalation by varnishing the skin causes death from uremia, with

* The Journal of Materia Medica, New Lebanon, July, 1876.

albuminuria and the production of triple phosphates in different parts of the body.

I need not prove to this Association the importance of the questions that I have so incompletely discussed, both for the diagnosis of urinary calculi and their medical treatment. If it be true, that the organs fundamentally at fault in this disease are, in the great majority of cases, the organs of assimilation and perspiration, it is to them that we must mainly look for those rational and judicious indications which can restore them to their natural functions, and cause such a profound and lasting modification of the whole system as to arrest the development of urinary calculi since their commencement, and prevent them from becoming large stones, and so avoid the ultimate necessity of one of the most severe and dangerous surgical operations. In order to obtain such an object, the physician needs a perfect knowledge of the chemical constitution of the urine, and of the means through which to make an accurate analysis. Did you ever hear of those quacks called "water doctors," who are found in every country, and who pretend to know diseases by a mere inspection of the urine? Gentlemen, I dare to say, that such a degree of skill (not based on charlatanism, but acquired by serious studies) a physician of modern times must have, when chemistry has made so great progress towards scientific exactitude.

New Orleans, January 20th, 1877.

TRACHEOTOMY IN A CASE OF BRONCHOCELE, WITH FATAL PNEUMONIA.

BY A. B. MILES, M.D.,

Demonstrator of Anatomy, Medical Department, University of Louisiana.

(*Read at a meeting of the New Orleans Medical and Surgical Association, Jan. 6th*, 1877.)

Bronchocele or Goitre, in the South, is not a disease of very frequent occurrence, and the opportunities for observations of its clinical history are necessarily limited. I think, however, it seldom happens in this affection, that the enlarged gland so compresses the trachea as to require tracheotomy; and those of my senior confréres whom I have consulted, whose experience in practice embraces a long period of years, hold the same

opinion. It may not be uninteresting, then, to relate the noteworthy facts in the history of such a case, and give a brief account of the operation, hurriedly performed, under urgent and rather unpromising circumstances.

The name of the patient is Frank R., aged eighteen years, of German parentage, but a native of New Orleans; well developed for his age, having previously enjoyed good health. For about five years there has been a perceptible enlargement of the thyroid gland, which has very gradually increased; but during the current year (1876), the comparatively rapid increase in size has been observed by Frank and his friends.

About the 10th of December, 1876, the compression of the trachea by the enlarged gland so impeded respiration as to cause alarm, and the patient sought the medical counsel of Dr. F. Lœber. At that time there was hypertrophy of the heart, with increased functional activity. Dr Lœber prescribed iodine and the iodide of potash internally, applied externally the comp. tinct. of iodine, and observed the patient at intervals until December 26th, when the urgency of the symptoms, by no means warranting any surgical procedure, justified him in informing the boy of the probable necessity of tracheotomy.

On the morning of the 29th of December, respiration became labored and much more difficult. About midday the boy "seemed smothered and turned blue in the face," and these untoward symptoms gave great alarm. A messenger was dispatched for the attending physician, in whose absence I answered the call, accompanied by Mr. Chas. Langebecker, a Student of Medicine.

I would here interpose a few words in explanation of the rather rapid succession of the alarming symptoms. A bronchial catarrh supervened on the morning of the 29th, with thickening of the mucous lining of the trachea, and probably an accumulation of mucus at the point of obstruction, which caused an additional impediment to respiration. Now the impaired respiration, originally caused by the compression exercised by the enlarged gland, by retarding venous circulation and causing congestion of the thyroid veins, became, in turn, an aggravating cause of the glandular swelling.

I found the patient lying on a couch in a half reclining posture, in a state of cyanosis, totally unconscious, breathing with great difficulty, and apparently in articulo mortis. The cause

of the suffocation was manifest in a large bronchocele, hard and elastic, compressing the trachea. I immediately made an incision extending from the lower border of the thyroid cartilage to a little below the upper border of the sternum, dividing the skin, which was tightly drawn over the tumor, hoping thereby to partially relieve the compression until the tube could be inserted into the trachea. It was now considered more prudent to "make haste slowly." No jetting artery was seen, but the distended branches of the thyroid anastomosis bled freely. As the tumor almost completely occupied the region of the neck, the trachea was exposed just above the sternum, and was found lying a little to the left side and compressed laterally.

I would remark just here, that, in such cases we should expect to find the trachea compressed laterally. The lobes of the gland lie by the side of the trachea, covered by the sterno-hyoid and thyroid muscles, and confined to the outer side by the strong sterno-cleido-mastoid muscles. Again, in consequence of the deficiency of the cartilaginous rings at the posterior third, where it rests on the œsophagus, the trachea yields much more readily to pressure exerted upon its sides than in front.

The trachea thus grasped firmly by the surrounding mass, was easily opened and the tube inserted. Artificial respiration was performed for about fifteen minutes to assist the patient in his feeble efforts at respiration, which, unaided, would certainly have proved inadequate to life in a few minutes. A half hour after the insertion of the tube into the trachea, to my surprise, I must confess, consciousness began to return, and for the first time, the patient gave evidence of pain in trying to remove the tube from his neck. During the operation he was as totally unconscious as one profoundly anæsthetized, and so insensible to pain that he did not flinch a single time.

Means were devised for the admission of moderately warm air into the lungs, and one hour and a quarter after the operation I left the patient breathing 58 times a minute, with a pulse quite frequent and feeble, and perfectly conscious of his condition.

At 6 p. m., respirations 56, pulse 140 a minute. Patient drowsy but easily awakened, and answering intelligently when aroused. From this time I saw the patient morning and evening, in consultation with Dr. Lœber.

December 30th, 1876. As shown by a carefully kept record,

the patient during the day breathed from 50 to 56 times a minute; pulse 130–140; temperature 99½°.

December 31st. During the day the respirations per minute were from 54 to 56; pulse from 134 to 140; temperature 102½°.

The previous congestion of the lungs predisposed to inflammation, and the operation, with its consequences, certainly proved a most efficient exciting cause. On the morning of the 31st of December, we were therefore not surprised to find pneumonia of the upper portion of the right and the lower portion of the left lung, as evidenced by the physical signs.

January 1st, 1877—9 *a. m.* Respiration 52; pulse 128; temperature 102½°. 5 p. m.—Respiration 34; pulse 134; temperature 103°.

January 2d—9 *a. m.* Respiration 60; pulse 140; temperature 104°. 5 p. m.—Respiration 48; pulse 150; temperature 104°.

The treatment of the case consisted in the administration of the most nutritious food; Dover's powders in doses of gr. vii., repeated according to the effect, to relieve the cough, which on morning of the 1st of January became frequent and painful; strict attention to cleanliness of the tube; the admission of moderately warm air into the lungs, and attention to the patient's general comfort. He died at 12 o'clock on the night of the 2d January, the fifth day after the operation—another victim of the fearfully fatal pneumonia which so often follows tracheotomy.

CURRENT MEDICAL LITERATURE.

PRACTICAL MEDICINE.

BY S. M. BEMISS, M.D.,

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CASES OF TYPHOID FEVER DEPENDENT UPON CONTAMINATED DRINKING WATER.

By L. Woods, M.D., Pittsford, Vt.

The following is a brief history of eleven cases of typhoid fever which I attended in the autumn of 1875. These cases are interesting, first, because with two exceptions, they occurred among the members of a single school of thirty children,

twenty of whom were attacked. Second, because the epidemic was distinctly traced to sewage poisoning, the source of the infection being the drinking water used by the school. This water was drawn from a well twenty feet deep, dug the preceding summer, within five feet of the rear of an old house and within fifteen feet of the back door where slops have been thrown out for more than fifty years. Within five feet of the well runs a board sink-drain liable to choke up and overflow. In this house lived a family of eleven persons, nine of whom had typhoid fever, but only three of these were under my care. Of the ten scholars who escaped I have positive information that three of them did not drink of the contaminated water, a specimen of which, examined microscopically and chemically, presented evidence of the presence of organic matter, including fibres of cotton, probably from dish-cloths, and showed upon its surface and the sides of a glass which contained it a greasy scum. Third, because the brothers and sisters of these patients who did not attend the school, nor drink the water in question, escaped the infection, as did their parents.

Four of the cases were males; seven, females. Average age, ten and a half; youngest, six; oldest, nineteen and a half. Six of the cases commenced with chills. Eight complained of headache and backache, and one of general muscular soreness. Two had epistaxis. One had ptosis of the left eyelid, followed in three days by otorrhœa on the left side. Five had bronchial symptoms, and four pneumonia. One, a male, complained of globus hystericus. Rose spots were noticed in three cases only. Abdominal symptoms, such as tympanites, gurgling, and tenderness of abdomen, were well marked in nine cases. Six had diarrhœa. In five there was slight delirium. Nausea occurred in two cases, in one of which it was continuous throughout. In two, who were cousins, the eyelids were observed to be œdematous.

The highest temperature was 109° F., fifteen minutes before death; at the time of death it fell to 108.5° F. In six cases it was 104° F. or over. The pulse rose to 120 or over in every case. In seven it was over 130; in five, 150; in one, 180; and in one 185. The last two cases were fatal; in one it rose till death, and in the other it fell during the two days preceding death from 185 to 150. The highest respiration was 56. In ten cases it rose to 30; in six to 35; and in four to 40. One had dysenteric discharges, with tenesmus, and vomited matter like verdigris twice. She recovered.

Two of the cases were fatal from intercurrent pneumonia; the rest recovered. Besides the eleven cases above mentioned, two others appear to have been aborted by an emetic of ipecac, exhibited at the onset of the attack. I made no record of the fourteenth case, an irritable child two and a half years old. These children, with one exception, were previously healthy. One of the fatal cases was convalescent from the fever and had a relapse.

Treatment.—Nourishing food, stimulants and quinine; ipecac emetics in four cases; mild expectorants and astringents for bronchial irritations and diarrhœa; turpentine stupes to the abdomen for tympany; Dover's powder and bromide of potassium *pro re natâ*. The acid treatment recommended by Chambers was perseveringly employed in all.—*Boston Medical and Surgical Journal.*

CASE OF MALIGNANT CHOLERA TREATED BY NITRATE OF AMYL AND HYDRATE OF CHLORAL.

By Edwin Fairland, L.R.C.P.Ed., Staff-Surgeon, Lucknow.

Private J. C., 8th Royal Irish, confined in the Lucknow Military Prison, aged 36, in service fifteen years and nine months, in India one year and eight months, of bilious temperament, and of previous good health, was seized with an attack of malignant cholera at 9.45 a. m. on June 22d, 1876. In the previous week, there had been two other cases of cholera in the prison, terminating fatally in seven hours each. Both cases were of the most malignant type.

He had suffered for two or three hours from slight fæcal diarrhœa when the symptoms of cholera manifested themselves, and he was at once removed to hospital. The symptoms on admission were constant and severe purging of rice-water motions; very severe cramps in the abdomen and legs, the abdominal muscles being knotted up and feeling like a board under the hand; surface of the body cold and clammy; extremities very cold and livid in appearance; excessive thirst, accompanied by constant vomiting of watery fluid; facies cholerica strongly marked; conjunctivæ flattened; eyes sunken and a dark ring surrounding them; countenance livid and shrunken; breath and tongue cold; voice whispering. He was almost unconscious, being roused with difficulty; and apparently quite callous as to the result of his illness. The respirations were labored. The pulse at the wrist was barely perceptible and thread-like. He complained of great heat of body, and preferred to lie quite naked. Six hours after admission, he passed about two quarts of rice-water motion. After being under treatment, a slight reaction commenced, the extremities becoming warmer and the pulse slightly fuller—98 per minute; but the cramps and vomiting continued unabated. Prostration was very much marked; he could not raise his head from the pillow. The thirst was intolerable. The symptoms continued the same until twenty-three hours after admission, when he was again purged, passing about a quart of rice-water fluid. The cramps and vomiting were incessant; the temperature unaltered. He dozed off to sleep at intervals. About forty hours after admission, reaction was fairly established; the eyes were becoming fuller and brighter; the

complexion lost its lividity; the tongue, breath and surface became warmer; the pulse fuller, 98; respirations easier, 14 a minute. About fifty hours after the seizure, he complained of pain in the back and limbs and great debility, and became very restless sinking down to the foot of the bed, and very despondent. Thirst was extreme and vomiting incessant. The cramps occurred at long intervals, There was no purging. He was slightly incoherent and wandering in his ideas, though conscious when sharply spoken to; he had occasional muttering and great restlessness. Sixty-nine hours after the seizure, and for the first time since early on the morning of the seizure, he passed twelve ounces of urine. His bladder had been empty up to this time. On the morning of the fourth day, the conjunctivæ became highly inflamed; the skin remained moist and warm; pulse regular and full. He voided about eight ounces of clear and limpid urine. He continued very restless, complaining of headache. At 9. p. m. he passed a large quantity of urine. The purging had completely ceased. He had been sleeping. The thirst continued; the vomiting had ceased. The inflammation of the conjunctivæ was diminishing. There was no headache; his mind was clear; great debility remained. On the sixth day, the bowels were opened by castor oil, the motions being normal. From this time he continued to improve. The debility was overcome by appropriate nourishment, and, on the tenth day, he was removed to another hospital for change.

Treatment. Soon after admission, I gave him five minims of nitrite of amyl by inhalation, and continued this steadily every half hour until twenty hours after admission, when it was inhaled hourly for fourteen hours more. It was then administered every two hours in the same doses until fifty-six hours after admission, when it was discontinued altogether, reaction having been well established. Five drachms had been inhaled altogether. I also hypodermically injected hydrate of chloral in two-grain doses—strength of solution 1 in 10. Of this drug, sixty-four grains were injected altogether, at intervals of about two hours, in the arms, legs, and twice over the epigastrium. No evil results locally followed any of these injections. About twenty-nine hours after his seizure, the following mixture was taken every two hours: ℞—Liquoris ammoniæ acetatis, ʒij.; potassæ nitratis gr. xv.; spiritus ætheris nitrosi, ʒj.; olei juniperi ℥ij.; aquæ ℥j. M. After taking this medicine for twenty-eight hours, the kidneys resumed their function, and twelve ounces of urine were passed. His body was frequently sponged over with tepid vinegar and water. Sinapisms were applied over the kidneys, and, on the third day, I allowed him a small quantity of beer, which he retained, and which seemed to promote diuretic action. During the whole time he was allowed to drink as much soda water and ice as he needed.

In concluding these notes, I wish to say that I have recorded them for the sake of information; a much more extended expe-

rience being necessary to prove whether either or both the two drugs relied on in this case had any real curative power over the disease that has hitherto proved so unmanageable. I was induced to try the nitrite of amyl by reading some remarks on its action by Dr. B. Richardson; and last October, a case occurred in the military prison very strongly resembling cholera, in which I tried it with the most satisfactory results, warmth and animation to the collapsed system being almost immediately restored by its use. I have also employed it in a few native cases of cholera with more or less satisfactory results; but it is not easy to employ amyl in such cases and note the results with the same accuracy as in European cases.

I used it also in the two cases of cholera referred to in the opening lines of these notes; but the disease had seized the poor fellows with such full force, that nothing short of a perfect antidote to cholera could have saved them.—*British Med. Jour.*

VACCINATION DURING THE PERIOD OF INCUBATION OF SMALL-POX, ILLUSTRATED BY CASES.

By W. M. Welch, M.D.,

Physician to the Small-Pox Hospital of Philadelphia.

In his article on "Small Pox," in Ziemssen's Cyclopædia of the Practice of Medicine, Dr. Curschmann writes as follows:

"Are we able to exert any influence on the disease in the early stage preceding the eruption? Is it possible in infected persons during the stages of incubation and invasion to cut short the disease or to modify its course? Many attempts have been made to answer these questions affirmatively, but as yet without much result. The first idea was vaccination, and this was employed by some in the ordinary way; by others, subcutaneous injections of vaccine lymph have been made, it is said, with good results (Furley, *Lancet*, May 25, 1872). I must, however, advise great skepticism regarding these assertions. Of the subcutaneous injection of lymph I have no experience; but that ordinary vaccination during the stages of invasion and incubation cannot stay the disease has been proved to me by chance observation and direct experiments. On the contrary, I have seen, in cases in which vaccination was practised after infection with variola, vaccine pustules and small-pox pustules develop side by side. It is, in my opinion, very doubtful whether vaccination can even render the course of the disease milder."

I also have no experience in the hypodermic use of vaccine lymph, and can say with Dr. Curschmann that I have frequently seen the vaccine vesicle and the variola pustules develop side by side, with no modification of the disease. This fact, so well established, should, I think, be regarded as proof that vaccine lymph introduced subcutaneously during the invasion of small-

pox is incapable of exerting any remedial power over the disease. Among the facts in the cases furnished below, one is that the prophylactic power of vaccination does not become manifest until the system has been brought fully under the influence of the vaccine disease, and this does not take place before the maturation of the vesicle. This being true, it is then about as inconsistent with reason to use vaccine lymph subcutaneously as a curative agent in small-pox, as is the homœopathic practice of administering it by the stomach.

I cannot, however, indorse the unqualified statement of Dr. Curschmann, notwithstanding it is based upon his own experience—namely, that vaccination during the stage of incubation of small-pox cannot stay the disease, nor even render its course milder. Among the cases furnished below may be found several striking examples of vaccination after exposure wholly preventing the occurrence of the disease; and also several examples of its power to modify the course of the disease. In order to obtain either of these results, it is, of course, necessary that the vaccination should not be too long delayed after exposure has taken place. The duration of the stage of incubation of small-pox has been found to be most frequently from nine to thirteen days. In the cases where I have been able to fix it definitely, I have found it to be about ten days in the larger proportion of them—*i. e.*, the initial fever appearing on the eleventh day, and the eruption on the thirteenth after exposure. Now, if vaccination is performed shortly after the reception of the variola contagion, the vesicle, if it runs a typical course, will arrive at maturity before the time of the expected outbreak of the disease, and will, consequently, prevent its occurrence; or, if the protection should not prove complete, the course of the disease will certainly be very much modified. When neither of these results follows, my experience would lead me to believe that the vaccination is in some way at fault.

But, if the vaccine vesicle has not reached or very nearly reached its maturity, or, to be more definite, if the vesicle has not arrived at its seventh or eighth day of development before the outbreak of small-pox, no modifying influence may be expected from it. Not only may the vaccine vesicle and the variola eruption develop side by side, but the former may even arrive at maturity some days in advance of the latter without exerting any modifying influence over the course of the disease.

As illustrative of the foregoing remarks, I submit the following brief histories of fifty persons in whom vaccination was performed after exposure. Before doing so, I would remark that the majority of these persons were exposed to the variola contagion before entering the Municipal Hospital, where they were observed, and that all of them were thus exposed after admission; and, also, that the vaccinations were primary ones in every instance. And I would call attention, particularly, to the results attending the vaccinations performed in the hospital, for

they were all done by myself, and with virus known to be reliable. It is chiefly upon these results that the conclusions already expressed are based.

No. 1.—*Perfect protection.* An infant, æt. 6 months, suffering from a cutaneous disease (not small pox), was sent to the hospital as a case of variola; vaccination after admission; "took" well; remained in hospital nine days; enjoyed immunity from small-pox.

No. 2.—*Perfect protection.* A girl, æt. 17 years, suffering from measles, was sent to the hospital as a case of variola; vaccination after admission; "took" well; enjoyed immunity from small-pox.

No. 3.—*No protection.* An infant, æt. 5 months, was admitted without disease, in company with its mother, who had small-pox; vaccination after admission; "took" well; about seven days after vaccination the variola eruption appeared; disease not modified; death ensued.

No. 4.—*No protection.* A boy, æt. 14 years, admitted with variola; vaccination about five days previously to the appearance of eruption; the vesicle and the eruption developed side by side; disease not modified; recovery.

No. 5.—*Partial protection.* A child, æt. 14 months, admitted with varioloid; vaccination seven days previously to the appearance of eruption; "took," but not actively; disease only very slightly modified; recovery.

No. 6.—*Partial protection.* A girl, æt. 15 years, admitted with varioloid; vaccination eight days previously to the appearance of eruption; "took" well; disease only slightly modified; recovery.

No. 7.—*No protection.* A girl, æt. ten years, admitted with variola; vaccination nine days previously to the appearance of eruption; apparently "took;" disease not modified; eruption confluent; death ensued.

No. 8.—*No protection.* An infant, æt. 7 months, admitted without disease, along with its mother, who had small-pox; vaccination after admission; six days subsequently the variola eruption appeared; the vaccine vesicle and the eruption developed side by side; disease not modified; death, preceded by convulsions.

No. 9.—*No protection.* A girl, æt. 23 years, admitted with variola; vaccination eight days previously to the appearance of the eruption; a retarded vesicle developed; disease not modified; eruption confluent; death ensued.

No. 10.—*Perfect protection.* An infant, age not recorded, admitted without disease, in company with its mother, who had small-pox; vaccination shortly before admission; "took" well; enjoyed immunity from small-pox.

No. 11.—*Partial protection.* A youth, æt. 18 years, admitted with varioloid; vaccination eleven days before the appearance of eruption; "took," though not in a typical manner; disease very much modified; recovery.

No. 12.—*No protection.* A girl, æt. 19 years, admitted with variola; vaccination three days before the appearance of eruption; the vesicle and the eruption developed side by side; disease not modified; recovery.

No. 13—*No protection.* A boy, æt. 14 years, admitted with variola; vaccination three days before the appearance of eruption; the vesicle and the eruption developed side by side; disease not modified; eruption confluent; death ensued.

No. 14.—*Partial protection.* A boy, æt. 12 years, admitted with varioloid, at the first day of the initial fever, in company with members of the same family suffering from small-pox; vaccination seven days before admission, or nine days before the appearance of eruption; "took" tolerably well; disease very much modified; recovery.

No. 15.—*No protection.* A boy, æt. 10 years, admitted with variola; vaccination six days before the appearance of eruption; "took" tolerably well; disease not modified; recovery.

No. 16.—*Perfect protection.* A healthy, well-developed infant was born in hospital, December 13, 1871, of a woman undergoing an attack of small-pox; vaccination was performed on the 13th, 14th, 15th, 16th and 17th; a small vesicle developed from the last insertion; remained in hospital twenty days; enjoyed immunity from small-pox.

No. 17.—*No protection.* A woman, æt. 31 years, admitted with variola; vaccination eight days before the appearance of eruption; "took," but not very actively; disease not modified; recovery.

No. 18.—*No protection.* A child, æt. 5 years, admitted with variola; vaccination five days before the appearance of eruption; the vesicle and the eruption developed side by side; disease not modified; recovery.

No. 19.—*No protection.* A girl, æt. 16 years, admitted with variola; vaccination nine days before the appearance of eruption; a vesicle very much retarded, developed (about five days slower than its usual course); disease not modified; death ensued.

No. 20.—*No protection.* A girl, æt. 18 years, admitted with variola; vaccination four days previously to the appearance of eruption; the vesicle and the eruption developed side by side; disease not modified; death ensued.

No. 21.—*Perfect protection.* A healthy, well-developed infant was born twelve hours before admission, of a women undergoing an attack of small-pox; vaccination immediately after admission; two insertions on the left arm; on the following day, two insertions were made on the right arm; both of the latter "took"

well; remained in hospital twenty-six days; enjoyed immunity from small-pox.

No. 22.—*Partial protection.* An infant, æt. ten months, admitted with varioloid; vaccination (judging from the appearance of vesicle) about one week before admission; the vesicle and the eruption developed side by side; disease was apparently somewhat modified; recovery.

No. 23.—*Partial protection.* A child, æt. 3 years, admitted with varioloid; vaccination nine days previously to the appearance of eruption; took well; disease modified; recovery.

No. 24.—*No protection.* A boy, æt. 13 years, admitted with variola; vaccination seven days previously to the appearance of eruption; "took," but not very actively; disease not modified; recovery.

No. 25.—*Partial Protection.* A child, æt. 5 years, admitted with varioloid; vaccination ten days previously to the appearance of eruption; "took" well; disease modified; recovery.

No. 26.—*No protection.* An infant, æt. 7 months, admitted with variola; vaccination three days before the appearance of eruption; the vesicle and the eruption developed side by side; disease not modified; death ensued.

No. 27.—*No protection.* A youth, æt. 17 years, admitted with variola; vaccination eight days previously to the appearance of eruption; three retarded vesicles developed; disease not modified; recovery.

No. 28.—*Perfect protection.* An infant, æt. 10 months, admitted without disease February 18, 1872, in company with its mother, who had varioloid, which disease was advanced to the fourth day of eruption; continued to feed from its mother's breast; vaccination was performed immediately after admission; "took" well. February 26th, two convulsions; no further sickness; remained in hospital fourteen days; enjoyed immunity from small-pox.

No. 29.—*Almost perfect protection.* An infant, æt. 5 months, admitted without disease, in company with its mother, who had small-pox, and from whose breast it was nursing; vaccination after admission; "took," but not very actively; on the eighth day after vaccination the variola eruption appeared, consisting of only a few papules, which entirely disappeared in a day or two; remained in hospital twenty-six days, at the expiration of which time the child was suddenly seized with convulsions and died. (The convulsions were evidently not the result of small-pox.)

No. 30.—*Partial protection.* An infant, æt. 1 day, admitted without disease, along with its mother, who had just given birth to it prematurely while undergoing an attack of small-pox; vaccination on the same day of its birth; "took" well; nine days subsequently a very light variola eruption appeared; disease

modified; during convalescence was seized with convulsions, and died.

No. 31.—*Perfect protection.* A healthy, well-developed infant was born in hospital, April 4, 1872, of a woman who did not have small-pox, but was admitted to take care of a child sick with that disease. The infant was vaccinated both on the 5th and the 6th; four insertions were made, all of which "took" well; remained in hospital twenty-nine days; enjoyed immunity from small-pox.

No. 32.—*No protection.* A child, æt. 3 years, admitted with variola; vaccination four days previously to the appearance of eruption; the vesicle and the eruption developed side by side; disease not modified; death ensued.

No. 33.—*Almost perfect protection.* An infant, æt. 1 month, admitted without disease, in company with its mother and other members of the family, who had small-pox; vaccination after admission; two insertions were made, both of which "took" well; seven days after the vaccination a slight variola eruption appeared, consisting of only three or four small vesicles, which speedily disappeared; all the other symptoms of the disease were also exceedingly slight; in hospital only ten days (counting from the first appearance of eruption).

No. 34.—*Partial protection.* A child, æt. 10 years, admitted with varioloid; vaccination ten days before the appearance of eruption; two insertions were made, both of which "took" tolerably well; disease modified; recovery.

No. 35.—*No protection.* A child, æt. 2 years, admitted with variola; vaccination seven days previously to the appearance of eruption; "took," though not in a typical manner; disease not modified; death ensued.

No. 36.—*Perfect protection.* An infant, æt. 9 months, admitted without disease, in company with members of the same family suffering from small-pox; vaccination after admission; four insertions were made, all of which "took" well; remained in hospital fourteen days; enjoyed immunity from small-pox.

No. 37.—*No protection.* A child, æt. 6 years, admitted with variola; vaccination ten days previously to the appearance of eruption; a retarded vesicle developed; disease not modified; death ensued.

No. 38.—*No protection.* A child, æt. 9 years, admitted with variola; vaccination eleven days previously to the appearance of eruption; a retarded vesicle developed; disease not modified; recovery.

The last two cases were members of one family; they had both been vaccinated at the same time, and, doubtless, with the same virus.

No. 39.—*Perfect protection.* A child, æt. 1 year, admitted without disease, in company with members of the same family suffer-

ing from small-pox; vaccination after admission; two insertions were made, both of which "took" well; remained in hospital twenty days; enjoyed immunity from small-pox.

No. 40.—*Perfect protection.* A child, æt. 2 years, admitted without disease, in company with members of the same family suffering from small-pox; vaccination after admission; two insertions were made, both of which "took" well; remained in hospital nineteen days; enjoyed immunity from small-pox.

No. 41.—*Partial protection.* A child, æt. 3½ years, admitted without disease, in company with members of the same family suffering from small-pox; vaccination after admission; two insertions were made, both of which "took" well; five days after vaccination the variola eruption appeared; disease apparently modified; recovery.

No. 42.—*Partial protection.* A girl, æt. 18 years, admitted with varioloid; vaccination eleven days previously to the appearance of eruption; "took," but vesicle was somewhat retarded; disease only slightly modified; recovery.

No. 43.—*No protection.* A girl, æt. 16 years, admitted with variola; vaccination five days previously to the appearance of eruption; the vesicle and the eruption developed side by side; disease not modified; recovery.

No. 44.—*No protection* A girl, æt. 7 years, admitted with variola; vaccination eleven days previously to the appearance of eruption; apparently "took;" disease not modified; eruption confluent; death ensued.

No. 45.—*No protection.* A child, æt. 5 years, admitted with variola; vaccination nine days previously to the appearance of eruption; apparently "took" well; disease not modified; death ensued.

No. 46.—*No protection.* A child, æt. 2½ years, admitted with varioloid; vaccination ten days previously to the appearance of eruption; apparently "took" well; disease not modified; death ensued.

The last three cases were from one family. They had all been vaccinated at the same time, and, doubtless, with the same virus.

No. 47.—*No protection.* An infant, æt. 6 months, admitted with variola; vaccination nine days previously to the appearance of eruption; aparently "took," but not well; disease not modified; death ensued.

No. 48.—*No protection.* A child, æt. 20 months, admitted without disease, in company with members of the same family suffering from small-pox; vaccination after admission; four days subsequently to vaccination the variola eruption appeared; the vesicle and the eruption developed side by side; disease not modified; recovery.

No. 49.—*Almost perfect protection.* An infant, æt. 3 months,

admitted without disease, in company with members of the same family suffering from small-pox, vaccination after admission; three insertions were made, all of which "took" well; eleven days subsequently to vaccination, a very light variola eruption appeared, consisting of about a dozen small vesicles which did not advance beyond the vesicular stage; the general health of the child was scarcely at all affected.

No. 50.—*No protection.* A girl, æt. 17 years, admitted with variola; vaccination nine days previously to the appearance of eruption; apparently "took" well; disease not modified; recovery.

An analysis of the above cases shows as follows. Of the fifty cases, ten were perfectly protected, three almost perfectly protected, eleven partially protected, and twenty-six unprotected. Of the eleven partially protected, one died, and that was an infant only a few days old, and of premature birth. Of the twenty-six unprotected, fifteen died—a death-rate of 57.69 per cent. Among those partially protected, the average length of time between the vaccination and the appearance of the variola eruption was 8.9 days; among those in which there was no protection it was 6.9 days.—*Medical Times.*

PLAIN DIRECTIONS FOR PREVENTING THE SPREAD OF INFECTIOUS DISEASES:

Small-Pox, Scarlatina (Scarlet Fever), Measles, Typhus Fever, Enteric (Typhoid or Gastric) Fever, Hooping Cough, Diphtheria, etc.

By J. M. Maclagan, M.D.,

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General Directions.—I. When a case of infectious Disease occurs in a house, immediate notice thereof should be given to the Medical Officer of Health or to the Inspector of Nuisances, and medical advice at once procured.

The following precautions should be taken:

1. *Isolate the person affected as much as possible from the other inmates of the house.*

This is most readily effected by at once removing him to an upper room if circumstances permit. The room selected should be large and airy, and the means of ventilating it, which shall be presently mentioned, at once adopted.

2. Before removing the patient, the following preparations ought to be made in the room:

All superfluous *curtains, carpets, woolen articles, unnecessary clothing*—in short, *everything likely to retain infection*, should be *at once removed.*

3. The patient's *bed* ought to be so placed as to allow of a *free current of air* around it, but not so as to place it in a *draught.*

4. *The room must be kept well ventilated*, under the physician's

direction, by means either of a fire (when required) or of an open fire-place and chimney, and of windows opening to the external air. By means of the latter, ventilation is most effectually procured, so as to avoid draughts, in the following manner:

Raise the lower sash of the window three or four inches, then procure a piece of wood made to fit accurately into the lower opening, and place it there. By these means free outward and inward currents of air—without causing any draughts—are obtained through the vacant space between the two sashes. *When a window is merely opened from the upper or lower sash, draughts are invariably caused.*

5. Placing a small sheet of oil-cloth, mackintosh, or other waterproof material, beneath the upper blanket on which the patient is to rest, effectually prevents the bed from being soiled by any discharges, etc.

II. After removal of the patient to the room in which he is to remain, the outside of the door and door-posts should be completely covered by a sheet kept constantly wetted with some disinfecting fluid, such as *Burnett's Solution*, *Condy's Fluid*, *Carbolic Acid*, *etc.*

2. The room must be kept scrupulously clean. Before being swept, which should be done daily, *if possible*, the floor should be sprinkled with *Calvert's* or *McDougall's Disinfecting Powders*, or with a weak solution of one of the disinfecting fluids already mentioned.

3. Vessels containing disinfecting fluids should be placed in the room for the reception of all bed and body linen, towels, handkerchiefs, etc., immediately on being removed from the patient, and on no account should they be washed along with other household articles

4. Disinfectants should also be placed in all the chamber utensils used by the patient, and, after use, more disinfecting fluid should be added, and the whole contents, if possible, should be immediately *buried*. *No chamber vessel should be allowed to remain in the room after having been used.*

5. All plates, cups, glasses, etc., which have been used by the patient, should be rinsed in some disinfectant before being washed; and on no account should any vessels used in the sick room be washed along with other things, unless previously thoroughly disinfected.

6. Attendants on the sick should not wear woolen dresses, but only those made of washing materials.

7. Basins containing water, to which some disinfectant has been added, should always be at hand for the benefit of the attendants on the sick, who should not be sparing of their use.

8. No article of food or drink from the sick room should be consumed by other persons.

9. Visitors to the sick room, except in the case of *clergymen* and *medical men*, should be peremptorily forbidden; and they, when necessarily present, should, on leaving, wash their hands

in water to which a disinfectant has been added, and should have as little immediate communication with others as possible.

III. When a death from infectious disease occurs, the body should be at once placed in a coffin, and sprinkled with some disinfecting fluid or powder, such as *chloride of lime, etc.*, and *buried with the least possible delay.*

2. *On no account whatever should it be allowed to remain in a room occupied by living persons.*

IV. *On the termination of a case of infectious disease,* either when the patient is pronounced *free from infection,* or, in the event of *death,* after *removal of the body,* the sick room and its contents should be thoroughly cleansed and disinfected.

2. The bed and bed clothes, and all wearing apparel used by the attendants or patient, should be *thoroughly disinfected.*

V. In houses where a case of infectious disease occurs no *washing, tailoring, dress making,* nor any similar occupation, ought to be carried on.

2. No *milk* or *food* of any kind should be supplied from infected houses.

3. *Children* from infected houses should not be allowed to *attend schools,* and *all persons* from infected houses should have as little communication as possible with others either in *private houses* or in public places, such as *railways, omnibuses, public-houses, churches,* etc.

4. Any accumulation of *filth* or *refuse* of any kind should be at once removed from or about the premises, and *disinfectants freely used.* If this cannot be done by the persons themselves, immediate notice should be given to the *Inspector of Nuisances.*

5. The existence of nuisances of any kind and wheresoever situated should be at once reported to the *Inspector of Nuisances.*

VI. During the prevalence of *epidemic, infectious* or *contagious diseases,* it becomes specially important that the general laws regarding the preservation of health should be rigidly attended to.

2. Implicit trust should not be placed in so-called "*disinfectants.*" They are very useful when judiciously employed, but are by no means *certain* "preventives of disease."

3. *Pure air, pure water, warm clothing* and *good food* should always be obtained if possible. By their constant use less chance is afforded for an invasion of disease.

4. *Temperance* both in eating and drinking is essential for the maintenance of health and the prevention of disease.

5. *Over-crowding* in houses, workshops or schools should be strictly prohibited.

6. All houses, cottages, schools and public rooms should be kept clean and well ventilated; and frequent use of lime-washing on the walls and ceilings should be made.

Special Directions.—I. Scarlatina and Scarlet Fever are one and the same disease. It is very infectious. A very *mild* case may give rise by infection to a very *severe* one. Infection is contained in all discharges from the body during the progress of the disease and recovery; but more especially from the skin during convalescence, and when the cuticle is being shed. The dry particles which are separated from the skin are highly infectious, and retain their infectious nature for an unknown time, unless thoroughly disinfected. They are disseminated through the air, and become attached to articles of furniture, clothing, draperies, and wall papers, etc. Thus the disease may readily be conveyed from one person to another by those who are not themselves suffering from it. It is also conveyed, as has been mentioned, by bedding, clothing, furniture and other articles, and by rooms which, having been exposed to infection, have not had their floors, ceilings, or walls disinfected, or had the wall papers removed.

No child should be permitted to go to school from an infected house, and communication of such in play or otherwise with healthy children should be prevented.

When a person has had the disease, he should not be permitted to mix with others until he has perfectly recovered and has had his clothes thoroughly disinfected; and not even then without the permission of his medical attendant. Nor is it advisable that any one who has had the slightest communication with a person suffering from the disease should go to any church, meeting, public-house, fair, or market, etc. Neglect of these precautions is a prolific cause of the spread of this disease.

Attendants on persons suffering from *Scarlatina* should be chosen, if possible, from those who have already had the disease.

"It is believed that the dispersion of contagious dust from the patient's skin is impeded by keeping his entire body (including limbs, head and face,) constantly anointed with oil or other grease; and some practitioners also believe this treatment to be of advantage to the patient himself. When the patient's convalescence is complete, the final disinfection of his surface should be effected by warm baths, with abundant soap, taken on three or four successive days (under the direction of the medical attendant), till no trace of roughness of the skin remains. After this process, and with clean clothes, he may be deemed again safe for association; but previously to this, however slight may have been his attack, he ought always to be regarded as dangerous to persons susceptible of Scarlatini."—Mr. Simon, *Medical Officer to Privy Council.*

II. Small-Pox.—Infection from this disease is contained in all matters passing from the patient—in the breath and from the skin, in the *matter* contained in the "pocks" and in the dried scabs of the latter.

Vaccination, carefully and efficiently performed, is the only means of preventing or modifying this disease, and by it an almost certain immunity from *death* by this disease is conferred. No doubt cases do occur after vaccination, but they are milder in character than those occurring in the unvaccinated. After several years' interval *re-vaccination* ought to be had recourse to; and whenever the disease is present as an "epidemic," every person should be vaccinated, whether he has been so previously or not; and at such times all *unvaccinated children*, whatever may be their age, if in a fit state, should be vaccinated without any delay.

There is nothing which has been more certainly proved than the fact that vaccination saves annually thousands of lives, and therefore no attention ought to be given to those ignorant and foolish persons who are constantly circulating absurd ideas regarding it.

Persons attending on patients suffering from small-pox, should themselves have had the disease, or should recently have been re-vaccinated.

III. Enteric (*Typhoid or Gastric*) Fever.—The mode in which infection is chiefly spread in this disease is by the poison contained in discharges from the patient's bowels, and lasts certainly as long as these discharges continue to be unnatural. It is believed, however, by some, that this disease is infectious in other ways. These discharges infect the surrounding air, the bed and body linen, and also all places used for their reception. Thus, if placed in a water-closet, cesspool, drain, privy, or ashpit, the sewers of a town or village, and through them the drains of houses, may, under certain circumstances, be the means of disseminating the disease. When drains into which these discharges have been thrown pass near to wells, the water contained in the latter has frequently been found to be perfectly unfit, indeed dangerous to use. By faulty construction of such drains, soakage is frequently caused either into wells or into the surrounding ground, rendering them directly the means of spreading the disease. Cisterns may become contaminated by having their overflow pipes terminating in drains; and even water supplied by a water company may become infected by gas being drawn into defective pipes during an intermittent supply.

Milk has frequently been found to be a fruitful medium for conveying the disease, either from having been placed in infected air, from which it has absorbed the poison, or from *milk-pails* having been washed, or the milk adulterated, with water containing the infection.

Great care should therefore be taken as to the source of the household milk supply.

The most certain and most deadly manner in which the poison of *enteric fever* is conveyed is by contaminated drinking water.

The most certain way of preventing this contamination of water is by immediately destroying the poison contained in the discharges as soon as they are passed by the patient.

Disinfectants should be placed in the chamber utensil before use; and immediately after being used more disinfectant should be added. Above all things, the use of disinfectants should be frequent and copious.

The patient ought also to expectorate into a vessel containing some disinfectant.

All sheets, towels, handkerchiefs, etc., which have been used by the patient should be thoroughly disinfected, and afterwards carefully washed.

In all cases of infectious disease, it may be as well that the patient use rags or pieces of old linen, etc. (in lieu of pocket-handkerchiefs), which may afterwards be burned.

When the bed or body linen is soiled, the soiled spots should be sprinkled with some disinfecting powder.

A small sheet of gutta-percha, mackintosh cloth, or other waterproof sheeting, placed below the upper blanket under the patient's body, effectually protects the bed from discharges, and is especially useful in this disease.

After the performance of any duty about a patient, the attendants should wash their hands freely in disinfected water.

The discharges should *never* (if it can possibly be avoided) be placed in a privy or water-closet, but should, after complete disinfection, be buried deeply in the ground, at a distance from any drain, well, or watercourse. On no account should they be thrown on to any ashpit or dunghill, nor into any cesspool.

IV. Other Infectious Diseases.—It is quite unnecessary to prescribe special rules for the prevention of the spread of *Typhus Fever*, *Measles*, *Diphtheria*, *Hooping Cough*, etc. The general directions given are sufficient guides as to what is necessary in cases of those diseases. Many recommendations might be made regarding them, but these belong more to the duties of the medical attendant than to the Medical Officer of Health, and therefore are omitted here.

Directions for Disinfecting Rooms.—Rooms which have been occupied by a person suffering from *infectious disease* should, on the termination of illness, be at once disinfected. To effect this thoroughly, all crevices round windows and doors and the fireplace should be closed by pasting pieces of paper over them. Lumps of sulphur (brimstone), one pound for every thousand cubic feet of space, should then be put into a metal dish, placed by means of tongs over a bucket of water. This being set fire to, the doors should be closed, and the room should be allowed to remain without interference for three or four hours. After this time the windows should be thrown open, and when the fumes have disappeared, all the woodwork

and walls should be thoroughly washed with soft soap and water, to which *carbolic acid* has been added (one pint of the common liquid to three or four gallons of water), and the paper from the walls stripped off. In whitewashed rooms the walls should be scraped, and then washed with hot lime, to which *carbolic acid* has been added. The windows should then be kept open for thirty-six or forty-eight hours.

Directions for Disinfecting Clothing.—The best mode of effecting this is by the agency of *great heat*, and when this is possible no other plan need be tried. Unless, however, there are places built on purpose, this agency is hardly procurable. Failing this, *boiling* clothes in water to which some disinfectant has been added should be employed. *Carbolic acid*, one part of pure, or two parts of commercial acid to one hundred parts of water, is sufficient.

Woolen clothing cannot be treated in this manner, but must be exposed for some time to the fumes of *sulphur*, and afterwards freely exposed to the action of the sun and wind. Other methods of disinfecting linen and other washing materials may be used.

One gallon of water containing two ounces of *Chloride of lime*, or one fluid ounce of the solution of that substance or of *Condy's Fluid*, or four ounces of common *carbolic acid* solution, may be used. In this the clothes should be steeped thoroughly, and afterwards placed in boiling water, or simply boiled. If *Condy's Fluid* be used, the clothes should be merely immersed, and not allowed to remain for any time, otherwise they will be stained, but they must be rinsed in clear water. If any other disinfectants can be readily had, it is better not to use *Condy's Fluid* for this purpose.

Directions for Disinfecting Discharges of Persons Suffering from Infectious Diseases.—There are several disinfectants which may be used for this purpose.

1. Two pounds of *sulphate of iron* (copperas or green vitriol) dissolved in one gallon of hot water, may be used either hot or cold.

Half a pint or so of this solution should be placed in all chamber vessels likely to be used by the patient when empty, and the same quantity should be poured over the contents after use.

2. Quarter of a pint of *Calvert's Liquid Carbolic Acid* in one gallon of water may be used in the same manner.

3. A like quantity of *Sir William Burnett's Disinfecting Fluid*, or,

4. Of *Condy's Fluid* may be similarly employed.

Directions for Disinfecting the Hands of Attendants.—After any duty connected with a patient suffering from *infectious disease*, the hands of attendants should always be put

into one of the above solutions, prior to being washed in clear water.

DIRECTIONS FOR DISINFECTING PRIVIES, ASHPITS, WATER-CLOSETS, DRAINS, OR ANY OFFENSIVE PLACES.—Two or three pounds (according to circumstances) of *sulphate of iron* (copperas or green vitriol) dissolved in a gallon of water, may be thrown into the place requiring disinfection, in quantities of one quart or upwards, according to the necessities of the place, and repeated so long as offensive odors exist.

Carbolic acid, Burnett's Solution, Condy's Solution, Calvert's or McDougall's Powders, and Cooper's Patent Salts (the latter are inexpensive and not dangerously poisonous disinfectants), may all be used either separately or in conjunction for this purpose. All these articles when sold have full information regarding the quantities necessary for different purposes given with them.

It must be remembered that most of these disinfectants are very poisonous, therefore great care in their employment must be taken. They should be kept entirely out of the reach of children, should not be put into bottles or receptacles generally used for other things, and should invariably have a "Poison" label attached.

With regard to the employment of *disinfectants*, it should be distinctly understood that they are merely *aids* in preventing the spread of infectious diseases, and that they must not by any means be trusted to entirely for that purpose.

In the event of *sewer gas*, continued *offensive odors* or *constant sickness* occurring in a house, proper workmen should be obtained in order to see if any structural defects exist in sinks, drains, water-closets, privies, etc. If such should exist, disinfection merely will be of no avail.—*The Sanitarian.*

BABY FEEDING.

Extracts from "La France Medicale," Paris.

NOTICE OF THE MILK FOOD, OR LACTEOUS FARINA.

By G. Monod, M.D., Professor of the Faculty of Medicine at the Academy of Paris.

I deem it useful to call the attention of physicians to this aliment, which seems to me destined to render the greatest services in the nutrition of infants, and debilitated adults with whom milk agrees.

Mr. Nestlé, a chemist of Vevey, has aimed at manufacturing for young infants an article of food, easy of digestion, and possessing the same chemical bases as woman's milk. He succeeded in getting up a powder, which he has designated under the

name of Lacteous Farina, now called Milk Food. That powder is made of perfectly pure cow's milk, concentrated in vacuo at a very low temperature, of wheat bread which has been submitted to a very great heat,* and of cane sugar—in scientifically established proportions; the whole being reduced into a yellowish-white powder. Without entering into the details of chemistry, which is not the aim of this notice, it will be sufficient to say that, according to the analysis of Mr. Barral, the "Milk Food" contains in 1000 parts, 19.50 of azote, and 7 of salts; therefore the solution of 1000 parts of that powder in 3000 parts of water, gives a milk which contains in 1000 parts 4.87 of azote and 3.70 of salts, whereas woman's milk contains 4.83 of azote and 2 of salts in 1000 parts. One can see that the two liquids are about identical as to their chemical elements; the little difference which exists between them is in favor of the Milk Food. By lessening the quantity of water used with the powder, one obtains a pap which has twice or three times the nutritive value of woman's milk, according to the proportion of water. Mr. Nestlé has published on the subject of his Milk Food a short and judicious pamphlet, in which, after acknowledging that nothing can replace for the infant its mother's milk, if she possesses the qualifications of a good nurse, he shows the evidence of the great advantage of being able to substitute for the mother's milk, so frequently insufficient or imperfect, an aliment analogous to that milk.

Experience proved before long the (correctness) of the theory which had induced Mr. Nestlé to manufacture his powder. The Milk Food is in general use at Vevey for the alimentation of infants, and begins to be used all over Switzerland, and in Germany; and at London, the consumption of that food increases rapidly. Imported into Paris, without noisy advertisements, it is as yet but little known. My attention was called to it last year by a client coming from Vevey (Switzerland), and I have often, since that time, had recourse to it for the feeding of infants and debilitated adults with whom milk agreed, and I have almost invariably had occasion to congratulate myself upon the choice of that aliment. There are but few children who do not take it with pleasure, and who do not digest it easily. I do

* The experiments of Mr. Barri have proved that in bread submitted to a very high temperature, the gluten is turned into a soluble matter, which is more azotized than the juice of meat.

not hesitate to prescribe the "Milk Food" in preference to cow's milk, when the mother's milk has to be replaced. The pap made with this powder seems also to me much to be preferred to all the soups, broths, etc., generally given to children. This pap seems so digestible that I recommend it after the age of six weeks. In his pamphlet, Mr. Nestlé gives excellent directions for the use of his powder. 12 to 15 grammes of powder with 100 grammes of water, make a milk easy to give with the bottle; it must be freshly prepared and have the temperature of the blood. 25 to 30 grammes of powder to 100 grammes of water are required to make the pap. The quantity of Milk Food to be given daily varies according to the age and constitution of the child. Both for the milk and for the pap, the liquid must be brought to ebullition so as to have it well intermingled. That cooking is quickly obtained—an important circumstance of itself, for it is preferable that the preparation be always made just before using. It is to be desired that the use of Nestlé's Milk Food may become general in Paris.

(*From "La France Medicale," Paris.*)

HYGIENE OF INFANCY—IN REGARD TO THE ALIMENTATION OF YOUNG INFANTS WITH THE "MILK FOOD."

By Dr. Morpain, President of the Medico-Practical Society of Paris, etc.

During the several years that I have been consulting manager of one of the three dispensaries of the 10th Arondissement of the City of Paris, Parmentier ward, district of the St. Louis Hospital, I have frequently found myself in presence of almost insurmountable difficulties when required to give advice on breast-feeding, weaning, or the alimentation of new-born infants.

That advice was, on a monthly average, asked for by a hundred mothers or wet-nurses. The prescriptions of the physician had to exert a very positive control over that ever-floating population of the gratuitous consultation clientelle, when the impression of the practitioner at first sight is, that what he says will not be listened to. But example proves the contrary: the agglomeration of that needy population in this part of the district, establishes between the various families an increase of control. One witnesses very often the fact, a prescription having been successful with one family, that at the next consultation hour

a crowd of people present, in their opinion, identical cases to the one just attended to, and request the same treatment.

I am, for that reason, enabled to see, in regard to breast feeding, how difficult it is to have a fixed and settled opinion on that form of alimentation, and how complex are the causes which influence the determination which the practitioner must take when consulted "*ex abrupto*" by a nursing mother. But with what nursing mothers have we got to deal among that poor population of overloaded families! They feed their infants only with the help delivered to them by the Maternal Society, and with the interest they inspire in the consulting physician.

The practitioner sees passing before him the whole cortege of "*gastrology of misery*," *wet-nurses cramps*, and yet the mother does not wish to give up nursing, but comes to seek advice about the alimentation of her offspring.

Then, we meet with mothers who bring up their infants with the bottle and various foods; and we are consulted about the affections resulting from that irregular regimé. Then again, there are brought to us infants returned to their mothers by mercenary nurses, and in what state!

For several years I did my best. I watched, as best I could, both infants and mothers, and, in presence of the poor results obtained through my advice, I felt happy, because I had sought *in good faith* the best condition of artificial alimentation.

Meanwhile, having carried my studies to other classes of society, I very soon perceived that at the top as well as at the bottom of the social ladder, this question of the feeding of infants had to be retaken—that it needed studies and earnest experiments.

I believe, to-day, the question to be ripe, and I have reason to think that the academies and the administration will do their duty.

Toward the end of the year 1868, while prosecuting my researches about the alimentation of infants, I saw among my clients a five-months' infant which the parents had just withdrawn from its wet-nurse, in a state of complete marasmus. My advice was to have recourse to a good wet-nurse on the spot. My advice was not followed, the family being unwilling to hear of breast nursing—and there I remained with them.

Some time afterwards they brought me that very infant, on the health of which I had expressed unfavorable doubts. Three months had elapsed since my first call, during which I had caused

the infant to be weighed and had found it to be then 4 kilog. 100 grammes. It was re-weighed at this time, and I noticed that its weight had increased by 2 kilog. 900 grammes. I inquired of the regimé they had followed with it, and they answered me that the infant had been feeding exclusively upon the "*Milk Food.*"

Struck with this result, I asked of Mr. Christen, druggist at Paris, to place at my disposal the quantity necessary to aliment my clientelle of nurses and infants at the public dispensary. That request was so well complied with, that it enabled me to make during ten months various clinical experiments with that product.

Those experiments were made *en masse.* Alone and without guide to oversee all my help, how much have I since regretted to have known too late of the thesis of my colleague, Condereau; It would have guided me in the construction of tables, and I would thus be able to supply traces of my sucklings.

I do not wish either, by fastidious repetition, to publish observations which would be wearisome by their monotony, or repeat here in detail the difficulties I had to overcome to obtain more or less exact information. The stake was, so to say, won when the mothers, having noticed *the rapid action of the Milk Food*, constituted themselves as observers, and thus relieved me in my researches.

I refer the reader to the pamphlet of Mr. Nestlé, in which he explains the preparation of his powder. It is, however, a fact, that its constituents give 20 per cent. of ashes, whereas the best woman's milk produces but 2½ per cent. The numerous testimonials from Germany, Switzerland, New York, by Drs. Dunster, Jacobi, and Hull, are the best guarantee for my confrères of France who will propagate its use.

From the month of May, 1869, to December of same year, within eight months, I put *one hundred infants* belonging to needy families, upon the more or less exclusive use of the "Milk Food," those infants being from *one month to two years old.*

60 infants were *one to three months old.*
20 " " *three to nine months old.*
20 " " *nine to twenty-four months old.*
59 were girls.
41 " boys.

In my private practice I had, at the same time, selected 20

infants from *one to thirteen months old.* Out of the *one hundred* infants taken care of at the dispensary, 20 died during the course of my experiments; they are to be divided thus. Out of the sixty infants one to three months old, 14 died. These deaths were stated to have been mostly caused by the bad condition of the nursing mothers. Many were carried away by an epidemic of measles, which was then preying upon all the population of the district. In all those cases I was able to keep the infants on the maternal breast, and not to deprive the mothers of the provision granted to nursing mothers.

Out of the 20 infants three to nine months old, I had but two deaths, brought on by neglected eruptive affections. All that category of infants had been fed exclusively on the "Milk Food."

Out of the 20 infants nine to twenty-four months old, four deaths.

Thus, in the space of 8 months, I had to state a mortality of only 20 per cent., whilst in the same number and among the same population, the yearly mortality reaches 50 to 60 per cent.

Among the infants in my private practice, I had no death to report. Did I fall on a lucky series? I doubt it; for the maternal conditions are changed here—air, light, cleanliness, the attentions of the mothers or parents, present all guarantees of the certainties of longer life.

Of the remaining 80 infants fed on the "Milk Food," say in the shape of milk (20 grammes of powder with 100 grammes of water) I was able to remark daily increases in weight which averaged 25 to 30 grammes.

Where all cares were bestowed, the development of the infant was more normal; seldom did the average of weights fall below the averages of 25 grammes.

I thought, also, that the evolution of teething was more favorable, and that there was hardly any diarrhœa or lienteries. Finally, everything in my opinion militated in favor of that product.

I do not wish, in this short review, to place in comparison the "Milk Food" with the various other foods I had before had recourse to with infants. I should have then been compelled to place myself under such conditions of experimentation that years would hardly have been sufficient to treat the question. At any rate, in presence of the conscientious experiments to

which I devoted myself, my conclusions, although seemingly presumptuous, can be stated thus:

1st. The "*Milk Food*" is to be preferred to maternal milk when the mother does not fulfil all the conditions of a good nurse.

2d. In the great majority of cases, one can, with advantage, do without *mercenary nurses*,

3d. Finally, *Nestlé's Milk Food*, as an aliment, is superior to the milk of the ass, the cow, the goat, etc.

NOTICES OF NEW BOOKS.

Cyclopædia of the Practice of Medicine. Edited by Dr. H. von Ziemssen, Professor of Clinical Medicine in Munich, Bavaria. Vol. VII.—*Diseases of the Chylopoetic System, together with the chapters on Diseases of the Naso-Pharyngeal Cavity and Pharynx, Laryngitis-Phlegmonosa, Perichondritis Laryngea, Ulcerations and Tumors, and Neuroses of the Larynx.* By Prof. Hermann Wendt, of Leipzig; Prof. W. Leube, of Jena; Dr. O. Leichenstern, of Tubingen; Prof. Arnold Heller, of Kiel; Prof. H. von Ziemssen, of Munich, and Dr. A. Steffen, of Stettin. Translated by Anthur V. Macan, M.D., of Dublin; Edward W. Schauffler, M.D., of Kansas City; etc. Albert H. Buck, M.D., New York, Editor of American Edition. New York: William Wood & Company, 27 Great Jones Street. 1876.

The most voluminous as well as the most valuable paper in this volume is by Leube, upon "Diseases of the Stomach and Intestines." This paper is prefaced by preliminary remarks upon the anatomical position and structure of the stomach, and upon its physiology. Then follow treatises upon Acute and Chronic Gastritis, Ulcer, Cancer, Softening and Hemorrhage of the Stomach, Gastralgia, Dilatation, Contraction, and Rupture. These various subjects are treated in a clear and perspicuous manner. Diseases of the intestines are classified and discussed in a very similar manner.

The chapters upon Constrictions, Occlusions, and Displacement of the Intestines, contain a vast store of interesting and useful matter. General practitioners should welcome a publication which places within their reach so valuable a fund of prac-

tical information, in respect to lesions whose importance calls for accurate knowledge.

The volume also includes chapters upon "Intestinal Parasites," by Professor Heller, and various Diseases of the Larynx by Prof. von Ziemssen. The whole volume contains 1046 pages, printed upon excellent paper, with clear and beautiful type.

To the practising physician, money invested in this book will scarcely fail to prove as bread cast upon the waters.

Six Months Under the Red Cross, with the French Army. By George Halstead Boyland, M.D., ex-Chirurgien de l'Armie Française. Cincinnati: Robert Clark & Co.

This is a vivacious and amusing little volume. The sum total of solid lore it contributes to the profession is quite inconsiderable, but yet it will be found to contain interesting information. It assumes to be nothing more than a personal narrative, relating in a racy manner that which passed under the writer's observation. Yet throughout all the descriptions of battle scenes, army movements, or surgeon's work, whether in field or hospital, the astonishing fact is apparent that a powerful nation went to war with a still more powerful neighbor, with every department of its military service imperfectly organized and equipped.

A Practical Treatise on Diseases of the Skin. By Louis A. Duhring, M.D., Professor of Diseases of the Skin in the Hospital of the University of Pennsylvania; Physician to the Dispensary for Skin Diseases, Philadelphia; author of the "Atlas of Skin Diseases," etc. Philadelphia: J. B. Lippincott & Co. 1877.

It may be that the cheerful congratulations bestowed upon Piffard, the pioneer of American authors upon diseases of the skin, have stimulated the publication of a second book upon the same subject, although by a different author. The present author adopts the classification of his old master, Hebra, and makes frequent reference to him in the discussion of his most important subject.

It affords a very good test of a dermatologist's information

and skill, as exhibited in his writings, to cite in criticism of them his mode of discussing eczema. Professor Duhring describes eczematous eruptions under four designations—Eczema Erythematosum, Eczema Vesiculosum, Eczema Pustulosum, and Eczema Papulosum. Under these headings he discusses in a very concise, but perspicuous manner, the coëxistence of various forms, and the essential pathology of the disease. His treatment is divided into constitutional and local, and his instructions are severely plain and practical. The book is an octavo of 618 pages, well printed and illustrated. It may be ordered through George Ellis & Brother, 62 Camp Street, N. O.

The Electric Bath, its Medical Uses, Effects, and Appliances. By George M. Schweig, M.D., Member of the New York County Medical Society, and of the Medical Journal Association of the city of New York; one of the physicians to the New York Lying-In Asylum, etc. New York: G. P. Putnam's Sons, 182 Fifth Avenue. 1877.

The author states that the interest manifested in an article written by himself upon the subject discussed in the present volume, induced him to undertake the publication of the present volume.

Chapter I.—Describes the apparatus used.

Chapter II.—Mode of Administration,

Chapter III.—Physiological Effects.

Chapter IV.—General Therapeutic Effects.

Chapter V.—Special Therapeutics and Clinical Record.

The volume is a duodecimo of 134 pages, printed on good paper, and in every respect neatly published. It may be found at R. G. Eyrich's, 146 Canal Street.

Transactions of the Twenty-Sixth Anniversary Meeting of the Illinois State Medical Society, held in the city of Urbana, May 16th, 17th and 18th, 1876. Chicago: A. S. Kissell & Co., Book, News and Job Printers, 196 and 198 Clark Street. 1876.

The reports published in this volume are interesting and instructive. While we are not able to afford space for such com-

ments and extracts as would be required to give our readers a fair estimate of the value of these papers, we feel it to be a duty to notice one or two of the most important among them.

In a report on the "Ovulation Theory of Menstruation," by A. Reeves Jackson, A.M., M.D., he discusses the following propositions.

1. *At regular monthly periods, in the human female, and coincident with the monthly flow, an ovule is discharged from the ovary, is received into the Fallopian tube, and by it is transmitted to the uterus.* The report disputes such part of this proposition as sets forth the synchroneity of ovulation and menstruation, and states as counter propositions, that "*menstruation may occur without accompanying ovulation*," and "*ovulation may occur without accompanying menstruation.*" The 2d proposition discussed and disputed is, that, "*physiologically, the period of menstruation in woman corresponds with the œstrus or rut in animals.*" The points of difference between menstruation and the œstrus are summed up as follows.

1. When, during the œstrus, there is a discharge from the genitals (which is not always the case), it is mucous in character, and its source is chiefly the glands of the external organs; its object is to lubricate the parts, and, in some instances, by its odor to attract the male. In woman the discharge is blood, from vascular rupture; its seat, the mucous lining of the body of the uterus, and its presence an indication of the disintegration of that structure.

2. The excitement characterizing the œstrus is the only period during which the male is received, and the only time when impregnation is possible. In woman, while pregnancy is possible at any time, it usually occurs during the period of rest, that is, during the inter-menstrual period.

3. On the subsidence of the œstrus, there is a period of inappetence, during which the female not only no longer invites, but successfully resists the male approach. At the corresponding time in woman, sexual desire is commonly increased, and, in some, present at no other time.

4. The œstrus, or period of sexual desire, is necessary in the lower mammalia for the reproduction of the species. In woman, desire is not essential either for intercourse or impregnation.

5. Œstruation and ovulation in many animals are determined by changes in the seasons and the surrounding circumstances;*

* *Barnes, Diseases of Women*, p. 148, states that in the wild state the rabbit has only one or two litters a year, but when its young are taken away at a suitable time it has perhaps seven. So likewise the period of ovular maturation is changed in the case of the pigeon, domestic hen, etc.

and in some animals (deer) the semen is only elaborated at such times. In man, changes of season, etc., produce no such effect, and semen is secreted constantly.

6. The œstrus may be excited in some animals (the mare) by the importunities or teasing of the male. Menstruation is neither excited nor hastened by the presence of the male; on the contrary, undue excitement of the generative organs or of the sexual passion, seems frequently to have a tendency to arrest it, as witnessed in newly married women.

7. During the œstrus, both the male and female evince a desire for copulation. During menstruation the female has a delicate shrinking from the act, and the male likewise feels more indifference than at any other time, amounting in many cases to a positive repugnance.

8. The ovaries in the lower animals contain ripe ova *only* at the period of heat. (Bischoff.) In the human female, ripe ova are found at all times, without reference to the period of menstruation.

The foregoing points of dissimilarity are so distinctive and refer to such important features, that I feel warranted in denying that œstruation and menstruation are corresponding processes.

The 3d proposition is, that "*the removal of the ovaries is at once followed by a cessation of menstruation.*" This is disproved by the citation of cases which show regular recurrence of the discharge after extirpation of both ovaries.

The reporter, in conclusion, summarizes his argument as follows:

1. Ovulation and menstruation may each occur independently of the other.

2. Ovulation is the irregular but constant function of the ovaries; while menstruation is the regular, rhythmical function of the uterus. (Kesteven.)

3. Ova are matured and discharged from the ovaries at all periods of female life, from early childhood to old age, both before puberty and after the menopause; hence, the one cannot be the sign of the other.

4. Menstruation is the consequence of conditions established by the structurally completed uterus, and depends upon ovulation *only* for its origination.

5. The mucous membrane of the uterine body is the only organ essentially concerned in the menstrual act; the uterus proper, the ovaries, Fallopian tubes and vagina have their functional activity increased, however, by receiving a share of the general pelvic congestion which accompanies the process.

6. The menstrual congestion of the pelvic organs—of the

ovaries in particular—is, of all causes, the one most likely to determine the ovipont when a Graafian vesicle is sufficiently mature, and hence, ovulation and menstruation are frequently concurrent.

7. The theory that would make menstruation dependent upon ovulation fails to account for the possible occurrence of pregnancy at any and all times between the menstrual periods; for multiparous conceptions; for the frequent persistence of menstruation after the removal of *both* ovaries; for the non-interference with menstrual regularity by removal of *one* ovary; and for the menstrual derangements and the shifting of menstrual periodicity from mental emotion.

8. All the known facts in regard to both ovulation and menstruation are consistent with the theory that, after the latter is once established, the two functions proceed side by side, but independently of each other, the former occurring at irregular, and the latter at regular intervals; while, on the contrary, many of these facts are wholly inconsistent with the theory that assumes a necessary ovular maturity and rupture at each menstrual period.

Other interesting reports are upon the subjects of "Placenta Previa," and "Endocervical Suppository."

The Tonic Treatment of Syphilis. By E. L. Keyes, A.M., M.D., Adjunct Professor of Surgery and Professor of Dermatology in the Bellevue Hospital Medical College; Surgeon to the Bellevue Hospital, etc. New York: D. Appleton & Company, 549 and 551 Broadway. 1877.

The author states his theory and general plan of treatment in the following propositions:

1. Mercury is generally recognized as capable of overcoming the symptoms of syphilis and postponing their appearance; 2. Mercury in minute doses, long continued, is tonic.

Before going into a detail of the steps of treatment, I have only to add that I have now for many years carried out the plan of treating syphilis by the long-continued, unremitting use of small doses of mercury. This I did before I ever heard of the hématimètre, under the instruction and advice of my preceptor and partner Prof. Van Buren. Three years ago we jointly published our views on this subject.* Since then I have been at work upon the problem, and think I have established a firm

* Van Buren and Keyes's "Genito-urinary Diseases, including Syphilis." New York: D. Appleton & Co., 1874.

scientific justification of the treatment, which had before very amply justified itself clinically. Of late years I have been using smaller and smaller doses of mercury, and continuing their use for longer and longer periods, and feel satisfied that this has been a step in the right direction. I have also been using the iodides less, except in certain selected cases, where I believe they must be pushed unsparingly.

My experience leads me to state that syphilis, in private practice, is a very manageable disease; that a patient rarely has more than one full, general eruption (the first), during which his treatment was commenced. That subsequent lesions are of a trifling character for the most part, and tertiary symptoms are very rare. I rarely see iritis, and not often any appreciable loss of the hair. Mucous patches about the mouth and tongue, and throat-symptoms, are often obstinate, and their duration protracted. I am now in the habit of keeping patients two and a half or three years or more under treatment continuously, and then I see them marry and produce healthy children.

The bad cases of syphilis I meet have generally been overtreated or undertreated early in the disease, and have not pursued a regular systematic, continued course.

I think the method I shall now proceed to lay down in detail will succeed as well in the hands of others as it does in mine, provided it be carried out with conscientious exactness, and be persisted in with long-suffering patience by the physician as well as by the patient.

The book abounds in prescriptions and details of their administration and the general management of the disease by the author. It is neatly published, and we express our thanks to the publishers for the copy received.

Smithsonian Contributions to Knowledge—259—*Explorations of the Aboriginal Remains of Tennessee.* By Joseph Jones, M.D., Professor of Chemistry and Clinical Medicine in the Medical Department of the University of Louisiana, New Orleans. Washington city: published by the Smithsonian Institution, October, 1876.

Professor Jones does not estimate toil and labor as most mortals do, and I suppose he looks upon this production as a sort of spontaneous bantling of recreative employments during leisure hours. However that may be, it will form no unimportant stone in the construction of that enduring monument which his industry and research are surely constructing for him. In the May issue

it is proposed to make extracts from that portion of this work which relates to the prevalence of syphilis among the aborigines of Tennessee and other parts of the present United States.

Disinfection in Yellow Fever, as practised in New Orleans in the years 1870 *to* 1876 *inclusive.* By C. B. White, M.D., submitted to the American Public Health Association at Boston, October, 1876. New Orleans: John W. Madden, printer, 73 Camp Street. 1876.

This pamphlet sets forth, in a candid and intelligible manner, the degree of success attending experimentation in the use of means to arrest the spread of yellow fever in New Orleans. The author is well known as the late President of the Board of Health in this city, and also as a zealous, clear-headed and efficient hygienist. His conclusions are entitled to very high consideration: they are stated as follows.

If it be finally established that yellow fever can be controlled by the agents hitherto used, substantial progress has been made, and experiment may with safety and propriety be undertaken to secure similar results by other means more effective, or of less cost, or of more easy application or less unpleasant to the senses.

The experiment has latterly been conducted in as strict accordance with scientific method as is practicable with the means and intelligence engaged. To facilitate investigation maps were prepared, exhibiting at a glance the locality and date of appearance of all cases of the disease, and date and amount of disinfection of all premises. The real and apparent relation of cases to previous or subsequent ones, and the actual or seeming efficacy or inefficacy of disinfection, were carefully considered and the results recorded.

Great as are the difficulties which surround the experiment, if the process be continued sufficiently long, and in a scientific method, a result conformable to truth will be reached. In a series of observations conducted on correct principles, honestly made and recorded, the tendency is to eliminate errors, bring truth into prominence, and develop law.

In further continuing this experiment, those who have hitherto conducted it, claim that no adverse decision be rendered till the precise theory and mode of disinfection herein announced have been tried, methodically, minutely, patiently and repeatedly. Results may be but seemingly good or bad. Failures, as well as successes, may be only coincidences.

CORRESPONDENCE.

Letter from Chicago.

Mr. Editor—Medical matters in this city are progressing quietly but actively. The two regular medical schools (not counting the one exclusively for the education of females) are enjoying a fair degree of prosperity. The faculty of the Rush Medical College, whose building was destroyed in the great fire of 1871, have just completed and are occupying an excellent new building located near the new county or charity hospital in the West Division of the city. They adhere to the old system of requiring two courses of lectures of four months each, without grading of classes, and ending with one general examination for graduation. Their class of students in attendance numbers between two and three hundred. Their easy access to the hospital for the sick poor, called the Cook County Hospital, gives them great facilities for clinical instruction. The medical staff of the hospital embraces members of both college faculties and some who are not connected officially with any school.

The Chicago Medical College, which is the medical department of the Northwestern University, is equally well provided with good college buildings, located in the South Division of the city, in immediate connection with the Mercy Hospital and the South Side Dispensary, in both of which the faculty have full medical control, and are carrying out a very complete system of clinical instruction.

The Woman's Hospital Medical College is an institution also directly connected with a public hospital for women and children. It is located in the West Division of the city, has a full faculty of regular professors, only two of whom are females. The number of students in attendance, however, is small.

There are two active and well organized medical societies in the city, one called the Chicago Medical Society, the other the Society of Physicians and Surgeons. The regular meetings of both are held twice each month, but not on the same evenings, and many practitioners belong to both societies.

In addition to these medical societies we have a well organized Academy of Sciences, with a very creditable museum,

and among the most active working members are some of our physicians.

About two years since, the two regular medical journals formerly published here were united into one, and committed to the hands of an organization called the Medical Journal Association, members of which represent all the various institutions and interests of the city. The plan has thus far worked harmoniously and with reasonable efficiency; but it remains to be seen whether any general organization of such a character will permanently succeed in imparting as much active force and influence to a medical periodical as a single individual whose brain and pocket are alike responsible for its success. During the past year our city has been visited by no unusual sickness or epidemic disease, until in October, scarlet fever and diphtheria began to prevail moderately and with a moderate degree of severity. Both diseases continued slowly to increase through November and the first part of December, when the mortality from scarlet fever, as reported at the health office, reached 43 deaths in one week, and that from diphtheria about 30. From that time to February first, both diseases declined slowly until the deaths from diphtheria ranged between five and ten per week, and those from scarlet fever between twenty and thirty. The former disease has continued to decline until at present it attracts but little attention. During the first part of February, however, the mortality from scarlet fever again reached 41 deaths in one week, but from that point it declined so rapidly that the week ending February 17th gave only 23 deaths.

From the highly sensational articles in the daily press of this city, and the newspaper discussions in regard to specific remedies and preventatives, the impression has been created in the public mind that the city has been scourged with a terrible epidemic of these diseases. But during the five months of their prevalence, the average weekly mortality from both has not exceeded 40, which in a population of 400,000 cannot be regarded as indicating an epidemic of more than moderate severity.

During the progress of the present epidemic, nothing new has been developed concerning either the methods of prevention or of cure. One member of the homœopathic fraternity published a notice in the newspapers several times, claiming that he had discovered a remedy which was perfectly reliable both as a remedy and a prophylactic; and that it could be obtained at his

office for a moderate price. His remedy, however, proved to be simply sulpho-carbolate of soda, given in ordinary (not homœopathic) doses. Hundreds of trials have been made with this and other supposed prophylactics, but with no reliable evidence of success; and isolation of the sick, coupled with ventilation, cleanliness, pure water, and disinfection, still constitutes the most efficient means for limiting the prevalence of these diseases. During the present writing the prevalence of these diseases, and especially of diphtheria, has not been limited to this city, but has extended over all the northern part of the State, and across the Mississippi into Iowa. The profession in this city are beginning to look forward with some anxiety to the coming meeting of the American Medical Association, and will be prepared to give all who may come a cordial welcome. Harmony prevails among us, and the local Committee of Arrangements is already at work. We hope to be favored with a full delegation from the South. N. S. D.

Chicago, February 22d., 1877.

Letter from Vermillionville.

VERMILLIONVILLE, LA., Feb. 10th, 1877.

Dr S. M. Bemiss, New Orleans:

Dear Doctor—I take the privilege of addressing you, to solicit your opinion upon the following medical queries: What is the pathological condition upon which *eclampsia* is dependent? and what the most reliable treatment in those cases of post-partum convulsion we sometimes meet with?

Having been educated under Dr. C. D. Meigs' instruction, I naturally imbibed his ideas of the pathology and treatment of these cases; and believing as he taught, that the convulsions depend upon engorgement of the cerebral blood vessels, I have usually resorted early to blood-letting, but every time to be sadly disappointed, and the care of six cases that have fallen to my charge has completely changed my idea of the pathology and treatment of this terrible malady. I say terrible, for there is no ill to which human flesh is heir, that seems to strike more terror and dismay among those interested in a case, than convulsions during or immediately after labor.

In latter years, I am led to the conclusion, that in most if not

all these cases, the morbid condition of the brain and spinal cord upon which the convulsions depend, is induced by a morbid condition of the nervous system of the uterus, and the turgescence of the cerebral vessels is the effect of, rather than the primary cause of, the convulsions. Acting under this conviction, I have ceased to bleed as I formerly did, and rely upon expediting the labor as much as possible; and if the convulsions continue after delivery, I endeavor to disgorge the brain of its blood, or water, by drastic purgation, with calomel and colocynth or jalap. In two cases that came under my charge some 15 years ago, I bled them until I dared not bleed them any more, without producing any perceptible effect upon the convulsions or coma. I then resorted to the calomel and jalap, with perfect success; and some four years since I was called upon to treat a case of convulsions occurring some four or five days after parturition, succeeded in relieving her perfectly with calomel and colocynth, and cold water applied to the scalp. And in a case which occurred a few days since, I was equally successful with calomel and cold water alone; and if you will pardon me for trespassing upon your patience, I will give you a tolerably full report of this case as it is fresh in my memory.

Called at 4 o'clock, on the 26th of January, 1877, to see Madam M., primipara. She had had light pains all night. First examination revealed an os uteri not larger than a crow's quill. She was cheerful, and complained of nothing but the *pains*. At six o'clock the os had dilated to the size of a half dollar, and the bag of waters well formed, with a vertex presentation; mind calm, and spirit buoyant. At seven o'clock, was hurriedly called by the nurse from the parlor to see madam, who was in a terrific epileptiform convulsion, with the bloody froth issuing from her mouth, and every muscle in her beautiful body in a perfect state of spasm. Administered sul. ether, which somewhat moderated the spasm. On examination, found the os rapidly dilating. But thinking that these convulsions, if they continued, might embarrass the labor, and render it necessary in the latter stage to assist it with instruments, I sent for Drs. Graham and Mudd, and a case of instruments. Dr. Mudd came, and as he entered the house another convulsion seized the lady. Administered chloroform with but little effect; the convulsions continued to return about every hour and a half; but as the labor continued to advance rapidly for a primapara, we concluded not to inter-

fere. At one o'clock she gave birth to a male child, with the cord drawn tightly around its neck, which I disengaged as soon as the head had cleared the soft parts. She then fell asleep and appeared to be doing well for about twenty minutes, when her breathing became stertorous, and I resolved to deliver the placenta; but as soon as I tightened the cord she convulsed again. I had no difficulty in delivering the placenta, as it was lying detached in the vagina. From that time—half-past one o'clock—until twelve o'clock at night, she continued to have spasms about every hour, with deep coma during the intervals. Seeing the convulsions and coma continue after complete delivery, I immediately commenced with fifteen-grain doses of calomel every three hours, intending to continue them until the bowels were thoroughly acted upon; but she only got 30 grains, as the family insisted upon sending for an *empiric*. I quit the case, but first assuring them that it was my opinion that as soon as my medicine should act freely upon her bowels, the spasms would cease and the woman recover. The empiric gave her nothing but an injection of musk, and applied two leeches to her head. I had shaved her head and applied cold water, and a sinapism to her spine, as soon as I gave her the calomel. It was eleven o'clock before my medicine acted, but after the first operation the convulsions became lighter, and at one o'clock she had the last one, and the coma gradually passed off. I visited her the next day, and found my prediction was fully verified. Until she had some three or four convulsions, her intellect was perfectly clear during the intervals between them, but then became gradually clouded, until at the birth of her babe she was completely unconscious and sank into a deep coma, from which she was only aroused after she had gotten three or four copious watery evacuations from her bowels.

Hoping that this case may have proved of some interest to you, and that you will give me your views in full upon the pathology and treatment of this terribly morbid condition, I will *not* trespass further upon your time, and subscribe myself,

Your friend and *well-wisher*. T. B. H.

Attempts to epitomize an answer to the above queries must of necessity result in greater or less degrees of failure. When, however, one is requested to reply in brief, and feels that it is

his duty to so, the following propositions, in my opinion, cover the ground better than any other which can be as tersely stated.

1st. Eclampsia, in the parturient female, must be referred to one or the other of two causes—either to contamination of blood, or to reflex irritation: both of these causes may be present.

2d. By far the most frequent cause is albuminuria, and uræmic poison accumulated in the systemic circulation. This is especially true as it respects primiparous women, and particularly women of small, or short stature.

In regard to the first proposition, it is a well admitted pathological fact, that a sickly or badly nourished nerve is an irritable nerve. Therefore it is, that the inauguration of zymotic diseases so often involves convulsions. This morbid motile excitability of nerves is an almost unfailing attendant upon uræmic intoxication.

3d. The treatment under the second proposition is two-fold: first, to subdue abnormal excitability; next, to eliminate the poisonous material. The former indication is met by chloral, chloroform, bromide potash, belladonna, opium, etc.; the latter indication is more urgent, since it implies the removal of the cause which lies at the root of the malady. Calomel, alone, or mixed with soda, or with jalap—elaterium, bitartrate potash—in a word, purgatives, diuretics and diaphoretics, should be administered without regard to any point except the desired effect. The two modes of treatment do not clash, and may be resorted to simultaneously.

4th. The only opportune time for treating albuminuria of pregnant women, so as to *cure* eclampsia, is to treat the albuminuria in its incipiency, and thus intercept the convulsions, which more advanced stages would be sure to produce. Proper regard to elimination surely effects this object. The most efficient elimination is from the action of hydragogues.

5th Proposition. If we can feel assured that the convulsions are due solely to reflex influences, the remedies which allay nervous excitability will cure. Some weeks ago I delivered a woman who had had convulsions at the accouchement preceding this. While the head was engaged in the inferior strait, she suddenly exclaimed: "Oh, my head, I am going into convulsions again!" My hypodermic syringe was thrust through the sleeve of her dress, in my anxiety to avoid loss of time, and ½ grain of morphia thrown into the tissues. A bottle of chloroform had been

kept in readiness, and this agent was given by inhalation until almost complete anæsthesia was induced. This state was maintained until the placenta was delivered, and, indeed, a partial anæsthesia was kept up for a longer period. The urine of this patient had been submitted to weekly examinations during the last weeks of pregnancy, and no albumen found.

6th Proposition. Whatever neuropathists may aver to the contrary, I believe it to be an incontrovertible fact, that science has not advanced far enough to justify us in accounting for the symptomatic phenomena of convulsions, by formulating any uniform state respecting the amount of blood in the vessels of the cerebro-spinal axis in causal relation to their occurrence.

7th. Relieving the womb of its contents as quickly as possible is proper practice, since it generally implies the removal of the cause of reflex motor disturbance.

EDITOR.

Letter from "Alumnus."

"To give general currency to an hypothetical opinion, or medicinal reputation to an inert substance, nothing more is required than the talismanic aid of a few great names; when once established upon such a basis, ingenuity, argument, and even experiment, may open their ineffectual batteries; the laconic sentiment of the Roman satirist is ever opposed to remonstrance—'*Marcus dixit? ita est.*'"
—*Pharmacologia,* by J. A. Paris, M.D., p. 76.

To the Editor of the New Orleans Medical and Surgical Journal:

Dear Sir—It will doubtless be conceded, that in no previous time has medicine or surgery furnished a more marked instance of diversity of opinion and practice than is exhibited at the present day in the treatment of wounds. While the minutiæ of dressings present infinite variety, the *questio vexata* of the present day may be presented in this way: "Shall wounds be treated by leaving them open, permitting free drainage and exposure to the air, or by closing them entirely and wrapping them in many layers of antiseptic material?"

It is rather remarkable that the centennial anniversary of our nation's birth, should bring vividly before the profession the extremes of these methods—the most modern as well as the ancient method of treating wounds. In a recent magazine, which has just reached our table, we find an article by Stephen Smith, of Bellevue Hospital, New York, entitled "How Thirty-five Consecutive Amputations were Successfully Treated a Century Ago." This article calls attention to the fact that even with our most approved

methods, no record of results can be exhibited superior to this of one hundred years ago, and adds that the nearest approach to it is that of Sir James Paget and Mr. Callender, of St. Bartholomew's, London, who use antiseptic measures to a limited extent, yet lay far more stress upon care in the management of the wound, cleanliness, and protection from injury. It may be added in this connection, that during the last year there appeared in the *British Medical Journal* a series of results from the practice of a leading metropolitan surgeon, tending to prove the superiority of the open method of treating wounds—a method directly opposed to the assumption of any virtue for the antiseptic method. The cases were treated at the Westminster Hospital, by Mr. Richard Davy, and were thirty-three in number, consisting of excisions and amputations of the greatest severity, and no death resulted. He claims for the open method the following advantages, as compared with the antiseptic system: (1) The results being equally as good, the operator and dresser is relieved of the onerous details of the antiseptic system; (2) the patient is relieved from the nervous apprehension which is consequent upon the indiscreet removal of, and painful repetition of, complicated dressings; and (3), the fullest opportunity is offered for clinical observation.

In 1872, one of our leading medical publishers issued a treatise of more than three hundred pages, by Dr. Addinell Hewson, of Philadelphia, entitled "Earth as a Topical Application in Surgery." In this work, Dr. Hewson claims that the best method of treating wounds is by the local application of, and dressing with, appropriate varieties of earth. In the surgical wards of the Pennsylvania Hospital, where Dr. Hewson labors, earth is applied to every variety of wound and sore, and he claims that the superior results published as resulting from this method are due to the chemical action of the earth upon the tissues. Dr. Hewson is known to be a surgeon of skill and ability, and his work abounds in reported cases highly creditable to him as an operator and dresser; yet we know of no one who has adopted his method of dressing, and very few would, after reading his book, attribute his success to the use of earth as a dressing to wounds. The almost universal expression in regard to his method is, that we have in him an example of an accomplished and skillful surgeon, who is disposed to attribute to an unimportant peculiarity in dressings his success in treating wounds,

which success is really due to the causes which obtain in the practice of other surgeons of equal skill, dexterity, care, vigilance, and cleanliness.

In June, 1867, Prof. Joseph Lister, of Edinburgh, published in the London *Lancet* a paper, entitled "On a New Method of Treating Compound Fractures, Abscess, etc., with Observations on the Condition of Suppuration." Since the publication of this article, the minds of medical men have been enthusiastically considering septic germs, and the hospitals of Europe and America have been redolent of carbolic acid. In the following year, 1868, Mr. Lister contributed to the *Lancet* a series of articles, entitled "Illustrations of the Antiseptic system of Treatment in Surgery," which detailed the various applications of the system in wounds, operations, etc., and gave the brilliant results of Mr. L.'s surgical labors in Edinburgh during the previous year. In 1869, Mr. L. gave to the world, through the columns of the *Lancet*, another paper, entitled "On the Ligature of Arteries on the Antiseptic System," in which he makes known the wonderful superiority of the carbolized catgut ligature.

In these articles, it is maintained that when the air is admitted to a wound, the decomposition of effused blood, suppuration, and other changes, is not due to the action of the oxygen or other gaseous constituents, but to minute particles suspended in the air, which are the germs of low forms of life, revealed long since by the microscope, and now known to be the essential cause of putrescence. Applying this principle to the treatment of wounds, he set about finding some substance, not too potent as a caustic, capable of destroying these germs, and carbolic acid was selected as best adapted for the purpose. The following statement of Mr. Lister shows the application of these principles in the antiseptic system. "Admitting, then, the truth of the germ theory, and proceeding in accordance with it, we must, when dealing with any case, destroy in the first instance once for all any septic organisms which may exist within the part concerned; and after this has been done, our efforts must be directed to the prevention of the entrance of others into it."

With a view of applying the antiseptic system to the ligature of arteries, Mr. L. made some experiments with animal tissue thoroughly saturated with carbolic acid, which he published as highly satisfactory. As the result of these experiments, he pronounced fine catgut, soaked in a saturated watery solution of

carbolic acid, as most suitable. Among other observations, he declares that these ligatures become intimately blended with the external tunic of the artery, and transformed, as it were, into living tissue. In connection with this subject, he states: "It appears, then, that by applying a ligature of animal tissue antiseptically upon an artery, whether tightly or gently, we virtually surround it with a ring of living tissue, and strengthen the vessel where we obstruct it. The surgeon, therefore, may now tie an arterial trunk in its continuity close to a large branch, secure alike against secondary hemorrhage and deep-seated suppuration; provided, always, that he has so studied the principles of the antiseptic system that he can feel certain of avoiding putrefaction in the wound. For my own part I should now, without hesitation, undertake ligature of the innominata, believing that it would prove a very safe procedure."

Such are the principles of the antiseptic system of Lister, which are carried out in practice with the utmost attention to details. The atmosphere of the room in which an operation is to be done, is by means of a spray apparatus saturated with carbolic acid. The instruments, the hands of the operator and assistants, and all dressings, are treated with a solution of the acid, while the carbolic spray is kept playing upon the part during the entire progress of the operation. Every change of the dressings must be done under the spray, and every avenue to the access of air to the part is to be blocked with carbolic acid.

While the theory of the antiseptic system is very attractive, and the results of its application in the skillful hands of Mr. Lister are quite wonderful, yet there are some things in connection with the principles involved which require the thoughtful consideration and examination of surgeons, before accepting the system as a model of scientific perfection and pronouncing carbolic acid the most potent of surgical dressings.

It will be observed that the antiseptic system is based upon the parasitic origin of suppuration, and upon the potency of carbolic acid as a parasiticide. Now, in this connection, it is well to examine a few facts bearing upon the nature of suppuration and decomposition.

In the first place, we have, upon no less authority than that of Baron Liebig, the statement, as the result of his observations, that the presence of dead nitrogenous matter is sufficient to account for fermentation, and the experiments of several French

and German chemists, confirmed by those of the late Dr. Jeffries Wyman, of our own country, tend to prove the chemical doctrine that oxygen is the initiator and *primum movens* of fermentative changes.

Going still further in our investigation of the part played by these atmospheric germs in the suppurative process, we find that numerous observers have detected vibriones and bacteria in the blood of the lower animals and man when affected with glanders, carbuncle, and malignant pustule; and Dr. Richardson, of the Pennsylvania Hospital, states (Handbook of Medical Microscopy), that such infusoria may be found in the blood of persons in health. In fact, it is stated that such germs are constant elements of the blood in health, and according to the experiments of Dr. Richardson (*Amer Jour. Med. Sciences*, July, 1868), bacteria when taken into the stomach pass readily into the blood.

These observations, coming to us with a weight of authority which will not permit of doubt, are in conflict with the principles underlying the antiseptic system of Lister, and with the impartial investigator after truth must affect materially his confidence in the antiseptic method in surgery and carbolic acid as the most valuable element of all surgical dressings.

About two years since Prof. Lister made a tour on the Continent, and in Germany he was received with the greatest enthusiasm, and demonstrated the antiseptic method in surgery to large and influential audiences. A splendid entertainment was tendered him on more than one occasion during his visit there, and we remember that the remark was quite common among the European correspondents of our magazines that these ovations were more in honor of Mr. Lister as a surgeon and Professor of Surgery in the great Scottish University, than in approval and acceptance of the principles of the antiseptic system. The fact that the system has not been universally adopted there indicates the correctness of this view.

Among the distinguished visitors to our own shores during the past year was Prof. L, and his visit has given quite an impetus to the use of the antiseptic system in American Surgery. Since Mr. L.'s articles were first published, in 1867, carbolic acid has been the favorite dressing with most of our leading surgeons, but it is only since the recent visit of Mr. L., that the antiseptic method with all its minutiæ has been extensively observed.

Now we learn that Drs. Stephen Smith, Van Buren, and others in New York, are adopting the system in the presence of large classes at Bellevue Hospital, and Dr. Sims is using it to his great satisfaction in ovariotomy.

The fact just alluded to, and the present aspect of antiseptic surgery, make it quite evident that no one can observe Mr. Lister's operations and the admirable results obtained by him without being struck with his wonderful success. But it does not follow that this success is any more due to the use of the antiseptic measures, so called, than is that of Dr. Addinell Hewson, previously alluded to in this article, to the use of earth as a topical application. Mr. Lister has few equals as a skillful operator, superior diagnostician, and a far-seeing, careful surgeon. The antiseptic system, as practiced by him, insures the greatest cleanliness on the part of the operator and his assistants, as well as the instruments and appliances. All competent surgeons pronounce these the cardinal elements of success in operative surgery. The success attained by the method does not by any means prove the truth of the vegetable germ theory, for recent observations indicate that this evidence is quite slender; nor does the method prove carbolic acid to be the most superior of all applications, for several other substances used about wounds are more potent in destroying and preventing the same kind of life. Carbolic acid has many advantages as an application to wounds, which will secure for it a popularity through many years. In addition to its disinfecting properties, its anæsthetic power when applied locally makes it very valuable.

We must not forget, however, that the comparative results of Mr. Lister's method, while exceedingly good, are no better than those furnished by other surgeons, of equal ability, who operate without any observance of the antiseptic system. Neither Lister or any of his disciples have surpassed the results obtained by Mr. Richard Davy, of London, in 1876, and Alanson, of Liverpool, in 1776, to which we alluded in the first part of this article.

I am, sir, very respectfully,

ALUMNUS OF THE UNIVERSITY OF LA.

EDITORIAL.

"Mr. Caulfield, or Harris."

Some weeks since, the Janitor of the Medical Department of the University of Louisiana received a package of circulars,

superscribed with the names of persons who were supposed to be students of medicine at the school of which he was a servitor. This Janitor is of rather a cautious turn of mind, and having learned, perhaps from observation, that flash medical advertisements were sometimes thrown into doorways, addressed to the "Lady of the House," he thought it proper to confer with the Dean before committing acts which should in any manner foster irregular protessional conduct. Under this determination, a number of the circulars were brought to the Dean, and one bearing the above address is now upon my table. The whole subscription upon the wrapper is as follows:

If not found P. M. will please hand to some other Doctor.
Mr. Caulfield, or Harris, Med. Dep. Uni. La , New Orleans La,

NASHVILLE MEDICAL COLLEGE,
N. W. Corner Cherry and Cedar Sts.,
NASHVILLE, TENN.

Largest Faculty of any Medical College in the South or West.

Session begins March 5th, 1877.

Duncan Eve, M.D., Dean,
159 Church St.

Whether or not the readers of this Journal will admire the enterprise which, by some as yet unavowed process, obtains possession of the names of medical students in actual attendance at a respectable school, and then attempts to pervert the duties of the Janitor to that of drummer for an institution of whose status he is not competent to judge, they can find nothing to commend in the professional spirit which plans and executes such purposes.

It is precisely the same mode of advertising, and the same petty and contemptible method of soliciting patronage, which a "double-headed school" in another western city had put in practice before this new "largest" concern in the "South or West" came into existence.

This latter institution, like its prototype, has two annual sessions and two annual commencements. Students are only required to have attended two full courses of lectures, and may consequently graduate after nine or ten months' study. We conscientiously believe that the whole profession should unite in

frowning out of existence any school, or clan of teachers, who profess to be able to perfect a student in a "greater number of specialties than any similar institution in the South or West," within the brief space of twelve months. The "largest collection of trained animals in the world" has just been put up at sheriff's sale in Georgia; so let it happen to all faculties in medicine, large or small, who in any manner conspire to convert medical schools into mere hot-dung forcing beds for sprouting succulent doctors.

Anecdote—A Double-Headed Prescription Shop—Dr. Mullens and Dr. Smith.

For a great number of years there has lived and flourished in this city an "old original" Dr. Mullens. His office was, and perhaps to the present day, is constructed upon a plan and after a principle whose ingenuity deserves a notice. Two doors in the same building opened upon the same street. One was labelled "Old Dr. Mullens;" the other was emblazoned with the real name of the party—"Dr. Smith," perhaps. A door through the partition of a back apartment had the magic power of transforming Dr. Mullens to Dr. Smith, and vice versa—Mullens, or Smith, or Smith, or Mullens, according to the patient's taste. "You've paid your money, and you can take your choice," as the showman said, when asked which was the Polar Bear. I have understood that a late, but not the latest Dr. Mullens was a person of much cleverness, and one who made a long tail to his professional kite by writing 'Harv." after his M.D. If the present incumbent should continue to use both office doors, would it pay better to flit from one door to the other personating the same character, without so much as a change of voice when asking innocent visitors to take their choice of the "pretty parlors," or to pursue the method of his predecessors?

Lacteous Farina.

Considerable space has been given to the translations of two papers giving some account of the use of this food in Europe. The Editor has prescribed it in quite a sufficient number of cases to justify him in recommending its use to his confréres.

Higgins Cow-Pox.

I have used three quills armed with bovine lymph from this producer, with successful results, and have obtained from them a crop of vaccine virus energetic and perfect in its character. His address is, Manchester, St. Louis Co., Mo.

Communications.

Papers are promised from Professor Schuppert and Dr. LeRoux.

Pamphlets Received.

"A prize Essay upon the Surgical Anatomy of the Tibio-Tarsal Articulation, with special regard to Amputations of this Joint." By John A. Wyeth, M.D. New York: Reprinted from *American Journal of Medical Sciences*, April, 1876.

"Transactions of the Medical Society of the District of Columbia, December, 1876." Committee on Publication—Drs. Kleinschmidt, Ross, and W. W. Johnston. Washington, D. C.: Printed by W. H. Moon, 511 Eleventh Street. 1876.

"Cases of Yellow and Prevailing Fevers Observed in Charleston, Summer of 1844; with Thermometrical and Pulse Observations noted at the bed-side—with a very high Percentage of Recoveries under the treatment used." By F. Payne Percher, M.D., Professor of Clinical Medicine in Medical College of the State of South Carolina. From *Charleston Medical Journal and Review*, January, 1877.

"Transactions of the Colorado State Medical Society. Sixth Annual Convention, held at Denver, June 20, 21 and 22; 1876." Denver, Colorado: Rocky Mountain News Steam Printing House. 1876.

"Transactions of the Medical Society of Virginia, 1876." Published in the January number of the *Virginia Medical Monthly*. Yearly subscription $3; single copy 50 cents.

"Report of the Board of Managers and Superintendent of the Texas State Lunatic Asylum for the fiscal year 1876." D. R. Wallace, M.D., Superintendent, Austin: Institution for the Deaf and Dumb. 1876.

METEOROLOGICAL REPORT FOR NEW ORLEANS.

Table I---January.

Day of Month.	Temperature.			Mean Barometer Daily.	Relative Humidity—Daily.	Rain fall—inches
	Maximum,	Minimum.	Range.			
1	47	21	26	30.175	85	.00
2	47	26	21	30.445	79	.00
3	47	26	21	30.547	87	.00
4	54	32.5	21.5	30.250	72	.00
5	56	40	16	29.938	83	.15
6	51	45	6	29.941	75	.00
7	55.5	37	18.5	29.981	61	.00
8	60	34	26	30 128	45	.15
9	43	26.5	16.5	30 230	37	.00
10	59	33	26	30.212	65	.00
11	70	47	23	30.165	83	.01
12	69	58	11	30.223	88	.05
13	73	63	10	30.180	87	.02
14	74	60	14	30.009	82	.02
15	76	65	11	29.869	83	.05
16	69	53	16	30.099	75	.07
17	56	51	5	30.278	91	.03
18	73	54	19	30.097	90	.00
19	74	60	14	30.162	82	.03
20	74	66	8	29.974	84	.01
21	68	58.5	9.5	29.966	92	1.55
22	60	53	7	30.145	86	.78
23	56	44	12	30.107	83	.52
24	53	40.5	12.5	30.243	58	.00
25	53	39.5	13.5	30.062	59	.00
26	57	44	13	30.386	65	.00
27	60	46	14	30.382	59	.00
28	60	48	12	30.385	60	.00
29	66	45	21	30.366	67	.00
30	66	45	21	30.382	73	.00
31	69	47	22	30.325	74	.00
Mean..	61.1	45.4	15.7	30.174	74.5	Total. 3.46

Table II---February.

Day of Month.	Temperature.			Mean Barometer Daily.	Relative Humidity—Daily.	Rain fall—inches
	Maximum.	Minimum.	Range.			
1	69	55	14	30.270	73	.00
2	71	55	16	30.161	83	.28
3	72	58	14	30.044	84	.00
4	59	55	4	30.156	78	.04
5	63	52	11	30.172	74	.00
6	62	49	13	30.094	62	.00
7	65	50	15	29.993	64	.00
8	66	51	15	30.028	60	.00
9	66	51	15	30.044	58	.00
10	64	52	12	30.200	61	.00
11	65	48	17	30.317	55	.00
12	65	52	13	30.222	66	.00
13	62	53	9	30.122	79	.37
14	57	50	7	30.177	78	.00
15	53	47	6	30.242	78	.00
16	51	47	4	30.328	63	.00
17	58	46	12	30.396	60	.00
18	62	42	20	30.312	57	.00
19	68	49	19	30.091	62	.00
20	57	49	8	30.290	55	.00
21	55	42	13	30.196	51	.00
22	56	46	10	29.881	80	.28
23	66	47	19	29.875	58	.00
24	59	48	11	30.039	63	.00
25	60	48	12	30.140	62	.00
26	59	46	13	30.151	61	.00
27	62	44	18	30.163	63	.00
28	69	48	21	30.073	59	.00
Mean..	62.2	49.3	12.9	29.077	66	Total. .97

Mortality in New Orleans from January 1st, 1877, to February 25th, 1877, inclusive.

Week Ending	Yellow Fever.	Malarial Fevers.	Consumption.	Small-Pox,	Pneumonia.	Total Mortality.
Jan. 7.....	0	10	17	18	13	140
Jan. 14.....	0	4	30	29	9	159
Jan. 21.....	0	5	16	29	15	138
Jan. 28.....	0	12	12	47	7	134
Feb. 5.....	0	13	13	53	8	155
Feb. 12.....	0	9	28	26	5	121
Feb. 19.....	0	5	19	63	10	157
Feb. 26.....	0	6	23	47	19	156
Totals.....	0	64	158	312	86	1160

THE

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ORIGINAL COMMUNICATIONS.

THE RECORD OF NINE ADDITIONAL CASES OF CEPHALIC VERSION, WITH INTRODUCTORY REMARKS.

BY JOSEPH HOLT, M.D.

(A Paper read before the New Orleans Medical and Surgical Association, Saturday evening, March 10th, 1877.)

Gentlemen—In the latter part of December, 1873, I read before this Association a paper entitled "Cephalic Version," wherein I endeavored to show why that operation should be recognized and thoroughly taught as an important obstetric measure, applicable in many, if not indeed in the majority of instances in which podalic version is invariably performed.

Explicit rules governing the operation under different conditions were given, and five cases illustrative of this method of version were fully reported. In each of these the child presented in a different position, and, therefore, each served as the type of a class of mal-position.

In no case had the membranes been ruptured less than three hours; uterine action strongly marked in all.

To appreciate how completely the profession is committed to a narrow line of action in its unquestioning adherence to podalic version, the writings of standard authors on obstetrics were quoted from; all of them rigidly conforming to the manipulative procedure taught by Pierre Franco three hundred and sixteen

years ago, and established by Paré and Guillemeau in the early part of the seventeenth century.

At the present date, although there is manifest an awakening interest in behalf of cephalic version on the part of our latest writers, even they are meagre and altogether imperfect in their treatment of the subject. They follow, with that dutiful precision singularly displayed in this branch of our profession, the instruction of their predecessors.

While entertaining a profound respect for those who teach us, it is essential to our own professional interest, that we keep in mind the fact that we live in an age marked by an unparallelled development of the physical sciences in every branch, and that obstetrics as a science and art has been so remodelled during the last few years that, so far from contenting ourselves with it as complete, we can only regard it as in a transition stage of its progress towards perfection. It is with each of us a sovereign duty to endeavor to improve upon the work of his master, untrammelled by too much reverence. There has ever been a disposition to retard the obstetric art by fettering it with the stereotyped notions and rules of ancient midwifery. This has been, and is now, the most formidable obstacle to its development.

Paré and Guillemeau resorted to podalic version as the safest and only proper manipulation under the circumstances of their time. They were compelled to resort to this as the only operation upon which they could certainly rely to begin and complete the turning and delivery.

This is the origin of podalic version; and to the necessity of the older obstetricians, helpless because of the lack of appliances, does it owe its reputation and present firm hold upon our profession.

In this advanced age, we have only to utilize with independence of action our extended knowledge and improved appliances. We can now control perfectly the patient, relax muscular contraction, obtund reflex excitability, and can have at hand instruments perfectly fashioned and adapted to our purposes.

The reasons in favor of podalic version have been set aside, and the question presents itself to the modern obstetrician, not of what he is obliged to do, but as one of choice between two methods, based upon the safety of the child and least hazard to the mother.

To determine this let us ask: Is not a breech delivery by far

the most dangerous to the child? Is not the passage of the hand high up into the womb with the force necessary to overcome the resistance offered by the uterus, and the evolution of making the long diameter of the child revolve through the transverse diameter of a contracted uterus, an operation oftentimes of severity, and therefore of hazard to the mother? Are there not special difficulties which beset the delivery of a breech case, and do not these entail upon the woman greater suffering?

True it is, the bi-polar method has greatly relieved the necessity of invariably passing the hand towards the fundus in search of a foot, but in some cases the revolution of the child cannot be effected without it.

When shall we turn by the feet? Being at liberty to turn as we please, we will select podalic version in all cases of premature delivery, the life of the mother being in jeopardy, and our main object being to deliver as speedily as possible.

In such deliveries, the child being comparatively small, we are less apprehensive of obstruction in the mechanism of its expulsion.

In labor at term, under circumstances of like urgency, we may obtain some special advantage in podalic version.

As it is true that we are sometimes unable to effect podalic version, even so, in a transverse presentation with impaction or excessive uterine resistance, it may be impossible to bring down the head, and yet possible to turn by the feet. Such a case I have seen.

In its general application, however, we may now reverse the rule of turning, established in the necessity of mediæval times, and relegate to the class of exceptions podalic version, while we resort to turning by the head as the rule.

It has been suggested that the operation is one of such a peculiar nature as to require the tact of a specialist to accomplish it! There is certainly a greater latitude for the display of skill than ordinarily obtains in podalic version, but there is nothing connected with the operation which may not be learned by a little careful study, and attention to its details; much less than its importance deserves.

Suppose we were to subject every improved surgical procedure to the same objection, what would become of modern surgery? As in the removal of cataract, the management of aneurism, lithotomy, or the treatment of a deformed limb, the sub-

ject has to be studied, its principles clearly understood; and when the operation is determined upon, it must be put into execution as though the mind was fully made up to accomplish it, and not with hesitation, as though we doubted, and had no confidence in the measure about to be undertaken.

It is this ignorance of its rules, the consequent lack of self-confidence, and readiness to fly to the old time-worn track of podalic version, which constitute the only obstacles to the general acceptance of cephalic version.

CASE I.—*Left Lateral Flexion of the Head; Prolapsus Funis; seven hours second stage labor; child dead.*

In consultation with Dr. A. Petit, September 28th, 1874, at 4 p. m., I saw Mrs. B., aged 34, in labor with her thirteenth child.

Her former labors were uncomplicated, excepting the second, in which the child presented transversely and was delivered with great difficulty by the feet, still-born.

In the present accouchement the membranes had ruptured at 9 a. m., a midwife in attendance; the doctor was called at 3 p. m., and at once sent for me to render him assistance.

Examination revealed a coil of the funis protruding from the vulva; cold and pulseless.

The head presented L. O. A., but strongly flexed upon the left shoulder, the right ear being felt near the centre of the sup. str. The cord was tightly pinched between the head and margin of the brim. In its mechanism the labor was completely locked; there was no possibility of engagement, and on the other hand no tendency of the head to glide upwards and allow the shoulder to present (a frequent termination of lateral flexions).

The woman was in a state of great irritability; and manifested symptoms of exhaustion. The pains had been frequent and powerful, but were losing their force and regularity.

We put her fully under the influence of chloroform, and placed her in the usual position for operation.

Passing my hand well into the cavity of the pelvis I carried it on up beyond the head until the fingers rested firmly upon the right shoulder. Steady and increasing pressure was now made upon this, with the view of pushing up the whole body of the child, and thus by increasing the long diameter of the uterus to make room for the head to come down, and resume its proper relation with the spinal column. Assisting this effort the left

hand pushed up the breech, or rather, raised the whole volume of the uterus. As the shoulders yielded and the fundus was raised, the excessive lateral flexion of the head was relieved and more room afforded for its rectification. The internal hand was then withdrawn from the shoulder, and quickly glided around the head in the direction of the left iliac fossa, the whole vertex and occiput firmly grasped, and rectification completed by drawing down the vertex vigorously towards the centre of the brim. This effort was greatly facilitated by the left hand pressed forcibly upon the head from without, urging it downwards in the direction of the brim. When the head had resumed its proper position, the vertex occupying the centre of the cavity, and while this was maintained by outward pressure over the occiput, the forceps were applied and engagement perfected.

The delivery was accomplished a few minutes later without trouble.

The lady made a good recovery.

The speedy application of the forceps is especially indicated as the final step in correcting head deviations, because of a proneness to the sudden recurrence of the mal-position; engagement effected the danger is at an end.

CASE II.—*Transverse Presentation; Right Shoulder; Head in Left Iliac Fossa; fourteenth hour of hard second stage labor; child dead.*

Dr. F. Lœber requested me to visit with him a case of labor to which he had been called, informing me that from information received, we would have to deal with a cross birth of many hours' second stage labor.

We found Mrs. ——, aged 30, in labor with her fourth child, in great distress, and seriously exhausted. She was in the charge of a midwife, who had allowed her to remain in hard labor fourteen hours after rupture of the membranes.

By careful examination we discovered that the child was dead; it presented by the right side, head in left iliac fossa.

In consultation we determined if possible to turn by the head and deliver with the forceps, believing it to be freer from risk to the mother, and promising as speedy a termination as turning by the feet. It was unfortunately too late for the operation as conservative for the child.

Chloroform was given to moderate anæsthesia. Having placed her in proper position, I passed my hand well up, and pressing upon the child found it easier moved than we had anticipated. The prominent points of the child were not encapsulated by the uterine walls, as frequently happens when the waters have been long expelled. When this does occur, it is a formidable obstacle to the beginning of any kind of version.

The bi-polar method was commenced; the internal hand pushing up and urging the child in the direction of the right iliac fossa; first the shoulder, then the neck, and finally the head, in succession came over the brim. The external upward pressure upon the breech was most effectual. As soon as the head presented itself fairly over the sup. str., the right hand was passed around it in the direction of the left iliac fossa; the vertex was firmly grasped and brought to the centre of the brim, flexion being accomplished during the manœuvre.

While external pressure was maintained over the occiput, the forceps were applied, and delivery completed in a few minutes.

The time occupied from the beginning of the operation to the moment of engagement with the forceps, was about fifteen minutes.

The prolonged hard labor left the woman greatly exhausted for many hours; she rallied, however, and soon convalesced perfectly.

CASE III.—*A Shoulder Presentation Converted into a Left Occipito-Iliac, by the postural method.*

The management of this case I consider the most skillful of any version that has ever come under my observation. To appreciate it fully I will briefly state that, during the session of 1866-'67 in the New Orleans School of Medicine, I conducted a class of instruction in operative obstetrics.

Having performed cephalic version twice, and being profoundly impressed with the practibility and importance of the operation, I taught it on the phantom with as much care as is usually devoted to podalic version alone, demonstrating particularly the advantage to be gained in certain cases of immobility of the fœtus, by placing the woman in such a position as to avail ourselves of the gravity of the womb and its contents in overcoming impaction.

In this class was Mr. (now Dr.) T. M. Stone, of Jasper, Texas, a gentleman *who had been so unfortunate as to lose his left arm in its upper third.*

Singularly enough, and unfortunately as it then seemed to me, he devoted himself with zealous attention to the study of obstetrics.

As compensating the loss of his arm, he was possessed of a rare intelligence, and unusual aptitude in devising means to meet emergencies.

From the *New Orleans Journal of Medicine*, Vol. xxii., No. iv., October, 1869, I quote the following account as given by the Doctor himself. (Special mention has been made of this case in the American Edition of "Barnes' Obstetric Operations.")

"April 1st, four o'clock a. m., I arrived at the bedside of Silva—colored—who had fallen in labor, as the midwife in attendance informed me, the morning previous. The membranes ruptured spontaneously at 9 p. m., succeeded by severe but ineffectual expulsive efforts. An examination revealed the right hand protruding beyond the vulva, and further inquiry determined the case to be a presentation of the right shoulder, the head resting in the right iliac fossa—belly of the child, therefore, to the front. Having the proper hand introduced, I readily seized a foot, thinking to effect podalic version, but in this I was utterly foiled by the excessive irritability of the womb; to the slightest movement of my hand the organ responded by a spasmodic grasp, so that after persevering for half an hour, I resigned all hope of success by the usual method of turning, and bethought me at once of the postural treatment revived by Dr. Gaillard Thomas, and invaluable in a more extended class of difficulties. Placing my patient upon her knees, her breast touching the bed, I re-introduced my hand and quietly waited a few moments, when I felt the womb gently relaxing, and with its contents gravitating towards the diaphragm.

"Presently I found impaction so relieved that I was enabled to return the arm by sweeping it over the breast, and then, gently pressing the shoulder from the superior strait, I passed my hand on towards the right iliac fossa, grasped the head and brought it down, engaging it with the occiput to the left acetabulum.

"The patient now being made to lie on her side, the uterus at once began to contract, and in a little while the birth was com-

plete. The child was born somewhat asphyxiated, but this was relieved by the ordinary measures. The placenta I immediately delivered, and thus brought the labor to a close."

CASE IV.—*Transverse Presentation; Prolapsus of Right Arm; four hours' second stage labor.*

In consultation with Dr. William P. Brewer, I visited Mrs. B., aged 35, in labor with her fourteenth child, Sept. 28th, 1875.

This was the same unfortunate lady whom I had attended with Dr. Pettit, on the same day of the month, one year previous. (See Case I.)

Dr. Brewer found her in charge of a midwife, who had contentedly "let nature take her course" in several hours of hard labor; he instantly demanded assistance, and I was sent for.

The membranes had been ruptured four hours; the uterus was rigidly contracted upon the child; the pains were powerful and recurring at short intervals. Examination discovered the right hand protruding from the vulva, blue, and greatly swollen; the shoulder was driven firmly into the brim, the head in the left iliac fossa.

Chloroform was given until she was fully under its influence. She was then placed in proper position, and with my right hand passed well into the vagina, firm pressure was made upon the shoulder and chest, with a view of raising the whole body of the child from its bed of impaction.

This pressure was exerted in such a direction—towards the woman's right—as to favor descent of the head. The left hand was engaged coincidently in pushing up the breech, and at times the whole body of the uterus. In two or three minutes the uterus began to yield, and the body of the child to respond to these efforts.

While the shoulder was being carried towards the right iliac fossa, the arm was readily drawn up and flexed upon the chest.

The evolution of turning was continued until the head came over the brim, when, slipping up the hand towards the left iliac fossa, it was boldly grasped by the vertex, flexed, and brought into position L. O. A. This manœuvre was greatly facilitated by the outer hand pressing down the head towards the brim.

Version having been completed, and while firm pressure was maintained over the occiput, steadying the head, the forceps were applied and engagement perfected.

We then treated the case deliberately, as one of natural labor, simply affording some little assistance with the forceps. In a few minutes a living child was born. It presented some evidence of having suffered during its four hours of hard squeezing in the womb, but quickly recuperated.

The arm which had prolapsed remained congested for several days.

Mother and child did well.

CASE V.—*Transverse Presentation; Head in Left Iliac Fossa; Right Hand Extended from the Vulva; eight hours of second stage labor.* (Reported by Dr. William H. Watkins.)

May 16th, 1876, I was called to see Mrs. W., aged 30, in labor with her fourth child.

I found her in great distress; the pains were severe and quickly recurring; the liquor amnii had been evacuated eight hours. A midwife was in attendance.

Examining, I found the right arm prolapsed, the hand fully displayed outside the vulva; the head in the left iliac fossa; shoulder and chest packed upon the brim. Abdominal palpation discovered the uterus in a state of tonic rigidity grasping the child, whose body was clearly outlined through its walls.

Chloroform was given until she was fully under its influence. Passing my right hand well into her vagina, I lifted the whole child from its incarcerated position; and while pushing up its pelvic extremity towards the fundus with my left hand I pressed upon the shoulder, urging it towards the right iliac fossa. This manœuvre was executed in such a way that in moving the shoulder from over the brim, it was effected so as to make a slight rotation backwards of the child's body upon its long axis, and in doing this the prolapsed arm was drawn up out of the pelvic cavity and flexed upon the chest.

The movement of version was continued until the head had come over the brim; this was placed in position R. O. A., the forceps applied, and delivery rapidly accomplished. The child was dead—this having evidently occurred before the operation was commenced. The mother made a good recovery.

CASE VI.—*Transverse Presentation; Head in Right Iliac Fossa; Left Shoulder Engaging; six hours' second stage labor.* (Reported by Dr. E. K. Shepard.)

Some time in the early Spring of 1874, during a most violent storm, I was called, at 2.30 a. m., to deliver a rather large and well-formed Gipsy woman, aged 46, in her fifteenth confinement.

Found my patient lying on a truss of hay on the ground, under a sort of tent pitched in an open square.

This lying-in chamber was about five feet wide, eight long, and not over four and a half in hight. Every gust of wind filled the tent with spray from the wet blankets of which it was constructed, these being stretched over hoop poles. This was certainly an inconvenient place.

Found the head of the child in the right iliac fossa, occiput to the front, left shoulder presenting. The liquor amnii had been evacuated six hours previously. The patient had been twenty-four hours in labor; pains at intervals of ten minutes, not forcible nor of long duration.

I determined on podalic version, but subsequently finding the child much more movable than I had expected, decided to try cephalic version if practicable.

Introduced my left hand so that my fingers lay over the chest of the child, my thumb on the scapula, and the left shoulder in the palm. With steady, firm, but gentle pressure upwards, at the same time using my right hand externally, the shoulder was easily raised. Passing my open hand, or rather, rotating my palm and fingers over the left side of the child's head, and into the right iliac fossa, I was able (to use Dr. Holt's expression) to grasp the head, "just as you would take hold of a cocoa nut." Manipulating with my right hand externally, and holding the occiput in my left, I was enabled to bring the head over the brim, and to rotate it so as to place it flexed, R. O. A.

This required not over fifteen minutes. With the third pain the head became engaged, the pains increased in force, and delivery was rapidly accomplished without further interference.

In flexing the head, I experienced none of the trouble spoken of by Dr. Holt. I was surprised, so easily was the rectification of position accomplished; and surely I was obliged to operate in a disadvantageous position.

The mother and child did well: the mother so well, indeed,

that on making my visit at 11 a. m., I found her lying at the front of the tent, before the fire, superintending the culinary arrangements.

CASE VII.—*Transverse Presentation; Head in Left Iliac Fossa; Left Shoulder Presenting; Prolapsus Funis; two hours' second stage labor; child dead.* (Reported by Dr. William H. Watkins.)

Mrs. H., aged 42, in labor with seventh child; liquor amnii evacuated two hours at the time of my arrival. I found the umbilical cord protruding from the vulva and pulseless. By the touch I discovered the left elbow and left side of the head presenting, the ear being distinctly felt.

Although, as in my first case, I recognized the child to be dead, I determined, nevertheless, to turn by the head, simply to teach myself the relative merits of the two operations in point of facility to the operator and safety to the mother, and to acquaint myself also with the details of manipulation in cephalic version.

Chloroform was administered. The elbow was then pressed up, and the chest lifted so as to permit the head to come down. This was then grasped, and brought into position L. O. A., and flexed. The forceps were then applied, and delivery rapidly accomplished.

The time consumed in operating did not exceed twenty minutes. The woman recovered without further trouble.

CASE VIII.—*Transverse presentation; Head in Left Iliac Fossa; Right Shoulder Engaging; Prolapsus Funis; eight hours' second stage labor; child dead.*

I was requested by Dr. W. H. Watkins to see, with him, a negress in labor with her second child. We found her in hard second stage labor; the waters had escaped eight hours before our arrival. A coil of the funis was hanging from the vulva, cold and pulseless, the head in the left iliac fossa, right shoulder presenting at the brim.

In order to demonstrate the comparative ease with which it could be accomplished, and for the sake of practicing the evolution of turning by the head, we determined upon cephalic version.

Putting her well under chloroform, we placed her in position and proceeded to operate. The right hand was introduced and the shoulder firmly pressed up; then by the combined bi-polar method, as already described, the shoulder was pushed up out of the way, while the head descended to the brim, and was placed in the proper position flexed, L. O. A. While held in this position by external pressure over occiput and fundus, the forceps were applied, and the delivery speedily accomplished. The woman made a good recovery.

CASE IX.—*Extreme Extension of the Head with Presentation of the Chin, existing before rupture of the membranes.*

At 2 a. m. December —, 1876, I was sent for by request of Dr. P. C. Boyer, who was quite ill, to attend for him an obstetric call.

I found the lady in labor with her fourth child, and in attendance an intelligent and educated midwife; a combination of qualities so rare in this class as to deserve recording.

The patient was in a fearful state of hysterical agitation: her mind was filled with gloomy forebodings, and was possessed with apprehension amounting to terror, almost uncontrollable. This mental condition was a little singular, inasmuch as her former deliveries had not been difficult, and had terminated fortunately.

During the entire period of this pregnancy she was impressed with the belief that it would terminate in some great calamity, and so firmly had this taken possession of her that no reasoning could convince her to the contrary or relieve her anxiety for a moment.

I mention this particularly, because it seriously complicated the management of the case.

The midwife had detected the nature of the presentation, and foreseeing trouble had sent at once for a physician. This timely action assuredly saved at least the necessity of decapitation.

After calming somewhat her excessive fear I practiced the touch. The os was almost fully dilated and thoroughly dilatable; the membranes were entire, and prominently presenting through them was the chin. Pushing the examination, I discovered that the head was in a state of forced extension, the

forehead lying above the left anterior margin of the inlet; the chin being the lowest part of the child's body, occupied a position near the center of the pelvic cavity.

As a primitive face presentation the case was not remarkable, but this attitude of the head in extreme extension, with a tendency of the chest to descend and become impacted as a chest and chin presentation, prior to the rupture of the membranes, was certainly one of the rarest complications to be encountered by the obstetrician. The possibility of such an occurrence I can only account for by the co-existence of a large child and a small quantity of liquor amnii.

Foreseeing that after the evacuation of the waters, one pain only would be sufficient to drive down and impact hopelessly the chest and chin, I determined to anticipate such a calamity by rupturing the membranes and operating instantly while the waters were still in utero.

Waiting about fifteen minutes until the os was sufficiently open to insure a ready transit of the head, I put her well under chloroform, brought her into the obstetire position, and proceeded to operate.

The right hand was passed well into the pelvic cavity, the left hand laid over the fundus of the uterus. During the interval of a pain I ruptured the membranes, applied my hand to the chin and chest, and endeavored to raise the whole body of the child so as to facilitate flexion of the head. The presenting parts were too firmly packed upon the brim to permit of such movement. It would have been absolutely impossible to have effected podalic version, so that the alternative was to turn by the head or to decapitate.

Having failed in the first manœuvre, I passed my hand posteriorly to the head, and high up in the left iliac fossa, and grasped the occiput firmly and, assisted by my left hand pressing it down externally, I drew down the occiput towards the brim, the chin ascending in the opposite direction. This had to be done slowly and with great caution, inasmuch as it required the exercise of great force. As soon as the vertex had passed the axis of the spinal column, flexion completed itself suddenly. The forceps were quickly applied and engagement perfected. The entire procedure occupied twenty minutes.

Because of the large size of the head, and hysterical state of the woman wherein she screamed out continually, and used no

effort to assist expulsion, I was obliged to call Dr. Boyer from his sick bed to complete the delivery, my energy being completely exhausted. With considerable effort he soon delivered her of an immense living child.

The mother made a good recovery, and the child did well.

As in this case, I have always experienced far greater difficulty in correcting those mal-positions of the head characterized by extension, than in any other position requiring version, not excepting shoulder presentations with descent of the arm. The reason is this:—When the head is greatly extended the length of the child is reduced almost as though the head had been completely removed. The uterus accommodates itself to this shortened axis, its fundus pressing upon the breech; the long axis of the uterus corresponds with the length of the child's body measured from the buttocks to the upper edge of the sternum, or the prætracheloid space. In attempting flexion the head has to be brought down, the vertex in a line with and therefore added to the length of the spinal axis. To accomplish this the long axis of the contracted uterus has to be correspondingly increased by being pushed up by the breech. As soon as the vertex has attained the line of the spinal axis, the subsequent flexion completes itself; therefore while the first half of flexion is exceedingly difficult of accomplishment, the latter half is remarkably easy.

PHOSPHORUS AS A RESTORATIVE REMEDY.

BY S. S. HERRICK, M.D.

Phosphorus is an important constituent of the human economy. Nearly three-fifths of the bony structure consists of calcium phosphate; the nervous structure contains a small, but very essential, percentage of phosphorus, and, besides, it exists in most of the fluids of the body. It enters into the albuminous and fibrinous components of our food, mainly those derived from animal flesh and the cereals.

In the mineral kingdom phosphorus exists in combination with oxygen and metallic bases, as phosphates, and in this condition is found in the soil. In the process of vegetation oxygen is generally rejected from its combinations, while its associated elements are absorbed by the plant. In this manner sulphur

and phosphorus become constituents of albuminous products, while in the putrefaction of both vegetable and animal matters sulphuretted hydrogen is a common exhalation, and in that of animal matters phosphoretted hydrogen is also observed, thus indicating that the sulphur and phosphorus were not previously combined with oxygen.

Liebig did not undertake to explain the mode of occurrence of phosphorus in nervous matter, but Liebreich has obtained from it a substance called protagon, which is its principal constituent, but whose precise chemical formula has not been ascertained. When boiled with strong baryta-water, protagon is resolved into glycerin, phosphoric acid, stearic acid, another non-nitrogenous acid not fully investigated, together with a base called neurine, composed of carbon, hydrogen, nitrogen and oxygen.

In the urine, phosphorus is found chiefly in the acid phosphates of ammonium and sodium, with a smaller proportion of calcium and magnesium phosphates, as products of retrograde metamorphosis, which is in effect an oxydation or combustion of worn-out tissues. Bone phosphate needs a higher degree of oxydation, to render it soluble and fit for elimination through the natural emunctories; and by analogy we may suppose that the phosphorus of nervous matter undergoes oxydation by its exercise. Certain it is that the alkaline phosphates appear more abundantly in the urine as an accompaniment of nervous exhaustion. As we shall see hereafter, there are therapeutic reasons for the supposition that the phosphorus of nervous matter is not highly, if at all, oxydized, and perhaps exists in solution with some fatty matter.

The substance under consideration has latterly attained a recognized place among remedial agents, though, in my opinion, it does not enjoy its due appreciation. It is not my intention here to bestow more than passing notice on the hypophosphites, the phosphates and phosphoric acid. Both chemically and therapeutically, they have about as close relation to phosphorus as the corresponding sulphur compounds have to their common radical, though some of them possess valuable properties. Phosphorus, pure and uncombined, is the remedy now under consideration.

In mode of action it is to be reckoned among the true restoratives, with special action upon nervous structure, just as iron is restorative to the red corpuscles of the blood. Iron is assimi-

lable, in whatever form taken, but the same can not be affirmed of phosphorus. Sodium phosphate is a simple purgative, and is speedily eliminated. Neutral calcium phosphate is insoluble, and as such non-assimilable. It may perhaps be converted into an acid and soluble phosphate by the oxydation of free phosphorus in the albumen of the blood. According to our present knowledge, animal force, in all its varieties, is a result of chemical action within the organism, that is to say, oxydation of ultimate or proximate elements. It is probable that the oxydation of phosphorus is concerned largely in the evolution of nervous force, and this accords perfectly with the therapeutic fact, that oxydized phosphorus compounds are not to be compared with the simple substance in the treatment of nervous complaints. Zinc phosphide is an efficient remedy, and the hypophosphites owe their value to their imperfect oxydation.

Indications for the use of phosphorus are found in those conditions of the nervous system marked by debility, and resulting either from excess in action or deficiency in nutrition. An accompaniment of excessive secretion of the alkaline phosphates in the urine strengthens the indication. Inquiry into the habits of the patient will generally disclose whether there be any cause for nervous exhaustion. The nutritive functions, of course, should be scrutinized, and the urine be examined for a possible excess of phosphates.

The complaint in which I have found most success with phosphorus is neuralgia, or, more strictly speaking, the neuralgic habit, often associated with tenderness of one or more of the spinous processes of the vertebræ. This is the malady known as spinal irritation, and supposed to be dependent on anæmia of the posterior columns of the cord. There is evidently a defect of nutrition in the nervous centres supplying the parts affected. It is proper to state, however, that I do not restrict treatment to the use of this remedy solely, but resort also to blisters, repeated if necessary, over the affected region of the spine. Their action is to produce local determination of blood, but nothing more than temporary effect need be expected from them.

There is also a condition of cerebral anæmia, marked by headache, listlessness, drowsiness, and often attended with muscular debility, in which phosphorus gives signal relief. The headache due to cerebral hyperæmia, would, of course, be aggravated by

this kind of treatment, and the distinction between these opposite conditions of the brain should be carefully observed.

The hysterical habit is quite apt to be found in individuals suffering from nervous debility, and in such case much benefit might be expected from phosphorus. In one particular instance, in my experience, after a prolonged course with this remedy, the attacks appeared at lengthening intervals, until I lost sight of the patient.

In maladies where the pathological condition is presumed to be any form of atrophy or degeneration of nervous substance, no inflammatory action existing, I should think this remedy to be indicated. Though the pathological histology of hypochondriasis, melancholia and dementia is not precisely understood, there is reason to suppose that it would rather favor than forbid indications for the restorative treatment heretofore suggested, and I should hope for favorable results, except in long confirmed cases. Other complaints might be named, due to conditions of the nervous system above noted, which the judicious practitioner would find adapted to the remedy in question, but it is needless to prolong the list.

In a large proportion of cases adapted to the phosphorus treatment, there is a state of spanæmia which calls for the use of iron. These subjects also are generally deficient in muscular tonicity, and their nutritive functions are imperfectly performed. Consequently I often find it advisable to combine iron and strychnia with the phosporus. Strychnia is, in the true sense of the word, a tonic, while the other two are as truly restorative remedies; and the three work admirably together in most of the cases where phosphorus is indicated.

Much depends on an eligible mode of exhibiting a remedy so distasteful as phosphorus. In the liquid state I have not found it possible to disguise effectually its abominable flavor, and the stomach is apt to signify a lasting displeasure at an abrupt introduction to so obnoxious a guest. The pilular form is much to be preferred, and the pills should be protected by sugar, unless intended for early use. It is hardly necessary to add that phosphorus should never be taken on an empty stomach. With the observance of these conditions, I have generally found the fiftieth of a grain three times a day to be well tolerated, and at the same time sufficient for a decided effect within a few days.

With a kind stomach to operate on, greater liberty might be taken, if necessity should require.

POISONOUS EFFECTS OF CYANIDE OF POTASSIUM.

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Cyanide of potassium is one of the most formidable poisons known to the chemist; and the extensive use of this salt in certain arts, and especially in photography, has given rise to many accidents, and also afforded facilities for its easy procurement for suicide and poisoning.

Chemical and Physical Properties.

This salt may be produced by the combination of cyanogen and potassium. The metal absorbs cyanogen slowly at ordinary temperature, but when heated, it quickly takes up a volume of the gas equal to the volume of hydrogen which the same quantity of potassium would eliminate from water. It may also be formed by fusing azotized organic matters with carbonate of potassium, by igniting nitrates or nitrites with organic substances, and by passing air over an ignited mixture of charcoal and carbonate of potassium.

Potassic cyanide may be prepared in large quantities, by heating to dull redness, in a covered iron crucible, a mixture of 8 parts of anhydrous potassic ferrocyanide, and 3 of dried potassic carbonate, until the fused mass has lost its yellow color, and ceases to give off bubbles of gas. The iron is separated in the form of a metallic powder, and subsides to the bottom of the crucible; the fused cyanide can then be poured off, and solidifies on cooling. The cyanide thus obtained is, however, always mixed with a portion of cyanate. If the presence of the potassic cyanate be injurious, it may be removed by adding to the mixture of the carbonate and ferrocyanide, before fusion, one-eighth of its weight of charcoal, which at a red heat reduces the potassic cyanate to the form of cyanide. The fused salt, when decanted

from the iron, presents a black aspect, owing to the presence of unconsumed charcoal. If it is to be used in solution immediately, it may be dissolved in water and filtered; but if required in the solid form, it may be purified by treatment with boiling alcohol, from which after filtration, it crystallizes in colorless cubes.

Cyanide of potassium crystallizes in transparent colorless cubes or forms derived therefrom. It is inodorous when dry, but when exposed to the air in the moist state, it is decomposed by the carbonic acid of the air, and exhales the odor of prussic acid.

Its taste is acrid and caustic, somewhat like that of bitter almonds. It is very fusible, melting at a dull red heat to a transparent liquid, which on cooling solidifies to a dull opaque mass, having the aspect of porcelain. At a white heat it appears to volatilize without decomposition. It has an *alkaline* reaction, is easily soluble in water and very deliquescent; it likewise dissolves readily in *hydrated alcohol*, but is insoluble in *absolute alcohol*.

Potassic cyanide is of great value to the experimental chemist both for its reducing and its solvent powers. As a reducing agent, it is nearly equal in power to potassium itself, and is especially useful in blow-pipe analysis. The oxides of a large number of metals, including those of lead, copper, and iron, when thrown into the melted salt, are immediately reduced to the metallic state, while potassic cyanate is formed. It may also be used in the laboratory as a reducing agent instead of black flux, in testing for arsenicum. In solution it dissolves metallic iron, zinc, nickel, and copper, with evolution of hydrogen, while potash is produced. Silver and gold are also dissolved by the solution of potassic cyanide, if air be allowed free access, and soluble cyanides of potassium with these metals are formed. Cupric sulphide is soluble in an excess of potassic cyanide, and may be thus easily separated from cadmic sulphide, which is insoluble in this reagent.

As a solvent, it is much used in analysis for separating metals one from the other, as cobalt from nickel, copper from bismuth, cadmium, etc., also in various processes of volumetric analysis, as the estimation of copper. It is used in medicine for the preparation of prussic acid. By photographers it is employed for fixing proofs on moist collodion, and for removing stains of nitrate of silver from the hands, which it does by forming a soluble double

cyanide of silver and potassium. This mode of employing it is, however, very dangerous, as if it comes in contact with a cut or scratched surface, it is apt to produce painful and troublesome sores, and may even give rise to dangerous symptoms of poisoning. The removal of silver stains may be effected by means of a solution of iodine in iodide of potassium.

Cyanide of potassium is extensively used in galvanic gilding and silvering; indeed the chief consumption of it is for this purpose.

It is evident, therefore, from the preceding well-known facts, that this intensely poisonous salt may be readily obtained, and especially in this country, in which no effective laws exist for the protection of the community from the unrestrained sale of poisons.

It is important to note the fact that, cyanogen was first obtained in the free state by Gay Lussac in 1815, and afforded the first instance of the isolation of a compound radicle. Many of its compounds had been known long before, prussian blue, having been discovered by Diesbach and Dippel in 1704, ferrcyanide of potassium by Macquer about the middle of the eighteenth century, and prussic acid by Scheele in 1782.

The following experiments were performed by the writer at various times during the past twenty years, illustrating the action of cyanide of potassium upon plants and animals.

Action of Cyanide of Potassium on Plants.

In the experiments with this salt, as well as in those with hydrocyanic (prussic acid), rice was the plant selected, and the surrounding conditions of temperature were the same.

Both in closed and unclosed vessels, solutions of cyanide of potassium arrested completely the process of germination. The word *arrested* is here used, because it is difficult in such experiments to affirm that not a single change took place in the organic elements before the complete arrest of the process: it is certain, however, that if any of the numerous changes of germination took place, they did not proceed far.

When the seeds thus acted upon by cyanide of potassium were transferred to pure water, in no instance did germination take place; they simply underwent slow decay. This experiment was repeated with similar results upon more than one hundred rice

seeds. Corresponding experiments were carried on at the same time with pure water.

Solutions of cyanide of potassium in every instance arrested the growth and caused the death of the germs of rice; and the rapidity of the action corresponded with the amount of the poison added. These experiments were in like manner repeated upon more than one hundred stalks of growing rice.

The following conclusions may be drawn from the preceding experiments.

1. Plants as well as animals may be destroyed by certain mineral and vegetable substances denominated poisons.

2. As the vegetable kingdom is without nerves, muscles, or any special circulatory apparatus, similar to the automatic apparatus of animals, it is evident that cyanide of potassium must act upon the individual living cells composing the vegetables subjected to their action.

3. As the living component cells of the vegetable kingdom are capable of elaborating distinct products from the surrounding nutritive materials, and as this power is destroyed by poisons, we must conclude that the functions of secretion, growth and nutrition, may be influenced directly by poisons, without the intervention of the nervous system.

4. As, therefore, poisons may act directly upon the individual living cells of vegetables, arresting the process of germination in the soil, and of the acts of secretion, nutrition and growth in the fully formed cells, it is reasonable to infer that poisons may act upon the individual living cells of animals.

Thus poisons may act directly upon the muscular fibre, or upon the ganglionic cells of the sympathetic and cerebro-spinal system, or upon the secreting and excreting cells of the liver and kidney, or upon the colored and colorless corpuscles of the blood.

The preceding conclusions were verified by about two hundred other experiments with poisons upon vegetables,

EFFECTS OF CYANIDE OF POTASSIUM ON LIVING ANIMALS.

Experiment: Effects of Solution of Cyanide of Potassium on action of Heart of Young Opossum (Didelphis Virginiana), Montevideo, Georgia. April, 1861.

The young opossum was taken out of the pouch of its mother,

and at the time of its removal it was sucking vigorously at the teat of its mother. The thorax was opened, and the heart cut out and dropped into a solution of cyanide of potassium, of the strength of ten grains dissolved in one fluid ounce of water. After falling into the solution the heart beat rapidly, for a few moments, and then ceased in one minute after its first introduction, and could not be excited to any farther action.

Experiment:—Effects of Solution of Cyanide of Potassium on action of Heart of Pided Viper (Heterodon Platirhinos).

Heart of living reptile cut out and thrown into solution of cyanide of potassium, 10 grains to fluid ounce of water.

Action of heart after being cut out, and before being thrown into the solution of cyanide of potassium, 48 per minute. After its immersion in the solution of cyanide of potassium, in one quarter of a minute its beat had fallen to 40 per minute, and in half a minute the ventricle and auricles contracted spasmodically, and the ventricle was corrugated as if portions of the muscular fibres were more contracted than others. In three minutes all action of the heart had ceased entirely, and it could not be excited to contraction even by mechanical stimuli.

Experiment: Effects of Solution of Cyanide of Potassium on action of Heart of female Emys Serrata.

April, 1861. Sternum of large emys serrata removed, and heart exposed; action of heart before being cut out, 70 per minute; after it was severed and removed from the body, 64 per minute. Immediately after throwing the heart into the solution of cyanide of potassium (10 grains to fluid ounce of water), the action was slightly increased from 64 to 70 per minute. In half a minute, however, its action began to decline in frequency, and in three minutes, it beat 40 times per minute. The effect of the poison was very marked in destroying the symmetry of the actions of the heart.

The heart in its natural state in chelonians beats thus: the auricles contract, and then the ventricle in regular order. The cyanide of potassium destroyed this relation of the action of the auricles and common ventricle; under its poisonous influence the two auricles could be seen contracting separately, the auricles and ventricles simultaneously, and one auricle and the common ventricle simultaneously. After this irregular action

had been established for a few moments, the muscular bundles of the ventricle then became corrugated, and irregularly contracted. Nine minutes after placing the heart in the solution of cyanide of potassium, it beats 36 times per minute, the ventricle spasmodically, with contortion of the muscular fibres, whilst the auricles give but little indication of any action whatever; 15 minutes after immersion in solution of cyanide of potassium, action of heart 21, spasmodic and wholly unlike the natural action; in 20 minutes all signs of action had ceased, the ventricles still presenting a corrugated contorted outline, with very slight spasmodic twitching in a few of the fibres; a few moments after this all signs of motion ceased.

In the preceding experiment, the cyanide of potassium appeared to act upon the sympathetic ganglia of the heart, as well as upon the muscular fibres, dis-associating their mutual rythmical impulses; and the rapidity of its action appeared to be inversely proportioned to the amount of the muscular fibre and number of ganglia.

Comparative experiments were instituted by throwing the hearts of living cold-blooded animals into pure water, and this organ continued to beat slowly and regularly for more than 100 minutes.

Experiment: Action of Cyanide of Potassium on Congo Snake (Amphiuma Means), June, 1862.

This reptile was immersed in a solution of cyanide of potassium, 6 grains to ½ pint of water; no special effects were observed for three hours; at the end of this time, the muscular system was thrown into violent spasms, and the muscles of the throat appeared to be permanently tetanized. At the end of six hours, all signs of life were extinct. When the heart was exposed, it was found to be perfectly motionless, and could not be aroused either by mechanical or electrical stimuli. The voluntary muscles, on the other hand, responded vigorously and readily to the interrupted magneto-electrical current, *thus showing that although the powers of the heart were destroyed still the voluntary muscles retained their power of responding to stimuli.*

The intestinal canal was congested with blood, and the abdominal canal contained effused blood, which coagulated upon exposure to the atmosphere.

Under the microscope, the blood corpuscles from the blood of

the heart presented in many cases perfect forms, whilst in some cases they presented an elongated, spindle-shaped appearance, instead of the usual oval form.

Experiment: Illustrating the Action of the Cyanide of Potassium on Warm-Blooded Animal.

April, 1860. Fine, large cur dog, fat, fierce and powerful. Temperature of rectum 103.59°. The attempt was first made to pass a strong interrupted magneto-electric current through the muscles of the thigh; during the cutting through the skin for positions for the terminals of the electrical apparatus, the dog struggled violently, and during these struggles there was a slight rise in the thermometer, which indicated 104°. In a few minutes, however, it fell to 103.79°. After the application of the electricity for a few seconds, his struggles were so violent, and his strength so great (the muzzle was torn off, and the dog bit the four young men who were assisting me in the experiment), that it was found to be impossible to continue the application of electricity, and a strong solution of cyanide of potassium was injected by means of a syringe into the mouth.

In one minute the struggles of the dog became violent (he barked and gnashed his teeth, and struggled in the most violent manner to break loose), and the dog died in six minutes after the solution of cyanide of potassium had been introduced into the mouth. Before death *the tongue and lips became of a brilliant scarlet color*, and the tongue appeared to be swollen.

About three minutes before death the dog became convulsed, the breathing became spasmodic, and at the moment of death the muscles were violently convulsed, and the body and extremities were stretched backwards. The force of the death spasm was so great, that the shaft of the glass thermometer with its porcelain scale, in the rectum of the dog, was broken into small fragments. During the violent spasms preceding death, the temperature rose 1.01°., and after remaining stationary for 20 minutes after death slowly descended.

Post Mortem Examination, 20 hours after death.—When the skull-cap was removed, the blood-vessels of the membranes and of the substance of the cerebrum and cerebellum were distended with dark blood, which assumed a bright arterial hue upon exposure to the atmosphere. Blood-vessels of membranes and

structures of medulla oblongata and spinal cord greatly congested with blood. The spinal cord was examined throughout its entire length. Heart distended with dark blood; lungs, liver, stomach and intestines congested with dark blood.

Upon exposure to the atmosphere, the blood from the centres of the heart and from all the organs assumed a brilliant hue.

Experiment: Illustrating the Effects of Cyanide of Potassium on Warm-Blooded Animal.

January, 1861. Thirty grains of cyanide of potassium were dissolved in two fluid ounces of water, and half a fluid drachm was injected subcutaneously beneath the skin of the left foreleg of a large cur dog.

The poison excited violent struggles, loud and piercing cries; fulness of respiration, disturbance in the action of the heart, followed by slowness of respiration, and slow and spasmodic action of the heart. The beats fell in 10 minutes to 40 beats per minute. Then followed a long piercing cry; tetanic spasms, long drawn and loud breathing, coma, and finally death in 20 minutes after the injection of the poison. The animal in this experiment, unlike the one in the preceding experiment, died without a struggle.

Post Mortem Examination, 21 hours after death.—Veins of brain distended with dark blood, which exhaled the odor of prussic acid. Brain normal in color and structure. Blood-vessels of brain less congested with blood than in the previous case of poisoning with cyanide of potassium. Spinal cord normal in appearance.

Vessels of stomach distended with dark fluid blood. Hepatic mesenteric and intestinal veins distended with dark fluid blood, as was the case also with the vena cava. Arteries empty. Liver of a dark purplish, greatly congested appearance. Kidneys of a dark, purplish slate color, and greatly congested with blood. Spleen dark colored and congested with blood.

Lungs somewhat congested; veins of stomach distended with blood; mucous surface much corrugated and of a deep pink and purplish color, and covered with thick mucous.

Veins of small intestines much congested with blood; mucous surface pale, and not congested except in the duodenum, near its junction with the stomach. The congestion of the mucous mem-

brane of the stomach appeared to have been due to the local action of the poison. Under the microscope, the colored blood corpuscles in some cases appeared to be smaller than normal, and in others presented a stellate appearance. When abstracted from the body, the blood coagulated imperfectly.

I repeated the preceding experiments upon some forty living animals with similar results.

General Conclusions from the Preceding Experiments, as to the Nature of the Effects of Cyanide of Potassium and Hydrocyanic Acid.

1. After the introduction of cyanide of potassium and prussic acid into the subcutaneous tissue, or after their application to the tongue and mucous membrane, a certain period of time elapses before the manifestation of symptoms of poisoning; and during this period the poison is absorbed, mingles with the blood, and is distributed to the various organs and tissues, and is thus brought into contact with the ganglionic cells of the cerebro-spinal system.

Various statements have been made as to the rapidity of the effects of prussic acid and cyanide of potassium in producing poisonous symptoms and destroying life, which have not been sustained by my experiments.

In the most suddenly fatal cases, the action has been referred by some physiologists to nervous action, transmitted from the points at which the poison touched the extremities of the nerves. The incorrectness of this view has been shown by experiments similar to the following by Blake. The portal vessels of an animal being tied, seven fluid drachms of Scheele's Acid were introduced into the stomach on the "*sentient extremities*" of the nerves on which the poison is said to act. Ten minutes elapsed without the slightest effect; the ligature was removed, and one minute afterwards the effects of the poison manifested themselves.

It is evident that those who give this explanation of the sudden effects of prussic acid, leave entirely out of view the fact that hydrocyanic acid is highly volatile, and that if a drop of the pure acid be approached towards the tongue of a living animal, the acid evaporates and reaches the lungs by inhalation, and is immediately diffused over an immense absorbent surface, before the drop of acid actually reaches the

mucous membrane of the mouth. It is well known that prussic acid is most rapidly fatal in the form of vapor. I have been, upon more than one occasion, most seriously affected by the vapors of the acid during my experiments and post mortem examinations. The time of the action of this poison should be reckoned from the moment that its vapor reaches the capillaries of the lungs; and the place of action should be considered the extensive absorbent surface of the bronchial tubes and air cells. Now it is well established that the poison may reach the heart and cerebro spinal and sympathetic systems in an almost inconceivable short space of time from the lungs. That a sufficient interval elapses between the application of the acid, and the moment when its first effects are produced, to allow of its being brought into contact with the central ganglionic masses, will be evident from the consideration of the following facts.

Haller and Sauvages were the first to ascertain by experiment, with what velocity the blood is carried through the vascular system; their calculations, however, were erroneous, as they were founded on the supposition that the movements of the blood depended exclusively upon the action of the heart. Haller's conclusions respecting the velocity of the circulation in frogs and small fish, are more correct, as they were confirmed by autopsies, but his observations were confined to cold-blooded animals, and it is scarcely necessary to mention how hazardous it would be to infer from them the velocity of the blood in warm-blooded animals.

The same remark applies to the experiments of Spallanzani and Dollinger.

In more recent works on the subject, the comparison of the quantity of blood contained in the ventricles of the heart, with the whole mass of the blood, and with the number of pulsations in a certain time, was considered sufficient to determine the relative velocity of the blood; a method the uncertainty of which appears from the circumstances, that the quantity of blood cannot be made out with precision, and that the number of pulsations and the capacity of the ventricles differ very considerably in different individuals. Mr. Herring, of Stutgart, found the capacity of the left ventricle in horses differing from 3 to 11 ounces, and that of the right ventricle from 4 to 38 ounces.

M. Herring tried another method which seems to lead to more

accurate results. He mixed a solution of the cyanide of potassium with the blood; he then took, at certain intervals, small quantities of blood from various parts of the body; and from the chemical examination of these different portions of blood, and from the comparison of the time which the substance required to arrive from one vessel into another, endeavored to ascertain the relative velocity of the blood.

The experiments were performed upon horses, and the following conclusions were established.

a. The time within which the cyanide of potassium after having been mixed with the blood passes from one of the jugular veins into the opposite, is from twenty to thirty seconds; into the saphena magna, twenty seconds; into the arteria mesenterica, fifteen to thirty seconds; into the arteria maxilla externa of the opposite side, from ten to twenty-five seconds; and into the arteria metatarsi, from twenty to forty seconds.

b. The cyanide of potassium, within a very short time after its introduction into the blood, is excreted by the serous membranes, but in small quantity. The time varies from two to eight minutes.

c. In the kidneys the excretion appears to take place with the greatest rapidity; in all experiments, within one minute after the introduction into the blood, the cyanide of potassium was found in the cortical, sometimes also in the tubular substance, and in a few instances in the pelvis of the kidneys.

d. Only one minute is required to bring the substance from the jugular vein into the thoracic duct.

2. Cyanide of potassium and prussic acid produce no absolutely uniform alterations in the circulation of the cerebro-spinal system recognizable after death; and the cerebral and reflex symptoms are not due to the engorgement of the vessels. In some cases, the brain was not at all congested; in others the veins were distended with blood; and the blood after 15 hours showed a great tendency to transude through the coats of the vessels, from its disorganization, and thus inducing a much greater appearance of congestion and irritation than actually existed at the moment of death.

The symptoms of cerebral disturbance—delirium, coma, expansion of the pupil—were as strongly marked in the cases in which the brain was not specially congested, as in the cases in which it was most congested. Independent of these facts, it is

evident that the mere state of engorgement of the blood-vessels could not produce death in so short a time. In some cases the spinal cord was not specially congested; in others the veins were distended with blood, and in others still, both the veins and arteries were filled with blood. Violent spasms, opisthotonis and all the phenomena of aberrated spinal action, were as well marked in one condition of the spinal cord as in the other. We are compelled from these facts to conclude, that cyanide of potassium and hydrocyanic acid, produce no absolute uniform alterations in the circulation of the spinal cord recognizable after death; and that the aberrated muscular actions are not due to the engorgement of the blood-vessels of the spinal cord and its membranes. Independently of the fact stated above, it is evident the mere state of engorgement of the vessels of the spine could not produce death in so short a time. Careful microscopical examinations did not reveal any uniform alterations in the nervous elements.

3. The peculiar phenomena manifested by the cerebro-spinal nervous system, in poisoning by cyanide of potassium and hydrocyanic acid, are due to the action of the poison on the nervous elements, conveyed to them by the blood; to the action of the altered blood on the nervous elements, and sudden arrest of the capillary circulation of the cerebro-spinal nerves, in consequence of the action of the poison on the sympathetic system, and muscles and ganglia of the heart; to the reflex action of the sympathetic system, and to the complicated actions and reactions of the poison in the individual structures.

4. In poisoning by cyanide of potassium and prussic acid, the disturbances of the sympathetic nervous system are not less marked than those of the cerebro-spinal nervous system. The slow, full respiration, the slow action of the heart in some cases, and its feeble, rapid action in others; the feeble pulse, the diminution of temperature in the extremities, the rise of temperature in the trunk before death during the first stages of the action of the poison; the subsequent fall in the temperature of the trunk before death in some cases; the accumulation of the blood in the large veins of all the organs and tissues, in most cases of poisoning by hydrocyanic acid; the engorgement of the veins of the stomach, small intestines, spleen, liver and kidneys; the suppression of urine in some cases—all point to aberrated nervous action of the sympathetic system.

The mere congestion of the blood-vessels of the sympathetic nervous system could not account for any one of these phenomena—in fact, if the sympathetic nervous system presides more especially over the circulation, the stagnation of the blood in the vessels of the sympathetic, and in fact, in the blood vessels of the cerebro-spinal nervous system, and of all the organs and tissues, is evidently the effect, rather than the cause, of the aberrated sympathetic nervous phenomena.

From these facts, it appears to be proper to conclude, that the aberrated nervous phenomena of the sympathetic system are due to the direct action of the poison, conveyed in the blood, on the ganglionic cells of the sympathetic; to the action of the altered blood on the same elements, to the congestion of the blood-vessels of the sympathetic, and to the reflex action of the cerebro-spinal system.

If the disturbances in the action of the sympathetic nervous system do not precede, they are certainly coeval with those of the cerebro-spinal system; and are in both systems manifested precisely at the moment when the blood containing the poison reaches the nervous elements.

The arrest of the action of the heart, and of the peristaltic motions of the intestines, must be referred to the direct action of the poison on the sympathetic ganglia, and to the action of the poison on the unstriped muscular fibre.

5. Cyanide of potassium and prussic acid act on both the voluntary and involuntary muscles, and decrease or arrest entirely their property of contractility; and after death from these poisons, in many cases it is impossible to excite contraction of the muscular fibres of the heart by mechanical or electrical stimuli.

6. The blood is altered; its color is changed, as if prussic acid had entered into combination with the coloring matter; in most cases it coagulates imperfectly, and in some not at all.

7. Cyanide of potassium and hydrocyanic acid produce effects on all the organs and tissues with which it is brought in contact; hence we cannot affirm that its action is confined exclusively to the nervous system; and more especially would it be impossible to affirm that its action is confined either to the cerebro-spinal or sympathetic nervous system, or that its primary action is on one or the other. Cyanide of potassium and prussic acid induce alterations in the constitution of the blood,

and through this medium affects all the organs and tissues. We have established also that these and other poisons act on vegetables, which are destitute of nerves, and hence we may conclude that it is capable of acting on all the individual cells of the living animal.

POISONOUS EFFECTS OF CYANIDE OF POTASSIUM ON MAN.

Hydrocyanic acid is as fatal to animal life, when combined with alkaline bases, as when it is free, and hence ammonia cannot be regarded as a chemical antidote in cases of poisoning by prussic acid: it acts merely as a stimulant to the cerebro-spinal and sympathetic systems. It is one of the most formidable poisons known to chemists, and has led to the destruction of life in many instances within the last few years, chiefly owing to its having been administered by mistake for other medicinal preparations, or by those who were ignorant of its intensely poisonous properties.

Fifteen grains of "Kali hydrocyanicum," in a dose, were prescribed by a physician for his patient; he intended to order the ferrocyanide of potassium, but instead of this salt cyanide of potassium was sent. The patient took the poisonous draught, and was quickly destroyed. On inspection, there was no particular odor, but the poison was detected in the contents of the large intestines.

A similar accident occurred in Germany, by which the patient was killed, and the physician had a narrow escape of his life. Two drachms of "Kali hydrocyanicum" were ordered in a prescription, with two fluid drachms of sugar dissolved in two ounces of camomile water, a desert-spoonful to be taken every quarter of an hour. Cyanide of potassium was dispensed instead of the ferrocyanide—the salt intended! The patient, an adult, took a dose (about 100 drops), and the operation of the poison was manifested during the act of swallowing. There was a tendency to vomit, and an immediate loss of consciousness; death took place in an hour. The quantity of cyanide here taken was not less than from thirteen to fifteen grains, equivalent to more than five grains of anhydrous, or 100 drops of Scheele's prussic acid!

The physician who prescribed the medicine was sent for while the patient was still suffering from its effects; and in order to show that he had prescribed an innocent mixture, he put about

a teaspoonful of it into his mouth and swallowed three-fourths. The remainder he spat out, as it gave him an astringent or constricting sensation in his throat, like that caused by alum or green vitriol. He immediately felt severe pain in the back of the head; there was inability to stand, indistinct vision, nausea, a rushing sound in the ears, loss of consciousness, and without complaining of any well-defined pain, he felt that he had lost the power to make a deep inspiration. The loss of sense was as rapid as in ordinary syncope. When an effort was made to swallow some milk, there was a strong feeling of choking followed by copious vomiting. For more than half an hour he could not stand upright. Giddiness, weight in the head, and constriction in the throat, continued for many hours. He passed a restless night; but the next day, with the exception of suffering from a general relaxation and weakness, he had recovered, and was enabled to assist at the examination of the body of his unfortunate patient. Some years since it occasioned the death of a person at St. Malo, under the following circumstances. A physician prescribed for the deceased rather more than one drachm of the cyanide in two ounces and a half of orange-flower water and syrup, and of this mixture three spoonfuls were to be taken daily. It seems that a tablespoonful was taken for the first dose, and the patient died in three-quarters of an hour. None of the poison was found in the stomach, but a portion of the mixture from which the first dose had been taken was examined, and found to contain the cyanide in solution. A criminal procedure was instituted against the physician, and he was fined and imprisoned. MM. Malaguti, Sarzeau, and Guyot, who gave evidence on the occasion, stated that they found no trace of the poison in the body,—that the cyanide was pure and only one tablespoonful was missing from the bottle. They further stated that a dog was killed in a few minutes, after taking less than *three grains* of the cyanide in solution, and that the largest *medicinal dose* to a human being, was five-sixths of a grain. The mixture in this case contained about three grains of the cyanide in one drachm: therefore had teaspoonfuls been taken by the deceased, the quantity would have been quite sufficient to destroy life. The medicine had evidently been prescribed by a person totally ignorant of its poisonous properties. (*Lancet*, Jan., 1843, Ann. d'Hyg. 1843, i. 413; Casper's Wochenschrift, Oct., 1845, p. 657; Taylor on Poisons, 627.)

The formidable nature of this poison may still further be illustrated by the fact, that a dose of five grains has proved fatal in three instances, and in one case the person died in two hours.

The symptoms which the cyanide produces are similar to those occasioned by prussic acid—insensibility, spasmodic respiration, convulsions, with tetanic stiffness of the jaws and body. These appear in a few seconds or minutes, and run through their course with great rapidity.

The rapidly fatal effects of cyanide of potassium were illustrated on the 24th of March, 1877, in the case of Severino De la Barrera, the Spanish Consul of New Orleans.

The following facts with reference to the death of the Spanish Consul were published in the papers of the 25th.

"It becomes our painful task to record the demise of Severino De la Barrera, the Spanish Consul in our city, which occurred at twenty minutes to 1 o'clock yesterday afternoon. * *

"Yesterday morning at half past 11 o'clock, after his breakfast, at the restaurant, he returned to his residence on Dauphine street, and retired to his bed-room with one of his friends, J. A. Bousquet. After a few moments conversation he remarked to Mr. Bousquet, that he had taken poison. Hardly had he uttered the words when he fell senseless. Mr. Bousquet, Signor Rafart, Vice Consul, and Mr. Samuel Rusch, the clerk at the consulate, used every effort in their power to revive him, but failed.

"In the meantime Drs. LeMonnier and Formento were summoned, but the shadow of death was already upon him, and ten minutes later he laid lifeless surrounded by his terror-stricken friends.

"A post mortem examination and inquest was held by Dr. Schumacher, City Physician, and Coroner Rance, and the jury, after the examination, rendered the verdict that death had been caused by prussic acid administered by his own hands."

It is not my intention to examine the question whether this was really a case of suicide; for it is to be hoped that justice to the dead as well as to the living, and the highest interest of this community, will force a thorough examination of all the facts.

Through the courtesy of Mr. H. C. Turpin, to whom the bottle from which the fatal dose had been taken, as well as the brain,

stomach and liver of the deceased, had been delivered by the Coroner, I was enabled to make a careful dissection of the brain and chemical examination of the blood from the various organs, also a quantitative analysis of the contents of the bottle containing the poison. The following general results were obtained from this examination, conducted by Mr. Turpin and myself in my laboratory.

The brain was greatly congested, but was healthy through all its textures. The brain exhaled prussic acid. The blood of the brain upon analysis yielded prussic acid and cyanide of potassium.

The liver was greatly congested with blood, exhaled prussic acid, and upon analysis yielded prussic acid. Both the outer and inner surfaces of the stomach were congested with blood. The mucous membrane presented a deep scarlet ecchymosed appearance, and was softened and eroded, apparently by the action (post mortem) of the gastric juice.

The stomach contained about ten ounces of partially-digested matters, which exhaled a powerful and sickening odor of prussic acid. Chemical analysis revealed the presence of the cyanide and of prussic acid in the contents of the stomach.

The blood from all the organs examined gave out prussic acid and yielded it upon analysis; and although dark-colored when first exposed, changed rapidly to the arterial hue. The coagulating power of the blood was entirely destroyed.

The bottle, labelled Simmons' Regulator, from which the deceased is said to have taken the fatal dose, contained eight and a half fluid ounces of a dark red liquid, which upon analysis contained 904.4 grains of cyanide of potassium. Each fluid drachm contained 13.3 grains of the cyanide of potassium.

The entire capacity of the bottle was ten fluid ounces; therefore one and a half fluid ounces were missing. It is not probable that the deceased took the entire amount, as he is said to have been in the habit of taking 1 or 2 tablespoonfuls of the "Simmons Liver Regulator" a short time after each meal. It is probable that he took about two tablespoonfuls of the poisonous mixture, which would yield 106.4 (one hundred and six grains and four tenths) of the cyanide of potassium—a quantity sufficient to have destroyed at least 21 (twenty-one) men. The entire amount of cyanide of potassium originally introduced into the bottle was

about 1110 (one thousand one hundred and ten) grains, a quantity sufficient to have destroyed 221 men, if the fatal dose be placed at 5 grains.

I administered 20 minims of the liquid from the bottle, which had caused the death of the Spanish Consul, to a dog, and symptoms of poisoning commenced in 20 seconds; in 30 seconds, violent spasms with a long piercing cry were emitted by the dog; coma, preceded by a prolonged spasm of muscles of the back, was established in 60 seconds after the administration of the poison, and death occurred in 100 seconds. The body of the dog was perfectly relaxed and flaccid, for 30 seconds before the extinction of the pulsations of the heart and the cessation of the spasmodic respiration.

The post mortem examination revealed congestion of the brain and internal organs, and distension of the cavities of the heart by black blood.

A strong odor of prussic acid was exhaled from the breath of the dog during life, and from the blood and from all the organs and tissues after death.

TREATMENT OF POISONING BY CYANIDE OF POTASSIUM.

The symptoms occur with such violence and proceed with such rapidity to the fatal issue, that there is scarcely time to institute treatment. If possible the stomach pump should be used, and the stomach washed out with a weak solution of green sulphate of iron, which will decompose the poison. A weak solution of chlorine will also prove beneficial. This gas when inhaled is one of the most potent antidotes to the effects of prussic acid. It must, however, be used with caution properly diluted, from its irritant effects upon the lungs. I have by a long series of experiments demonstrated the stimulant effects of chlorine upon the heart, and its power of overcoming the action of prussic acid.* Ice to the head and spine, cold effusion, artificial respiration, and electricity should not be neglected amongst the other measures, if sufficient time is afforded for their employment.

Ammonia is a valuable stimulant, but it should be remembered that it is not a chemical antidote, but merely a stimulant to the nervous system.

* Medical and Surgical Memoirs, vol. i., 1876, pp. 297, 298, 303, 304, 327,

Appendix to Case of Spanish Consul of New Orleans, Destroyed by Cyanide of Potassium, March 24th, '77.

The following letter from Prof. Y. R. LeMonnier, M.D., the efficient Secretary of the Board of Health, presents many points of interest.

New Orleans, March 31st, 1877.

Joseph Jones, M.D., Professor of Chemistry and Clinical Medicine, Medical Department, University of Louisiana:

Dear Doctor—In answer to your inquiries about the tragic death of the Spanish Consul I will state that, on Saturday, the 24th inst., at or about 12 m., a messenger out of breath entered my office, asking "for a physician for the Spanish Consul, who was very ill." In haste we hurried to the Consulship, two squares distant, where I was told he had taken poison. I sent for some ipecac immediately, and proceeded to examine the patient. I found him in his bed, lying on his back; respiration deep, difficult and *slow*, with fluttering of the lips, foam at the mouth during respiration, the tongue once in a while protruding between the lips. The face was pale, the pupils normal; the temperature below the normal standard, with a cold clammy skin; pulse at the wrist slow. The muscles were in a state of complete relaxation. Total absence of consciousness. Whatever substance had been taken had penetrated the nervous system. We tried in vain to rouse him. On his forehead were two bruises, caused by striking against his chair in falling. I was then told that he had taken a dose of "Simmons' Liver Regulator"—a table spoonful or two—and a few *minutes* after, had dropped. I smelt and tasted the contents of the bottle; the smell and taste, though familiar to me, I could not *then* recall. In again examining the patient, I detected a strong smell of *prussic acid* in his breath. My diagnosis was now *positive*.

Cyanide of potassium in great quantity was in the *bottle*.

In the meantime Dr. Formento had entered the room. I called his attention to this fact, and he verified the diagnosis.

The ipecac arrived (30 grains), which I put in a tumbler of luke-warm water, and by teaspoonful administered it to the patient. By pouring the draught into his mouth, and placing the hand over it, he would swallow. The act of deglutition was not under control of the will, as the patient was unconscious and

life fast ebbing away. No effect from the ipecac. Prognosis—fatal result. I expressed my opinion to this effect to the surrounding friends, and to satisfy them (for there was no hope of saving the patient), sent for my stomach pump and the antidote for cyanide of potassium. I expressed the opinion that the man would be dead before their arrival. The pulse soon disappeared at the wrist, and the man died without a struggle or moan before the arrival of the stomach pump.

I then examined closely the bottle of "Simmons' Liver Regulator," supposed to contain the fatal draught, sealed it in person, in presence of Dr. Formento and the attachés of the consulship (left the seal in charge of the vice consul), and in propria personæ, delivered the bottle into the hands of Dr. Henry Bezou, Deputy Coroner. I inquired whether the Consul was in the habit of taking the liver regulator, and being answered in the affirmative, I asked if there was in the house an empty bottle of this drug. One was brought containing about one drachm. I carefully examined this, which differed both in taste and smell from the bottle I had just sealed. The color was the same. It is evident that the cyanide had been placed in the liver regulator since the purchase of the bottle; in fact, within the last 24 or 36 hours, as about one-quarter of the contents of the bottle had been taken by the Consul, by tablespoonfuls every morning, as reported by his body servant, an intelligent negro.

Rèsumè.—Reached the bed-side of the patient at about 12.10 m. At 20 minutes of 1 p. m. he was dead, from having taken, at about 12 m., a tablespoonful or two of a bottle of "Simmons' Liver Regulator," containing an unknown but large quantity of cyanide of potassium. When I reached his bed-side he was already unconscious.

Y. R. LEMONNIER,
159 *St Louis street, near Rampart.*

The following extract from the testimony of Mr. Jas. D. Bouisquet, at the coroner's office, on the 31st. of March, throws additional light upon the symptoms of Mr. De la Barrera, immediately after the administration of the poison.

The Jury then adjourned to the coroner's office, at the corner of Dumaine and Royal streets, and the inquest continued. Mr. Jas. D. Bouisquet was the first witness called up. He stated that he had arrived in New Orleans on the 13th of March, and

had come here to wait for his brother, who was coming, and to speak to Mr. De la Barrera on business of importance. He said that on the morning of Mr. De la Barrera's death, he called on Mr. De la Barrera, and both went out to a bank where Mr. De la Barrera collected some money. They then went to Moreau's restaurant, where they spoke about matters personal to witness. After leaving Moreau's they went to the consulate. Mr. de la Barrera, after going to his office, went to his desk and examined some papers. Witness sat at the desk and commenced writing. Mr. De la Barrera went to his room, then returned and said to witness several words, one of which was poison; he returned to the room staggering, his eyes were glazed and his mouth foaming. Witness ran to the room where the Vice Consul and clerk were sitting. All returned to Mr. De la Barrera's room, and found him lying on the floor, face downward. Mr. De la Barrera was picked up and placed in his bed. The Vice Consul and clerk went out for a doctor.

LISTER'S ANTISEPTIC TREATMENT.

(A Paper read before the New Orleans Medical and Surgical Association, Saturday evening, March 17th, 1877.)

BY F. LŒBER, M.D., OF NEW ORLEANS.

Holmes' Surgery. Lister. London Lancet. P. Schuetzenberger on Fermentation. Tyndall—Fermentation and its Bearing on the Phenomena of Disease. Schueller and Lindpaintner. Deutsche Zeitschrift fuer Chirurgie. Volkmann, Thiersche, Schultze, Summlung Klinischer Vortraege.

Mr. President and Gentlemen—To-day the subject of our discussion is Lister's Antiseptic Treatment. It has created an uproar through the whole medical world. Sharp controversies are going on about it; some consider it not superior to other methods, and say that they can not see that healing per primam intentionem was oftener and erysipelas less than before, and in spite of this method often see a bad condition of the wound; others, on the contrary, consider it as one of the greatest achievements of modern surgery, and one of the greatest blessings to suffering mankind.

Before I commence to speak about Lister's method, I have to beg of you to follow me in another field, which properly does not belong to surgery; I mean, let us wander for a little while in the department of chemistry, and look at the process of "fermentation." On this process, Lister, as we will see hereafter, bases

his whole method, and it is absolutely necessary that we understand the process of fermentation, to understand and appreciate Lister's method of treating wounds.

For more than 2000 years fermentation was effected without any knowledge of its cause. Theophrastus, who was born 400 years before Christ, described beer as the wine of barley, and Egypt was the land in which it was first brewed. "Noah planted a vineyard, drank of the wine, and experienced the consequences." Bacchus taught the old Greeks to make wine, and Moses in his writing draws a distinction between unleavened and leavened bread, and relates that the Israelites were in such haste during their flight from Egypt that they had no time to put leaven in their dough.

In science one discovery grows out of another. Before the cause of fermentation could be understood, the microscope had to be invented and considerably improved. Lœwenheck was the first one, in 1680, to examine beer yeast by the microscope, and to ascertain that it was formed of very small spherical or ovoid globules. He could not, however, determine their nature. Cagniard de la Tour, in France, and Schwann, in Germany, independently of one another, demonstrated the organic nature, and microscopical observation revealed development of globules of ferment whenever there was a production of alcohol. Then came the question as to the origin and nature of these microscopical organisms. Gay-Lussac advanced the theory that the presence of oxygen caused fermentation, and according to Liebig, the cause of fermentation was the internal molecular motion, which a body in the course of decomposition communicates to other matter in which the elements are connected by a very feeble affinity. Berzelius, for his part, treated the organic nature of yeast as a poetico-scientific reverie, and rejecting the doctrine of Liebig, borrowed from Willis and Stahl, would only see in fermentation an act of contact due to catalytic force, and in yeast an amorphous principle. Mitscherlich supported the ideas of Berzelius, while he admitted the organic nature of the ferment. Pasteur says: "The chemical act of fermentation is essentially a correlative phenomenon of a vital act, beginning and ending with it. I think that there is never any alcoholic fermentation without there being at the same time organization, development, multiplication of globules, or the continued consecutive life of globules already formed."

Pasteur shows us how the fermentation in the beer wort is produced by a living cell, called torula cerevisiæ or sacharomycis, budding and sprouting in suitable mixture. In contact with plenty of oxygen the cell grows and augments, and gives off carbonic acid gas; and not only the free oxygen of the air, or the oxygen physically dissolved in water can be utilized and caused to disappear by the yeast cells, also oxygen combined with hæmaglobin. Thus when we diffuse fresh yeast, whether washed or not, in arterial blood or in a solution of hæmaglobin saturated with oxygen, we see the tint change rapidly from red to dark blue or black. A simple agitation of the blood with air is sufficient to restore its red color, and the deoxygenation recommences again. F. Schuetzenberg, Director of the chemical laboratory of the Sorbonne, in his work on Fermentation, has shown by practical experiments that the yeast cell acts on the blood as a living cell in the animal organism. He caused blood to circulate slowly through a sufficiently long system of hollow tubes, the walls of which are formed by thin gold-beater skin, which is immersed in a mixture of yeast diffused in fresh serum without globules, kept at 95° Fah. The red blood passes out black and venous on the other extremity. He proved that yeast is indispensable for deoxydation—by immersing tubes in serum without yeast, the blood came out red. This experiment is the exact representation of what takes place in the animal organism, with the exception of the perfect method employed by nature to multiply contacts and surfaces. In the latter case, the cellular and histological elements of the tissue play the part of the yeast cell; they absorb the oxygen dissolved in the plasmic liquids which bathe them and constantly tend to bring down their oxymetric condition. The oxygen very loosely fixed by the hæmaglobin, reëstablishes the equilibrium by a series of gaseous diffusions from the red globules to the plasm of the blood, and from the plasm of the blood to that of the organs. These continual disturbances are the inevitable consequences of the disturbance of equilibrium produced by the aëration of the organic cells or the cells of the yeast in the above experiments. Yeast breathes, grows and augments, when placed in contact with plenty of oxygen. But what will it do if we give it not enough oxygen, as in the beer barrel with a small opening? Soon the oxygen of the small quantity of air inside the barrel is used up; but breathe it must, and so it takes the oxygen per force from the surround-

ing substance in which oxygen exists, not free, but in combination. It decomposes the sugar of the solution, produces heat, breathes forth carbonic acid gas, and one of the liquid products of the decomposition is alcohol. The act of fermentation is the result of the effort of this little plant or little cell to maintain its respiratory function; or, as defined by Pasteur, "fermentation is life without air." The question might be put: Are these little yeast cells also the cause of fermentation in the grape juice, or is it spontaneous?

But before going any further, gentlemen, I have to warn you against errors which have been committed over and over again. It is not all yeast cells that can thus live without air and provoke fermentation, as Pasteur shows conclusively. They must be young cells, which have caught their vegetative vigor from contact with free oxygen. But once possessed of this vigor, the yeast may be transplanted into a saccharine solution absolutely purged of air, where it will continue to live at the expense of the oxygen and other constituents of the solution. Under these new conditions its life, as a plant, will be by no means so vigorous as when it had a supply of free oxygen, but its action as a ferment will be indefinitely greater. Gentlemen—I draw your attention to this: we will see later in pathological processes similar conditions. To another interesting fact I have to draw your attention before going further: it is not the yeast cell alone which produces alcoholic fermentation; there are many others; for instance, penicillum glaucum. Expose an old boot or common paste in a warm place. You soon will find it covered with this little plant, growing luxuriantly if in contact with plenty of oxygen; but steep it into the mixture, and you soon will find alcoholic fermentation set up. It wants breath, and can only find it by decomposing the saccharine solution. But, what is still more interesting, we find this power to produce fermentation in substances containing it in themselves. The yeast plant and penicillum glaucum are composed of a mass of cells; but so at the bottom, as shown by Schleiden and Schwann, are all living organisms. Cherries, apples, peaches, pears, plums, are composed of cells, each of which is a living unit. In 1821 a French chemist, Berard, established the interesting fact that all ripe fruits exposed to the atmosphere absorb the oxygen and exhale carbonic acid. He also found, that when ripe fruits were placed in a confined atmosphere, the oxygen of the atmos-

phere was first absorbed and an equal quantity of carbonic acid given out. After the oxygen was used, still carbonic acid continued to be inspired by the fruits, which at the same time lost a portion of their sugar, becoming more sour to the taste, though the absolute acidity was not augmented. Luedersdorf was the first to show by this method that yeast acted not, as Liebig had assumed, in virtue of its organic, but in virtue of its organized character. He destroyed the cells of yeast by rubbing them on a ground glass plate, and found that with the destruction of the organism, though its chemical composition was the same, the power to act as a ferment totally disappeared. Pasteur proved that the fermentation was the work of the living cells of the fruit itself, after air had been denied to them. When the cells were destroyed by bruising, no fermentation followed.

We know that the brewer adds yeast to his wort to cause fermentation, but the wine maker does not. Pasteur has shown by an ingenious device, that the fermentation in the grape juice is not spontaneous or inheritant in the juice itself, but that it is dependent on another organism or cell, which we find adherent both to the outer surface of the grape and of the twigs which support the grape. The grape is sealed by its own skin against contamination from without. Pasteur extracted from the interior of the grape its pure juice, and proved that in contact with pure air it never acquires the power to ferment itself, nor to produce fermentation in other liquids. It is not, therefore, in the interior of the grape that the origin of the life observed in the vat is to be sought. Add these microscopic particles, which we find hanging on the outside, to the pure and inert grape juice. Forty-eight hours after this is done, our familiar torula is observed budding and sprouting, the growth of the plant being accompanied by all the other signs of active fermentation. The ferment of the grape is in fact a parasite of the grape; and from time immemorial the art of the wine maker has consisted in bringing, it may be said, ignorantly bringing, two things closely associated by nature into actual contact with each other.

The liquids of the healthy animal body are also sealed from external contamination, the same as the grape; and neither pure urine, collected fresh from the bladder, nor pure blood, drawn with due precaution from the veins, will ever putrefy in contact with pure air. If, then, there is no spontaneous fermentation, what is the origin of ferments—where do they come from? Tyndall has

proven that our atmosphere is full of dust particles, and has shown us the method to convince ourselves with our own eyes of their presence. If a sunbeam falls in a dark room, the cone of rays is marked by millions of very fine, glittering, or light-reflecting particles—the same as we observe if we look at the cone of rays of an electrical lamp in a dark room. The air does not reflect the light; the particles of air do not reflect light in our eye; the air is perfectly transparent, and in a perfectly clear air we can not observe the cone of rays. These very fine particles suspended in the air reflect the light, and by them we see the course the light takes. Tyndall proved that if he removed these fine particles out of the air, darkness ensued. If he passed an electric spark through a cylinder filled with air which had passed through a heated tube in the cylinder, darkness ensued—the particles were burned up. The same results he obtained by filtering the air first through cotton, or conducting it through a tube turned in the manner of a corkscrew. That these particles settle to the bottom if left alone, he proved by taking two retorts, one open-mouthed closed by cotton, and one with a corkscrew neck; both contained impure air, proved by the electric spark, but after 11 days' rest both contained perfectly pure air—the dust had settled to the bottom. Pasteur has shown us again, as in the grape juice, that living microscopic organs are the cause of all fermentation, the air being full of them. Tyndall has proven when they fall into an appropriate infusion, some, according to their kind, may produce alcohol, others acidity, putrefaction. What makes the above experiments of Tyndall still more interesting, is the fact that the same method Tyndall used to separate the light-reflecting particles from the air, Pasteur used to prevent fermentation. He prepared some chambers containing perfectly pure air, by filtering the air entering through cotton, or letting it pass through a tube wound in the manner of a corkscrew; then he prepared a clear transparent beef tea by chopping up a beefsteak, and allowing it to remain for 2 or 3 hours just covered with warm water—he thus extracted the juice of the beef in a concentrated form. He exposed a number of vessels containing this tea to the chamber of pure air, and a number of vessels containing precisely the same fluid to the atmosphere laden with dust. In three days every one of the latter stank, and, examined under the microscope, swarmed with living elements of putrefaction; after 3 months, beef tea within the

chamber was found as sweet and clear as on the day when it was put in. There was no difference between the air in or outside the chambers, except the one was dustless and the other laden with dust. He proved the correctness of his experiments by opening the doors of the chambers and let dust in, and in 3 days the tea contained in the chambers for three months perfectly clear and sweet, had the same disagreeable smell and was laden with living organisms.

One might think if the elements of fermentation are contained in the air, it is not necessary to go to work and impregnate beer wort with leaven; expose it to the atmosphere, and fermentation will set in. Certainly it will, but the chances are that the product of this fermentation, instead of being agreeable, would be disgusting to the taste. By chance we might get true alcoholic fermentation; the germs of our yeast plant are contained in the air but very sparingly, and beer wort exposed to the air is almost sure to be taken possession of by foreign organisms.

The air is full of the germs of ferment, differing from the alcoholic leaven, and sometimes seriously interfere with the latter. They may be considered the weeds of the microscopic garden, which often overshadow and choke the flowers. Let us look, for instance, at boiled milk exposed to the air. It will cool and then turn sour, separating like blood into clot and serum. Place a drop of this sour milk under a powerful microscope, and watch it closely. You see the minute butter globules animated by that curious quivering motion called Brownian motion; here and there we observe a greater disturbance than ordinary among the globules. Keep your eye upon the place of tumult, and you will see emerging from it a long eel-like organism tossing the globules aside, and wriggling more or less rapidly across the field of the microscope: this organism has received the name of vibrio. It is this organism which, by decomposing the milk, renders it sour. It is the butyric acid ferment, as the yeast ferment is the alcoholic ferment; keep them out of your milk, and it will never get sour. But the milk might get putrid; this is due to another living organism. Examine your putrid milk under the microscope, and you find it swarming with organisms much shorter and different from vibrios. Keep them out of your milk, and it never will putrefy. Expose a piece of meat to the air and keep it moist, in warm weather it soon stinks. Place a drop of the juice of the meat under the microscope, and you find the same organ-

isms as in the putrid milk. These organisms, which receive the common name of bacteria, are the agents of all putrefaction; keep them from your meat, and it will keep forever sweet. Thus we begin to see that within the world of life to which we ourselves belong there is another world, requiring the microscope for its detection, but which has nevertheless the most important bearing on our welfare.

Two hundred years ago, the celebrated philosopher Robert Boyle wrote, in his "Essay on the Pathological part of Physik," that "he that thoroughly understands the nature of ferments and fermentation shall probably be much better able than he that ignores them to give a fair account of divers phenomena of several diseases, which will perhaps be never properly understood without an insight into the doctrine of fermentation." Two hundred years ago these words were written, and it is only now that men are beginning to fully realize their truth.

Professor Lister, of Edinburgh, formerly of Glasgow, repeated the experiments of Pasteur and Tyndall, and, convinced of the truth that putrefaction is caused by foreign bodies, made practical use of this theory in his hospital by trying to prevent putrefaction of wounds by non-admittance of the germs to the wound, and if present, their destruction. He has taken these facts as the foundation on which he built his treatment, and the method of Lister will only then be properly understood and appreciated if we have always before our eyes the foregoing facts of fermentation.

In reading the different articles published by Lister, it is interesting to see the origin, progress and, so to say, perfection of his method of treatment. He commenced by trying to effect a new formation of scab, by covering the wound with a non-irritating substance, metal plate, cotton, lac plaster, carbolized lac plaster. By degrees he improved his dressing, or new scab, so that it now comes very closely to imitate a natural scab. [The fact that wounds heal readily under a proper scab had long attracted the attention of surgeons, and principally in England, John Hunter, James Paget; in Germany, Langenbeck, Volkman, and Mareuse, have paid attention to that subject] He improved the use of antiseptics, and modified his dressing so that, on the one side he protected the wound against the irritating influence of the antiseptic, and on the other side he protected it by the antiseptic against putrefactive fermentation.

The principles of his method now may be summarized as: 1st. To destroy any germs of putrefaction which may have been accidentally implanted in the wound before it is dressed, or to guard against any such implantation. 2d. To provide for the drainage of decomposable fluids from the wound, without admitting the entrance to it of unfiltered air. 3d. Never to allow the access of air to the wound except filtered through the antiseptic.

Let us see now how Lister tries, and has tried, to carry out the above.

1st. To destroy any germs of putrefaction.

He made use of raw cotton, since it had proven so well in filtering the air; but before using it on the wound, he purified it first by treating it with chlorine gas or sulphurous acid, afterwards saturating it with benzol or carbolic acid. With cotton prepared in this manner, he succeeded to prevent decomposition of pus for several days, although the cotton had soon lost the antiseptic gas or liquid; it acted in the same manner as in the experiments to prevent fermentation by filtration. Practically, the cotton did not do. The secretion of the wound passed through the cotton to the surface, in contact with the dust-laden air; putrefaction soon set up, and went easily and quickly from the outside to the inner wound. Instead of cotton he took gauze, which he could impregnate for a comparatively long time with antiseptic substances, and at the same time possessed the property to be permeable for the secretion of the wound. The antiseptic substance used is carbolic acid, salicylic acid, boracic acid. Generally he uses carbolic acid in a 1 per cent. solution to prevent putrefaction, and a 3 per cent. solution to disinfect, if the wound is already infected with the germs of putrefaction. The experiments of Sanderson, Hoppe-Seyler, Zapulsky, Calvert and others, in regard to the influence of different solutions of carbolic acid on bacteria, prove that the strength of these solutions answer the purpose for which they are used. Water only takes up 5 per cent. of carbolic acid, and soon loses it again; but just on account of this, watery solutions are very useful to clean the wounds; the irritation produced by them is very little and soon passes off—the irritation ceases as soon as the acid evaporates or is absorbed. Resins take up a large quantity of the acid, and retain it very firmly even at a high temperature. A combination of carbolic acid with resin

is very useful as an outside dressing of wounds; its action is not so strong, but longer lasting, and possesses the good quality not to be washed away by the secretions of the wound. A solution of carbolic acid and oil stands intermediate between resin and water. Now let us see how an operation is performed and the wound dressed. Before he operates he cleans well the parts to be operated on with a watery solution of 2 or 3 per cent., and lays particular stress to be careful and clean the hair in the neighborhood; the hands of the operator and the instruments used in the operation are disinfected with a similar solution. During the operation the wound would be exposed to the atmosphere laden with germs; he uses therefore a spray of watery solution of 1 per cent. The operation under the protection of the spray is performed; the vessels are tied with a catgut ligature.

[*Catgut Ligature.*—One part crystallized carbol acid, made liquid by 5 per cent. water, and added to 5 parts oil (olive). Put in a glass with stone at the bottom, so the catgut does not lay in the water which settles at the bottom. At the commencement the catgut swells, gets soft, slippery, and loses its transparency. After a few weeks it regains its transparency, and gets hard, like silk. Allow to remain in the solution at least 2 months without interruption, but not at a high temperature; the longer it remains in the solution the better it gets.]

No foreign substance in the wound, it can be closed at once, and we need not fear that the ligature will be absorbed and hæmorrhage be the consequence. The greatest attention is paid to the stoppage of all bleeding vessels, even the smallest, and after all bleeding ceases the wound is closed, not with catgut ligature, but with carbolized silk, or silver wire (silk steeped in hot solution of 1-10th part carbolic acid and wax). The wound is then closed, with the exception of a small opening, and we come to the second principle laid down, viz., to provide for the drainage of decomposable fluids from the wound without admitting the entrance of unfiltered air.

Lister pays particular attention to free drainage of wounds, because wounds exposed during an operation to the spray of carbolic acid are more or less irritated by it, and in consequence of the irritation, will secrete more freely immediately after the operation than they would do if no spray had been used; and a little hæmorrhage, even with the greatest care, will often occur.

If these secretions are retained in the wound tension will be produced, another cause of irritation to the wound. Free drainage is therefore absolutely necessary. A small opening is left, and a drainage tube properly disinfected introduced. The outer end must must not reach above the surface of the skin, and therefore not liable to be compressed by the outer bandage and the drainage prevented. Now we come to the third principle laid down: never to allow the access of air to the wound except filtered through the antiseptic. To effect this, the wound and surrounding parts are covered with antiseptic gauze.

This gauze is prepared by putting common gauze in a mixture of 5 parts of resin, 7 parts parrafin, and one part crystallized carbolic acid melted in a water bath. After saturating the gauze with this mass, it is pressed between rollers folded together in several layers, to get rid of the superfluous portion of the mass. The gauze should take up from the mass a little less than its own weight. The interspaces of the gauze should remain free. The reason why the resin solution is used we have seen before, and parrafin is used to prevent its sticking; but still the gauze containing resin and carbolic acid is in some degree irritating, and Lister's aim is to avoid all and every irritation to the wound. The irritation does not amount to much so long as the wound secretes freely; but cicatrization is certainly retarded by the use of carbolic acid. To prevent this, he interposes between gauze and wound his protective, a piece of oiled silk, first well washed with a 1 per cent. solution, and covered by a mixture of 1 part dextrin, 2 parts of starch, and 16 parts 1 per cent. watery solution of carbolic acid. The purpose of the outer silk is to prevent the irritation of the carbolic acid on the wound, but the protection, as Lister says himself, is not perfect. A solution of chlor. zinc $\frac{1}{8}$ was introduced by Morgan, of Paris, to clean and disinfect the wounds; this solution is recommended by Lister to use in already infected wounds. Boracic acid is used, also alcohol, but all are more iritating than carbolic acid. The quinine preparations are too costly, and their antiseptic properties not strong enough. Chlorine, sulphurous acid, hypermanganate of potash, soon get inert by chemical decomposition. Thiersche, at Leipsic, uses now constantly salicylic acid. He says it is less volatile and less irritating than carbolic acid.

By dressing the wound with the gauze bandage we have to observe certain rules. The gauze is applied in 8 different layers

these layers have to overlap the wound in all directions; and to prevent the secretion from coming by the shortest route to the outside, a piece of mackintosh is interposed between the 7th and 8th layer of the gauze—thus the secretion is forced when reaching the makintosh to distribute itself peripherally through the gauze, to come in contact with a great deal of disinfecting material before it reaches the border of the mackintosh and the last layer of the gauze. Twenty-four hours at the latest we have to look after our bandage; if we see the gauze infiltrated with the secretion a new bandage has to be applied, otherwise not. In applying a new bandage we have to be just as careful as in the first application. An assistant has to use the spray constantly, or we may cover the wound, after all bandages are removed and before we can put on the new one, with a piece of lint saturated with a 1 per cent. solution of carbolic acid. If we are successful in applying our bandage, we find by removing it very little secretion, no smell, no putridity—the color of the protective not altered. The lead of the protective gets altered, brownish, by sulphuretted hydrogen, and is, in fact, a very good and delicate test for putrefaction.

We see, then, gentlemen, that the most minute observance of the smallest details is absolutely necessary to get such results as he and others have obtained. Only the one who has constantly the three principles before his eyes, and is convinced of their correctness—this one only will pay attention to all the details and will have good results. The spray, gauze and protective amount to nothing, if not used with the proper understanding and carefulness.

Allow me to give you the results of several German surgeons who had adopted Lister's plan of treatment.

Thiersche, in Leipsic, treated in the surgical clinic of Leipsic, from 1st of April to 31st of January, 190 patients strictly antiseptically. Out of these were 51 greater operations, as amputations, resections, and compound fractures, the rest were wounds, smaller amputations, resections, exarticulations, abscesses, ostitis, periostitis, extirpation of tumors, as struma, carcinoma, sarcoma, hydrocele, neurosis, removing of sequestra, operation for hernia, etc. Out of these 190 patients operated on, seven died, the others were dismissed cured. 1st. Compound fracture of both legs, primary amputation of both legs, and a secondary amputation of the left thigh, died 100 days after operation from hæmor-

hage of the bowels. 2d. Compound fracture of right leg, primary amputation of leg and secondary of thigh, died 123 days after operation: cause of death, hydrothorax. 3d. Pseudarthrosis of left thigh, amputation, died 23 days after operation: cause, suppuration of left shoulder-joint. 4th. Gangrenous ulcer of left leg, amputation, died 28 days after operation: cause, debility. 5th. Inveterate spontaneous luxation of femur, resection, died 25 days after operation: cause, uræmia. 6th. Tuberculous caries of both wrist-joints; resection of both wrist-joints on the 31st of July, and amputation of right fore-arm 15th of February next year; died 201 days after operation: cause, debility. 7th. Compound fracture of left humerus, amputation, died 30 days after operation: cause, pyæmic embolism.

Volkman, Professor of Surgery in the University of Halle, says in *Klinische Vortræge*, in regard of the antiseptic method: "After using this method for the last three years, I am convinced that in recent wounds the protection offered by this method against incidental diseases, with the exception of tetanus, and against profuse and bad suppuration, is absolute. The certainty of the results extends so far as human and personal certainty of the attending surgeon and certainty of the unfortunately complicated apparatus commonly extends. Bad results will occur, in the same manner as a chemical or physical experiment will fail in the hands of the most skillful experimenter, or a manufacturer will once fail in making a certain quality of goods, although he has made it one hundred or one thousand times successfully. When I therefore hope that under my hands the metastatic pyæmia never shall occur in such cases which are adapted to the antiseptic treatment, I am far from asserting that I give an absolute guarantee against it. Still less will I say that hereafter I will not lose another patient from simple pyæmia, septicæmia, and the least secure will I feel myself against erysipelas. I have made in the last year and a half more than 100 amputations and more than 50 resections, and in no instance did I have pyæmia or septicæmia following the operation. Erysipelas occurred during this time in three or four cases, treated according to Lister."

Lindpaintner, Assistant to Professor Nussbaum, in Munich, gives, in *Zeitschrift für Chirurgie*, the results of Lister's treatment in the hospital of Munich from 1st of April, 1875, to March 31st, 1876. He gives the history of 459 cases treated strictly accord-

ing to Lister, and states that before it was introduced into the hospital 80 per cent. of the sick suffered from hospital gangrene. Erysipelas was daily on the roll—so much so that its occurrence was considered almost as something normal. It was a standing rule in the hospital never to sew up a wound of the head; a healing by first intention never occurred. From 17 amputations 11 died of pyæmia. A compound fracture was seldom seen in the wards; either an amputation was made, or after a few days there was infiltration of pus, gangrene, septicæmia the cause of his death. To take all in all, he thinks that the hospital at Munich was equal to any one in regard to bad healing of wounds. How different does it look to-day! Heretofore, in spite of all disinfectants and ventilations, we could not prevent the bad smell in our wards; to-day they are free from any bad odors. In former times we had to stay with our patients to console, at least, when we could not help; to-day our visits are more like a promenade—instead of groaning and sighing patients, we see faces full of joy and gratitude. From the 1st of April, 1875, to 31st of March, 1876, 459 patients suffering from all kinds of surgical diseases were treated, strictly according to Lister, with carbolic acid; erysipelas occurred six times, hospital gangrene not once, septicæmia in three cases, pyæmia in three cases. He had pretty nearly as good results with 344 other cases treated during the same year, using Lister's method, substituting boracic acid for carbolic acid.

Boyle's prophecy is fulfilled. We see what good results are obtained by the one who thoroughly understands the nature of fermentation, and that all diseases are produced by the introduction of a foreign substance ("contagium") into the living organism. In 1850, two French observers, Messrs. Davaine and Royer, noticed in the blood of animals which had died of the virulent disease called splenic fever, small microscopic organisms, resembling transparent rods, but neither of them attached at that time any significance to the observation. Only several years later, when Pasteur published his Butyric Acid Fermentation, was it suspected that these rod-like particles might be the cause of the disease, producing fermentation in the animal body. Two years ago, Dr. Burdon Sanderson wrote about that disease, and said that in regard to the permanence of the contagion, it had been proven to hang for years about localities where it had once prevailed; and this seemed to show that the rod-like organisms could not constitute the contagion, because their infective

power was found to vanish in a few weeks. But other facts established an intimate connection between the organism and disease, and Dr. Sanderson came to the conclusion that the contagion existed in two distinct forms—the one fugitive, and visible as transparent rods, the other permanent but latent. At the same time that Sanderson wrote this, a German country doctor by the name of Koch studied the habits of the rod-like organisms, and found the aqueous humor of an eye to be particularly suitable for their nutrition. With a drop of the aqueous humor he mixed the tiniest speck of a liquid containing the rods, placed the drop under his microscope, warmed it suitably, and observed the subsequent action. During the first two hours hardly any change was noticeable, but at the end of this time the rods began to lengthen, and the action was so rapid that at the end of three or four hours they attained 10–20 times their original length. At the end of a few additional hours they had formed filaments, in many cases a hundred times the length of the original rods. He proved that rods were the active contagion by inoculating them into a living animal. He operated upon guinea pigs, rabbits, and mostly on mice. Inoculating them with the fresh blood of an animal suffering from splenic fever, they invariably died of the same disease within twenty or thirty hours after inoculation. He then sought to determine how the contagion maintained its vitality. Drying the infectious blood containing the rod-like organisms, in which, however, the spores were not developed, he found the contagion to be that which Dr. Sanderson calls "fugitive." It maintained its power of infection for five weeks at the farthest. He then dried blood containing the fully-developed spores, and exposed the substance to a variety of conditions. He permitted the dried blood to assume the form of dust, wetted this dust, allowed it to dry again, permitted it to remain for an indefinite time in the midst of putrefying matter, and subjected it to various other tests. After keeping the spore-charged blood which had been treated in this fashion for four years, he inoculated a number of mice with it, and found its action as fatal as that of blood fresh from the veins of an animal suffering from splenic fever. There was no single escape from death after inoculation by this deadly contagion. Uncounted millions of these spores are developed in the body of every animal which has died of splenic fever, and every spore of these millions is competent to produce the disease. The name of this

formidable parasite is Bacillus anthrosis. The experiments of Dr. Max Schueller with putrid matter and different species of bacteria, which he had planted each one in a place for itself, and after raising the crop injected the different solutions, of different strength, and studied their effect. Some produced only an abscess; others, fever more or less; other, septic fever, etc.

You see, gentlemen, the most striking analogy between the contagion and the ferment: each possesses the power of indefinite self-multiplication under favorable conditions. Tyndall compares it with the truthful figure regarding leaven employed in the New Testament. A particle hidden in the measures of meal leavens it all. He says, in a similar manner a particle of contagion spreads through the whole body, and may be so multiplied as to strike down a whole population. Consider the effect produced upon the system by a microscopic quantity of virus of small-pox. That virus is to all intents and purposes a seed. It is sown as leaven is sown, it grows and multiplies as leaven grows and multiplies, and it always reproduces itself.

It was my intention to give you Lister's method of treatment, its origin and principles, as clearly as possible, avoiding all controversies. I do not know that I have succeeded. All I wish is, that I may have induced all or some of you to try and verify these doctrines by clinical observation and on the operating table.

A CASE OF HEPATIC CANCER, WITH REMARKS.

BY CHARLES L. LeROUX, A.M., M.D.

Mrs. W., ætat 53, descended from a hardy stock, as both her father and mother were more than 80 years old when they died.

She had two brothers who died of consumption, and a half-uncle of cancer of the face. Until her marriage, which took place on December 1st, 1841, she was never seriously ill. She then suddenly and without any known cause suffered from uterine hæmorrhage, so violent that she came very near dying.

Her first child was born on December 19th of the following year. It was a foot presentation. She went through a very hard labor, after which she suffered for several months with a "kind of stitch in the region of the uterus."

She afterwards bore seven living children, and had three miscarriages. Never, during the whole of that period, or after the menopause, did she have a return of the slightest uterine trouble, until December last. She then suffered again with uterine pains accompanied by hæmorrhage. Those symptoms, however, soon passed off.

From the birth of her first child up to the last date above mentioned, she never had been confined to her bed from sickness the short space of a week. She was remarkably energetic, and since the war often did the work of three ordinary women—worked for the love of work.

For the last 25 or 30 years her residence was at the head of the Bay St. Louis, about equal distance, say 8 miles, from the town of that name and that of Pass Christian. It is a most beautiful spot, and as far as I know perfectly healthy, within a few feet of the edge of the water.

Some time in December, 1874, she went to New Orleans, to consult Dr. Beard, who operated on her for a cancer of the eye on the 28th of same month, after which her health gradually failed.

Her daughter, the oldest I believe, died on November 13th, 1875. The diagnosis returned by the attending physicians was consumption. She was married, and then in the 24th year of her age. Her father told me that he never thought the diagnosis a correct one.

On her death-bed she begged her mother not to weep for her; that she (her mother) "must soon follow."

The last words of her expiring daughter made, it appears, a very deep impression upon my patient's mind, and as far back as June last she fixed upon November as the time for her departure from this world.

Her husband, a very well educated and intelligent gentleman, told me that he did not think his daughter's prediction was without its influence upon Mrs. W.'s mind, and that, to him, with the exception of the swelling in the right hypochondrium in his his wife's case, the symptoms were almost identical with those of his daughter.

Mrs. W.'s disease came, at first, so gradually upon her, and she was so free of pain, that it is impossible to state positively when it commenced.

Her husband went once to Pass Christian, and described her

symptoms to Dr. T. E. Broaddus, who accordingly thought proper to prescribe the use of iron. The medicine was tried for six weeks, and as there seemed to be no improvement, Dr. Payro, a homœopath of Bay St. Louis, was called upon. He pronounced her case one of cancer.

Again finding no relief in his infinitesimal treatment, Mrs. W. finally sent for me.

I was never able to ascertain what was the prescription of the homœopathic doctor; his medicine was colorless and tasteless, as much so as rain water.

My first visit was on September 4th, ultimo. On entering the sick room, I was at once struck by my patient's countenance. Her face was of "a pale straw color; the eye was deeply sunken and surrounded by a dark, livid circle; general emaciation; loss of strength and energy. All my questions were answered with a clear voice, and in the kindest manner. A few minutes of conversation changed the expression of the face, which at first was that of utter despondency, and accordingly, as I encouraged my patient, she became more and more communicative. It was not long before I found out that Mrs. W. was a very intelligent lady, a perfect Christian, entirely resigned to the will of her Creator. Pulse 102, and feeble; temperature somewhat higher than normal, as far as I could judge without my thermometer; respiration 32; tongue thick, quite red around the edges—its dorsum was covered with a thick yellowish fur. Complains of an unquenchable thirst and a constant bad taste in the mouth; can not exactly describe it, but it is something like "a sweetish-bitter taste." Thorough and careful examination of the lungs revealed nothing abnormal. In the right hypochondrium I found a hard swelling, just under the last rib, about the size of a large orange. This tumor, on handling, is slightly movable, painful, feels roughened, and offers to the touch quite a number of small protuberances and depressions. Both by percussion and palpation, I tried to ascertain the extent of the enlargement of the liver and spleen. Both were enormous, the liver especially, the lower margin of which I could easily feel extending as low down as the umbilicus, and continuing downwards in an oblique direction, very nearly reaching the hip. On passing my hand over the abdomen, I felt, rolling under it, indurated mesenteric glands, varying in size from that of a pea to that of a marble. The epigastrium was also found very hard and tense. There, also,

and over the lower portion of the sternum, I detected a few small, hard nodules. There was some soreness in the inguinal region and over the whole abdomen, especially when handled. The axillary, mammary, and cervical glands apparently normal. The patient complains, but mostly at night, of severe pains, sometimes of a lancinating character, in the right hypochondriac region. At times the pain is local, sometimes shifting, but not constant. There had been, a few days previous, some slight œdema about ankles—none at present. Bowels obstinately costive; stools hard, resembling white clay or putty; urine pretty scanty, the color of port wine; no albumen; specific gravity 1022. Anorexia, flatulence, nervousness, want of sleep, feeling of fatigue, of embarrassment, are also symptoms of which she complains. Has fever now and then towards the evening; it generally goes off at a certain hour of the night in profuse perspiration, after which she generally falls asleep until morning unless disturbed by sudden, violent pains. I tried later to find out if the fever had an "intermittent" character. It had not. Whenever it occurred, it was at irregular intervals, and we never were able to attribute its rise to any imprudence, or any thing that she had either eaten or drunk.

I at once strongly suspected the case to be one of "Hepatic Cancer," complicated by enlargement and induration of mesenteric glands. Knowing the constant fatality attending such cases, I never looked for much improvement in her general health, even under the best treatment. But at a later date, finding my patient improving in a good many respects to an astonishing extent, I began somewhat to doubt that my diagnosis was correct. That improvement, unfortunately, did not prove of long duration, which can be readily seen on reading the diary of the case given below. The subsequent train of symptoms, gradual softening of the cancerous mass, impairment of the organs of respiration, circulation, digestion and absorption, mode of death, etc., established still more firmly than at first in my mind the diagnosis of cancer.

In accordance with the wishes of the family, I called on October the 1st ult., in consultation, my former professor and kind friend, Dr. S. M. Bemiss, who, after a most careful examination of the lungs, found, as I had, nothing abnormal, confirmed the diagnosis, although he said some of the main symptoms noticed

by him in previous cases were lacking in this one, and entirely approved of the treatment which I had adopted.

I am extremely sorry to state that a post mortem was not obtained.

The observations were taken twice daily, and very accurately so, by Mr. W. himself, whom I had provided with a thermometer, and whose intelligence I could trust entirely. The distance separating me from my patient's residence, which I had to reach by water and at a very busy time of the season, compelled me to do so.

The treatment adopted by me was in accordance, I believe, with that of the most eminent physicians, calculated above all to maintain the constitutional powers, and retard, as much as it lies in the power of medicine, the inevitable onward march of the disease to its fatal termination.

Diet.—Mostly animal, broiled birds, squirrels, milk, eggs, beef tea, chicken broth, fresh water fish, oysters, bread, and jellies.

Stimulants.—Sherry, port, milk punch, in moderate quantity.

Tonics.—Elixir calisaya bark, iron and strychnine, cod-liver oil with lacto-phosphate of lime—this, as the patient's stomach could not keep it, was replaced by syr. hypophosphites.

To relieve constipation, pills of calomel and rhubarb administered p. r. n.

To relieve pain and promote rest—sweet spirits of nitre, bromide of potassium, Battley's fluid extract of opium, with camphor water.

Local applications—Dilute nitro-muriatic acid and sponging of the liver, counter irritants, Iodine, hot poultices, camphorated oil.

Whenever deemed necessary, the sulphate of quinia was resorted to, more as an antipyretic than as a febrifuge.

To relieve ascites, the "mistura resinæ copaïbæ" was given thrice daily: dose, two tablespoonfuls. I adopted the formula of Guy's Hospital. As it is a somewhat troublesome emulsion to prepare, I ordered it from the house of I. L. Lyons, New Orleans. (For further particulars concerning success obtained from its administration, mode of preparation, etc., see the March, 1876, number, page 57, of the Druggists' Circular and Medical Gazette.) This prescription, in Mrs. W.'s case, was far from acting as I had seen it in a previous case that fell under my care. Before giving its use up, I combined each dose of the mixture with a few drops of digitalis. Still the desired effect was

not obtained. I attributed the failure to a want of absorption. Neither food nor medicine at that time seemed to benefit my patient. When sending the prescription over, I wrote to Mr. W. that if the medicine did not act freely within two or three days, he must consider it a very bad omen. Later, in one of his "polite" letters, he refused to pay for the prescription, on the ground that he considered it a very sad mistake, which any physician is apt to commit; did not mean to hurt my feelings, but considered it "the immediate cause of his wife's death."

The following diary extends from the 13th of September, 1876 (that is nine days after my first visit), up to the 12th of December, the day on which death occurred. Whole duration—three months and one week.

Table of Observations.

DAY.	HOUR.	TEMP.	PULSE.	REMARKS.
September 13th	6.30 p. m.	98°5′	95	Comfortable, but very thirsty.
14th	6 a. m.	98 5	96	
"	6.30 p. m.	98 5	93	
15th	7 a. m.	96	102	Great thirst.
"	7 p. m.	98 5	93	
16th	7 a. m.	95 5	78	Sense of weariness; dry throat.
"	7 p. m.	98	93	
17th	7 a. m.	98	81	Pleasant night's rest.
"	6.45 p. m.	98 5	96	
18th	8.30 a. m.	97 5	100	When sitting up, pulse rises to 120.*
19th	7 a. m.	———	———	A good deal oppressed this morning, fulness about the lungs.
"	6 p. m.	100	108	
20th	6 p. m.	99	98	Round measurement under the breasts 27¼ in.
21st	6 p. m.	102	112	Much pain just above hip bone.
22d	7 a. m.	95 5	100	Pain and soreness continue.
"	6 p. m.	101	106	Measurement has increased to 28 inches.
23d	7 a. m.	99	1 5	Much pain in moving.
"	6 p. m.	99 5	112	Measurement 28½ inches.
24th	6 a. m.	98	100	Very restless during fore part of night; this morning more comfortable, after a tolerable good sleep and profuse perspiration.
"	6 p. m.	99	108	Measurement 28½ inches Perspires very freely
25th	7 a. m.	98	108	After eating. To-day measurement 28 inches. With the subsidence of fever the pain is gone. On rising, there is much soreness and pain; it is like a stitch. Lower part of abdomen softer. (Commencement of softening.)
"	6 p. m.	100	110	
26th	6 a. m.	98	98	Bad night.
28th	6 p m.	98 5	105	Very thirsty all day.
29th	9 a. m.	97	104	Bad night; pain in right side.
"	1 p. m	102	120	Feverish; restless; corded pulse; occasional chilly sensation.

* This observation was taken after breakfast, during digestion; it accounts for such rise in the pulse. The least exertion runs it up to 120. Restless last night, but bright and hopeful to-day. Have discontinued the acid sponging. Skin has become very tender. Used instead, the camphoretted oil. Upper part of thorax hot; abdomen cool; legs and feet unnaturally cold.

I at once call the attention of the reader to the variability of the temperature and pulse, which oftentimes are seen not to correspond. These observations were frequently repeated when thought at the time not to be correct.

TABLE OF OBSERVATIONS—*continued.*

DAY.	HOUR	TEMP.	PULSE	REMARKS.
September 30th	9 a. m.	94·0'	120	Decrease in size 1¼ inch.
"	6 p. m.	100	105	Bowels troubled. Some teresmus. Feverish last night. Measurement 27½ inches.
October.... 1st	6 a. m.	96	105	Bowels relaxed.
"	6 p. m.	98	113	More comfortable and cheerful than for a week
2d	6 a. m.	97 5	108	Continues cheerful.
"	6 p. m.	102 5	111	Dull heavy pains diagonally across back from shoulder blade downwards.
3d	7 a. m.	96	102	Comfortable.
"	7 p. m.	97	104	Comfortable.
4th	7 a. m.	97 5	102	Pleasant night's rest. Able to lie on right side for the first time.
"	8 p. m.	96	98	
5th	7 a. m.	96 5	103	Restless during night. Dry mouth. Pain in back. Measurement under the breast, 28½ inches; around abdomen, 30½.
"	6 p. m.	97	119	Taken during digestion. Comfortable.
6th	7 a. m.	98	101	Slight pain, fluctuating. Slept pretty well. Have given no medicine in last 48 hours, except syr. hypophosphites, camphor and peppermint. Since, the disturbance in lower part of bowels has subsided. Skin has become loose, etc. More strength.
"	7 p. m.	98	100	Comfortable and cheerful.*
7th	7 a. m.	97	85	Dry mouth, and restless during first part of night. Comfortable this morning. Mr. W writes: There seems to be a general look of improvement. More strength and comfort. Thirst and restlessness gave way last night to one dose of potassium brom.
"	6 p. m.	99 5	94	Comfortable.
8th	7 a. m.	96	90	Measurement 31½ under breasts.
"	6 p. m.	98	93	Bad night. Bright at present.
9th	8 a. m.	99	100	
"	6 p. m.	99	105	Feverish. In pain.
10th	6 a. m.	96 5	97	Bad night. Short breath. Pain. Soreness.
"	8 p. m.	97 5	110	
11th	7 a. m.	98 5	98	Very bad night. Constant pain, mostly in the large swelling over right hip; sometimes in other parts of abdomen.
"	7 p. m.	100 5	115	Perspired pretty freely most of the day. Used hot flaxseed poultice over painful spot. More comfortable.†
12th	6 a. m.	96 5	103	More comfortable last night. Slept pretty well. Pulse quick and very feeble. (The pulse kept remarkably feeble throughout the whole time of the disease.) General debility fast increasing. Pills have failed to operate. One enema given.
"	6 p. m.	99 5	108	Perspiring freely under remedies. More comfortable.
13th	6 a. m.	98	104	Improving.
"	7 p. m.	97	106	Great soreness on being moved. Very feeble.
14th	7 a. m.	97	106	Taken after breakfast. Comfortable. Measure under breasts, 31½ inches.
"	6 p. m.	97	118	Observation unsatisfactory—not according to appearance. One hour after, observation repeated and found the same. Perspiring gently.

* At this visit, my patient's countenance has much improved; she looks quite comfortable and cheerful. On examination, I find that enlarged glands are getting softer, and can detect a fluctuation over the liver. I can move my patient in every direction and the fluid remains stationary. Lower down, I detect a commencement of serous effusion.

† I call the attention of the reader to the observation taken on October 10th, 8 p. m. That night was a very bad one. Her temperature was only 97.5° at 8 o'clock p. m.; the pulse 98. The next day, at 7 p. m., with a much higher temperature and pulse (thermometer 100 5°—pulse 115 and weak), she is comparatively comfortable.

TABLE OF OBSERVATIONS—*continued.*

DAY.	HOUR.	TEMP.	PULSE	REMARKS.
October... 15th	6 a. m.	99°	104	Flighty at night; comfortable; free perspir'n.
"	6 p. m.	99	120	Occasional pain.
16th	6 a. m.	93 5	110	Bad night Pain in left shoulder, running down diagonally to right hip. Shooting pains in different parts.
"	6 p. m.	99 5	110	
17th	7 a. m.	98 5	110	
"	6 p. m.	100 5	106	
18th	8 a. m.	93 5	108	After breakfast tired sensation.
"	6 p. m.	99	112	Turn after eating.
19th	9 a. m.	99 5	101	More comfortable night. Able to lie on right side a short while. Nausea.
"	7 p. m.	98 5	103	
20th	7 a. m.	97	94	
"	6 p. m.	99 5	100	Potass bromide once only.
21st	7 a. m.	97	96	Suffered from heat, perspired freely and then felt relieved.
"	6 p. m.	98 5	109	Complained of fulness. One enema given.
22d	7 a. m.	100	97	
"	6 p. m.	97	105	
23d	7 a. m.	95	99	
"	6 p. m.	97	105	Slept some on right side.
24th	7 a. m.	97	98	Dry mouth. Slight pain.
"	5 p. m.	99 5	105	Tongue purplish in streaks.
25th	7 a. m.	96	96	
"	6 p. m.	99	110	
26th	7 a. m.	97	104	Bad night. Considerable pain. Bromide potass. twice; sedative once.
"	6 p. m.	98	105	Comfortable all day
27th	7 a. m.	97 5	100	Good night. A little pain this morning. Measures 33½ inches.
"	6 p. m.	100 5	110	
28th	7 a. m.	98 5	102	Bad night. Abdomen tympanitic. Pain in right side and shoulder. Lower margin of liver extends further downwards; has nearly reached the hip. Comfortable.
"	6 p. m.	99 5	112	Comfortable.
29th	7 a. m.	97	100	Much pain in left hypochondrium Gave brom. potass. three times, sedative once. Right side perfectly easy.
"	6 p. m.	98	109	
30th	7 a. m.	94 5	106	Observation taken twice.
"	6 p. m.	101 5	112	Bad night. Considerable tension and hardness. Very restless. Considerable pain. When I saw my patient I found out she had eaten some fresh pork.
31st	7 a. m.	97 5	112	Considerable pain in left side. Rubbed parts with camphoretted oil. I leave my patient in the afternoon more comfortable.
"	6 p. m.	101 5	120	After leaving her. Much pain. Short breathing.
November...1st	7 a. m.	98	114	Four doses of bromide and one of sedative.
"	7 p. m.	101 5	120	Very short breath.
2d	7 a. m.	99	105	Very bad night until 2 o'clock. Bromide twice.
"	6 p. m.	100	105	Frequent stools. Short breathing.
3d	7 a. m.	97	115	More comfortable. The difficulty, says Mr. W., may have been in eating something that disagreed with her; can not tell what.
6th	6 p. m.	103	123.	Very dull; feverish. Probably has eaten too much.
7th	7 a. m.	94 5	108	
"	6 p. m.	99	114	
8th	7 a. m.	97 5	103	Pain in bowels.
"	6 p. m.	101 5	113	
9th	7 a. m.	95	106	Bad night. Very restless.
10th	7 a. m.	94 5	102	Took pills. Slept pretty well.
"	6 p. m.	99	110	
11th	7 a. m.	97	97	Restless. Pain Bromide and sedative once.
"	6 p. m.	99 5	114	Pain in right side.

TABLE OF OBSERVATIONS—*continued.*

DAY.	HOUR.	TEMP.	PULSE	REMARKS.
November 12th	7 a. m.	95°	104	Comfortable.
"	6 p. m.	97	110	
13th	7 a. m.	100	110	Restless night.
"	8 p. m.	98	110	
14th	7 a. m.	97	105	Comfortable night.
"	7 p. m.	99	105	Considerably puffed up.
15th	7 a. m.	98	100	Much pain during night. Restless. Measures 35 inches.
"	6 p. m.	97	112	
16th	7 a. m.	98	112	Very uneasy night.
"	6 p. m.	100	120	Suffered all day with rambling pains. Pulse very feeble. Anodyne twice.
17th	7 a. m.	98	112	Umbilical pains.
"	6 p. m.	100	107	Feverish Measures 33¼.
18th	7 a. m.	100	114	Very restless. Much pain.
"	6 p. m.	101	116	
19th	7 a. m.	96	99	Very restless. Pain.
"	6 p. m.	88	101	
20th	7 a. m.	96	102	
"	7 p. m.	97	105	
21st	7 a. m.	95	99	
"	7 p. m.	97	106	Very restless. Considerable tympanitis. Getting very large.
22d	7 a. m.	95 5	97	Much pain all night.
"	6 p. m.	96	98	Tympanitis. Restless.
23d	7 a. m.	96	111	
"	6 p. m.	96	107	do. do.
24th	7 a. m.	96 5	114	Bad night. Shooting pains through abdomen and back.
"	6 p. m.	96	108	Pain constant. Oppressive fulness.
25th	7 a. m.	95	107	Much pain only in fore part of night.
"	6 p. m.	99 5	116	Tympanitis, but comparatively comfortable.
26th	7 a. m.	97	116	
"	7 p. m.	97	111	

The oppression is very great, and caused by the fluid pushing up the diaphragm. Order "Mistura Resinæ Copaibæ" (2 tablespoonfuls thrice daily). Finding that the prescription did not act as I expected, before giving it up I prescribe a few drops of tr. digitalis to be added to each dose of the mixture. Still no effect from the medicines. At my next visit, intend to get rid of serous effusion by means of Dieulafoy's aspirator. Two cases of confinement prevented me seeing again my patient in time to operate.

After December 1st, Mr W. writes the copaiba mixture was discontinued. He thought she grew worse under its use. The pains in the side and abdomen became so constant as to interfere with thermometrical observations. Lower extremities became partially paralyzed. Labia swelled enormously. Urine gradually decreased, When standing on her feet, lower portion of body "presented the appearance of a monstrous hernia." Two days after discontinuing the copaiba mixture and digitalis, he says the swelling gradually subsided to half its proportion.

Urine finally ceased to flow on the 9th of December. On the next day the struggle commenced. It lasted 30 hours. All pains then ceased; she fell asleep for six hours; after which, without a struggle or a groan, or even the twitchings of the corners of her mouth, she breathed her last. Her mind remained perfectly clear and calm to the last, although conscious of approaching dissolution.

Remarks.

Cancer is "a local manifestation of a specific disease or poison of the blood." According to the development of the growth, this poison becomes, by re-absorption, more and more violent and fatal. Such is, I believe, at present, the opinion entertained, within a few exceptions, by the leading pathologists. As it is constitutional, the removal of the local trouble will not effect a cure. At some later, indefinite period, the disease will reappear in some other vital part or parts.

There are many varieties and even sub-varieties of cancer given by different writers. I lack space and time to refer to all. But in reference only to two varieties, the Scirrhus or Hard Cancer, and the Medullary or Soft Cancer, I will simply state that the latter is the one more commonly met with in Hepatic Cancer, and to it the following remarks will mostly apply.

Cancer is said to be one of the most frequent affections of the liver. It is upon its convex portion that we generally see it. According to Cruveilhier, the largest cancerous masses are habitually found in that portion of the liver which corresponds to the suspensory ligament. Although almost any portion of the organ, whether deep or superficial, may be the seat of this terrible disease, the right lobe, nevertheless, seems to be more frequently attacked.

The volume of the liver is not always increased. It is sometimes normal, sometimes smaller. I am not aware which it is decided is the most common modification of the three.

If we examine the cancerous mass, we find it soft, grayish, resembling somewhat the brain substance of newly-born children, and it is very vascular. Like the scirrhus, the substance of the medullary becomes soft at a certain period of the disease. This softening always progresses from the center to the circumference. Whilst softening of the cancerous mass is going on, there

occasionally occurs the rupture of a few blood-vessels. The effusion remains stationary in some part of the tumor either in a fluid condition, or in that of a blood clot; or even undergoes the same metamorphosis and absorption, as in some cases of cerebral apoplexy. Other organs are oftentimes affected at the same time as the liver. The following enumeration is given according to the frequency of their lesion: stomach, pancreas, colon, peritoneum, mesenteric glands, spleen, lung, kidney, uterus and ovary. Andral has seen co-existing in the same subject a scirrhus of the stomach, liver and colon; in another, of the liver, stomach, pancreas and gastro-hepatic epiploon. Cruveilhier mentions one of the liver, pancreas, kidney and lung.

In hepatic cancer, at an advanced period, the primæ viæ, the stomach especially, the organs of respiration and of circulation become more or less affected. Their tissues may become thicker or thinner, soft or indurated, inflamed or ulcerated.

The *pain* is not always referable solely to the hepatic region. It is sometimes violent in the epigastric. Sometimes the pain is shifting, travels all over the abdominal region; sometimes even, but rarely, it is totally absent.

Ascites is a very common complication of cancer of the liver, and caused, it is readily understood, both by the compression exercised by tumors upon hepatic vessels and by the great impoverishment of the blood.

The *œdema* of the lower extremities only takes place after the ascites, and reaches sometimes an enormous extent.

Icterus is another complication, and takes place whenever the biliary ducts are interfered with by compression.

The *complexion*, however, is not always the same. It may be very yellow, of a dirty yellow hue, or of a pale straw color.

The *digestive functions* are seriously disturbed especially in the last period of the disease. *Nausea* and *vomiting* supervene, either owing to the morbid condition of the stomach itself, through sympathy, or to the compression exercised by the hypertrophied liver upon the ventricle.

Obstinate constipation exists in the beginning of the disease. Towards the last, it is replaced by a more or less copious *diarrhœa*, sometimes colliquative in its character, and the stools become decolorized. The *urine* remains scanty throughout, and is of an orange color or much darker. Interference by compres-

sion may extend as far as the *diaphragm*. When we take into consideration the relation of circulation which exists between that organ and the *heart*, we will not be astonished to meet sometimes with an imperfect, irregular action of the latter. I noticed it several times in Mrs. W.'s case. Her pulse was at times irregular, intermittent. There may be often a rise of *fever* in the first period of the disease; but it becomes more constant towards the last. It then ordinarily offers the characteristics of *hectic*, which combined with many other morbid causes, hastens very much the exhaustion of our patients. Their *mind* generally remains clear to the last. Throughout the disease, we see them given up to utter *despondency* and *hypochondriasia*.

It is impossible to exactly state the *duration* of hepatic cancer: it is too variable. Andral mentions cases who died within fifteen days after the apparition of the disease: others lasted as many months.

Concerning its *termination*, we can positively say it is constantly fatal. Death, however, may directly take place from different causes, among which I will mention hepatic degeneration and disorganization, sudden hæmorrhage, peritonitis, gastro-enteritis, pleurisy, pneumonia, general dropsy, etc.

As to the *causation* of hepatic cancer, we can say no more that is reliable or positive than in any other kind of cancer. But the belief in the *hereditary predisposition* and in the *cancerous diathesis* is, I believe, unanimously entertained.

One more word concerning "the *treatment* of *hepatic* cancer." As all deep-seated cancers, we know it is beyond the resources of science. Hence, all our efforts should tend towards maintaining the constitutional powers, and retard as much as possible the progress of the disease. Violent medicines are entirely disregarded by the most eminent men of the profession, who recommend a generous diet, mostly animal; stimulants sparingly, unless there be great prostration; locally, counter irritation often applied and warm fomentations; anodynes and narcotics to relieve pain and promote rest. It is also of paramount importance that the patient should be in a healthy atmosphere, and a well ventilated apartment. Surrounded by cheerful objects and friends; and any thing calculated to produce upon the mind a violent shock or emotion, should be most carefully avoided.

CURRENT MEDICAL LITERATURE.

SURGERY.

[Compiled by SAMUEL LOGAN, M.D., Professor of Anatomy and Clinical Surgery Medical Department, University of Louisiana.]

AMMONÆMIA.

At the meeting of the *Aerztlicher Verein* of Marburg, on February 9th, Prof. Roser exhibited the bladder of a young man who had suffered from calculus. No operation had been performed, because, when admitted into the hospital, he had symptoms of pericystitis with marked collapse. The bladder presented an ulcerated perforation, and the ammoniacal urine was infiltrated as far as the inguinal ring. The professor recounted a number of similar cases of ammonæmic collapse, from which he deduced the following conclusions:

1. Acute ammonæmia, which is caused by absorption of decomposed urine, produces marked collapse with low temperature of the blood.
2. A low temperature in cystitis and pyelitis may be considered diagnostic of ammonæmia.
3. When the source of the ammonæmia is removed without delay by cutting into the urethra, the bladder, or the pelvis of the kidney, the symptoms of collapse often disappear.
4. Ammonæmia deserves more attention on the part of surgeons than it has heretofore received.—*Berlinerklin. Wochenschrift*, June 19th.

THE EXTIRPATION OF LARGE FIBROMYOMATA OF THE UTERUS BY LAPAROTOMY. PARTICULARLY BY SUPRA-VAGINAL AMPUTATION OF THE UTERUS.

(*Centralbl. f. Med.*, No. 25, 1876; from *Berlin. Klin. Wochens.*, 1876, Nos. 12–14.)

Hegar gives two cases of successful operation. The first was that of a pregnant woman, on the surface of whose uterus a myoma was situated. Artificial labor was induced at the sixth month. Five weeks later, laparotomy was performed. The myoma when taken away by the écraseur was found to have a large stalk, and to be accompanied by many small fibroids within the uterus. For this reason the organ itself was, after the application of a double ligature, taken away by the same means, the stump being fixed in the aperture of the abdominal wound. After several accidents from sloughing of the wounded surfaces, etc., the cure was effected by the end of the fourth week.

In Hegar's second case, a rapidly growing intra-parietal myoma was extirpated with much hemorrhage. The myoma left only a small portion of the cervix free; the remaining stump was therefore very short, and could not be fixed in the abdominal wound. The tumor when removed was found to weigh four kilogrammes.

H. advises that the abdominal wound shall be made sufficiently large, so that the tumor, after turning upon its axis, may be withdrawn without being made smaller. If this cannot be accomplished, he advises that it be taken out piecemeal. The original communication contains full details of the procedure.—X, in *Medical Times.*

A NEW ANTISEPTIC.

E. Hermant (*Centralblatt für Chirurgie*, 1876, p. 528, from *Arch. Méd. Belges*, 1876, B. 6, pp. 407–415) uses a mixture of spirits of camphor and solution of hypochlorate of calcium, which, when gradually mixed, retains the greater portion of camphor in solution. In gangrenous wounds this solution acts more favorably in favoring decomposition without profuse suppuration.—X, in *Medical Times.*

RESECTION OF THE MEDIAN AND ULNAR NERVES.

Braun (*Centralblatt für Chirurgie*, 1876, p. 536, from *Deutsche Zeitschrift für Prakt. Med.*, No. 25) gives the following case. A laborer, 20 years or age, cut himself in the left arm; the wound healed, but the fingers remained useless. Ten months after the accident he came under observation. There was a scar in the upper third of the arm, within the biceps; under this several painful nodules the size of cherry-stones could be felt. The hand was cold, and covered with thin, smooth, brownish-red skin. The nails were thick, crumpled, split, and furrowed. The interosseous muscles and both balls were atropied; the symptoms, in a word, showed division of the ulnar and median nerves. There was no hope excepting from operative interference.

By the aid of Esmarch's apparatus, and under carbolic-acid spray, the central ends of the divided nerves were laid bare and resected. The peripheral ends were found with difficulty, since they had become retracted nearly an inch, and were somewhat deflected from their normal position. They were freshened and joined to the central extremities by fine sutures, and, the wound being closed, were kept in position by a right-angled splint. There was severe pain in the wound for two days; it closed after profuse suppuration at the end of a month, at which time the nerve-sutures, with one exception, remained fixed. The sensory and motor paralysis continued, but electric stimulus aroused slight movements in the muscles. Six weeks after the operation

the sutures and splint were removed. Six months after the operation, some movement was restored to the hand. Eighteen months after the resection, the condition of the limb was as follows. The forearm was much stronger; the skin was thicker, warmer, and not so shining; the nails were less thick and crumpled. The activity of the flexors and pronators of the hand had become almost entirely reëstablished, while the movements of the ball of the thumb and that of the little finger were still imperfectly performed. Feeling had returned, with the exception of occasional imperfect localization. Irritation of the nerves above the sutures aroused energetic contraction; below the sutures, none; that is to say, conduction had returned, but not irritability of the peripheral end. The patient was able to perform his work once more perfectly well.

Braun also alludes to another case of Langenbeck's, where resection was performed after two years. It is the late performance of the operation which gives these cases interest; cases of resection of recently-separated nerves are not rare.—X, in *Medical Times.*

GOKHRU IN SEMINAL DISCHARGE AND INCONTINENCE OF URINE.

(*The Indian Medical Gazette,* July 1, 1876.)

Cheytan Shah, Assistant Surgeon to the City Dispensary, Peshawur, comes to the following conclusions in regard to gokhru: 1. It is useful in certain cases of premature discharge, and for certain forms of involuntary emission. 2. It entirely cures the moisture or dribbling that occurs from the orifice of the urethra shortly after micturition. 3. The effects are manifested in the course of a week. 4. In a few cases relapses occur. 5. A few patients complain of lassitude and a few of dryness of the mouth from its use. 6. It appears to have a marked effect upon irritability of the bladder and the prostatic region, and after its use urine can be retained in the bladder for a longer period.—*Medical Times.*

RADICAL CURE OF HYDROCELE WITH INJECTION OF CARBOLIC ACID.

(*New York Medical Journal,* November, 1876.)

Instead of the customary puncture and subsequent injection with tincture of iodine, which always produces pain and confines the patient to bed for some days, Prof. Hüter has tried and highly recommends an injection of carbolic acid, two per cent. In one case there was no pain whatever, either during or after the operation; the patient took a walk immediately after, and was not confined to his house. On the fifth day there was no

swelling nor tenderness, and the hydrocele could be considered cured.—*Medical Times.*

TRANSMISSION OF SYPHILIS.

Dr. R. W. Taylor, of New York, states that he has met with four cases in which syphilitic fathers procreated syphilitic children, while the mothers remained healthy. These cases were all most carefully studied, and the doctor thinks there can be no doubt of the correctness of his conclusions. In several other instances, he was personally satisfied that the fact was the same, but as the cases were not sufficiently complete for publication, he does not take them into consideration. At the present time Dr. Taylor makes public the details of two of the above cases, of which the following is a synopsis. In the first case a man was infected with syphilis a year before his marriage, but under a mercurial treatment of about six weeks' duration all visible manifestations of the disease disappeared, and he stopped treatment. His wife was perfectly healthy and never presented any symptoms of syphilis; but one year after her marriage was delivered at term of a dead child, which presented no perceptible lesions. She subsequently gave birth to four children, all of whom were syphilitic, and all died within a few months of birth. During this time the father was suffering from periosteal pains, ulcers, and a scaly skin affection. In 1866 he sought relief at a dispensary and was ordered biniodide of mercury and iodide of potassium, which he continued to take for nearly a year, when he became apparently well. In 1867 his wife gave birth to a healthy child which is still living, and never presented any evidence of syphilis. In 1869 the husband again began to suffer from periosteal pains. At this time he impregnated his wife, and she gave birth to an apparently healthy girl. Shortly after birth, however, the child became sick, and was covered with an eruption. She was brought to Dr. Taylor for treatment, and he found the body and extremities covered with a copious roseolous syphilide, with numerous typical syphilitic papules interspersed among the roseolous patches. The pabules about the anus were excoriated. There was also intense ozæna. The mother was perfectly healthy. Repeated and most rigid examinations revealed no evidence of syphilis, past or present. Dr. Weir also examined her and pronounced her perfectly free from syphilis, past or present. The father, however, gave a good history of, and presented at the time, many signs of syphilis. The child was treated by inunctions and recovered. The father was put on a mixed treatment (mercury and potash), and the mother was given iron and quinine. In 1872 she gave birth to a boy, who was and has since remained perfectly healthy.

In the second case a healthy woman was married to a healthy

man in 1862; in the three years following she gave birth to three perfectly healthy children. In 1865 the husband had a chancre, which was followed by a general eruption. He was treated for six weeks, when he considered himself cured. In 1866 his wife gave birth to a boy, who soon became sick, puny, and covered with a skin disease. The history of anal condylomata and ozæna could be made out. In 1869 she had a girl, which soon became sick in the same way as the boy. When the child was four months old it had a squamous, coppery eruption about the mouth, and a roseolous and papular eruption on the body and soles of the feet. It had also the typical senile facies. At this time the boy born in 1866 had interstitial keratitis, Hutchinson's teeth, and an umbilical hernia. The mother was in blooming health, and the most careful examination failed to reveal any evidences of syphilis. In fact, between that time and 1875 she was repeatedly examined, but always with the same result. The husband at that time presented scattered papules on the body, and a gummatous infiltration over the left eye. He was kept under treatment for several months, and in 1872 his wife gave birth to another perfectly healthy child.—*Archives of Clinical Surgery*, September, 1876.

AMPUTATION PERFORMED ON A PATIENT SUFFERING FROM ALBUMINURIA.

M. Verneuil laid it down that no operation should be attempted on patients suffering from diabetes or albuminuria. Any injury rapidly carries off patients under these conditions. There are, however, exceptions to this rule, of which M. Terillon quoted a remarkable one. The case was that of a man, aged twenty-nine, who, being drunk, fell down and broke his forearm, and at the same time wounded himself so as the wound communicated with the seat of the fracture. Notwithstanding the most methodical dressing, a diffused phlegmon supervened, accompanied by *delirium tremens*. The phlegmon made such progress that, notwithstanding the presence of an enormous quantity of albumen in the urine, M. Terillon decided on performing amputation of the arm, which was followed by immediate improvement, rapid cicatrisation, and complete disappearance of the albumen.—*The London Medical Record.*

ON THE TREATMENT OF UTERINE INVERSION BY THE ELASTIC LIGATURE.

In a case of uterine inversion in which he had tried reduction ineffectually by all the means usually employed, M. Arlès drew out the inverted uterus and surrounded it by a moderately tight india-rubber tube. The results were very simple, and the tumor

came away in a fortnight. M. Arlès affirmed that the elastic ligature is superior to all the methods hitherto employed.—*London Medical Record.*

BETZ ON A PATIENT WHO WASHED OUT HIS OWN STOMACH.

In Betz's *Memorabilien*, Jahrgang xxi. Heft 4, Dr. Friedrich Betz narrates the following case. The patient, a merchant, who had been a sugar-baker, now forty-nine years of age, had suffered from dyspepsia ever since he was fifteen years old. In the beginning he suffered chiefly from a horrible feeling of hunger, with collections of saliva in his mouth, hiccup, and pyrosis. For some time a milk-diet relieved this. He could never bear smoking, or fatty or farinaceous food. In the course of time, all these symptoms grew worse, and then he had severe pains in his stomach; then actual vomiting of sour smutty-colored masses; with obstinate constipation, loss of sleep, etc. For about a year and a half his condition was a horrible one. The epigastric pain was almost unbearable; he vomited more than he ate; and his strength failed rapidly. After Dr. Betz had satisfied himself by percussion and succussion that the stomach was dilated, and retained its contents, he proceeded to use the stomach-tube. The contents of the stomach were neutralized and diluted with warm water containing carbonate of soda. Cold water could not be borne. Only the tube was used, not the stomach-pump. The first attempts set up a little pharyngeal and œsophageal irritation, but this soon subsided. In the intervals anti-fermentative and tonic remedies were used. The diet was restricted as to quantity and quality. The exacerbations were relieved by hypodermic injections of morphia, and cold compresses to the anterior surface of the body, clysters, etc. Sometimes the pain appeared to be due to peritonitis. As he lived too far from Dr. Betz for him personally to use the stomach-pump the local surgeon did so ten or twelve times. But one night, the tube being kept in the house, the patient felt so urgent a need to empty his stomach, that he seized the tube, introduced it himself, and filled the funnel with water; then, by simply bending forward, as had been done before, the diluted fluid escaped. For the last five weeks he has had resort to this means, but whether finding that filling the funnel was too slow for him, or too troublesome, he had recourse to the following plan. He has two or three vessels of hot water, holding nearly a pint each, near him, and drinks one of them. He then introduces the oiled tube, whilst sitting; he then stands up, bends forward the upper half of the body, and lets some of the water run into a basin. Then he drinks the second glass, repeats the manœuver with the tube, and continues till the fluid comes back clear from the stomach. He takes account how much goes in,

and how much comes out. In general the latter exceeds the former. This treatment has done him good; his appetite is better, the bowels are regular, and his strength improved, so that he can walk for an hour comfortably. He takes baths of the Neckar water, and is gaining weight. He is so fond of the tube, that he takes it with him in travelling. He overcomes the difficulty caused by the cricoid cartilage projecting behind, by drawing a deep breath. The introduction of the tube no longer gives him pain. If the lateral openings be stopped up, he simply withdraws the tube, cleanses it and puts it in again. It is an English tube, with an olive-shaped end. It must be well oiled. He thinks, perhaps correctly, that he would not have suffered so much if the tube had been used earlier in his complaint. Dr. Betz proposes to try electricity in this case if the stomach does not show some power of contraction upon its contents in a reasonable time. There is no tumor, but very probably callous thickening of the pyloric end. It is interesting to note how quickly the removal of the acid contents relieves the pain, so that it seems likely that there is a direct irritation of the nerve-terminations in cases of this kind. However, he says the object of his paper is not to describe the pathology of this patient's dyspepsia, but rather its therapeutic technology, "the remarkable thing," as the patient calls it, of his success in washing out his own stomach. It may encourage others.

'Sibi quisque inde exemplum expetat.'—PLAUTUS.

—*London Medical Record.*

EIGHT CASES OF EXCISION OF THE KNEE-JOINT, TOGETHER WITH A DESCRIPTON OF A NEW MODE OF PERFORMING THE OPERATION.*

BY WILLIAM KNIGHT TREVES, F.R.C.S.,

Surgeon to the National Hospital for Scrofula, Margate.

Excision of the knee-joint has got into bad odor of late. I believe the explanation is to be found in the fact that operating surgeons either do not always sufficiently secure perfect immobility of the limb in the putting up, or leave the after-dressing to dressers or house surgeons of limited experience.

It has been our custom not to remove the limb from the splint in which it was placed on the operating table, till the wound is healed and union is believed to have taken place; measures being taken to prevent the soiling of the splint, so that removal may not be necessary. The splint has generally been left on for three months. In all these cases, the limb has been secured to the splint by gum and chalk or silicate bandage, so as to render

* Read at Margate, at a meeting of the East Kent District of the Southeastern Branch.

rebandaging unnecessary. The splint used has consisted of moulded leather thigh and leg pieces, with iron interruption at the knee; the leather splint being put on damp, and secured by fixed bandage at the time of operation. Sufficient slices have been taken off the bones to permit the excised ends to lie easily in a good position, and not to exercise any pressure against each other. All the cases have had an excision-bed, that is, two short mattresses separated by a square air-pillow, which is emptied for the use of the bed-pan, or to change the sheets. The limb has in each case been swung in a Salter's cradle. They have all, except the fatal case and one still in the hospital, been kept in till the wound has entirely healed, and they have been able to walk, run, and use the limb freely. Their average stay has been about six months after the operation. I have mentioned these particulars at the commencement to avoid repetition.

1. R. M., aged 17, female; disease of two and a half years' standing; acute pain on movement, with partial dislocation outwards; excised March 17th, 1871—usual operation. The cartilages were found eroded, and there was grumous matter in the joint. This patient has remained perfectly well up to the present time. She walks long distances and leads an active life.

2. E. A., aged 11, male; disease of seven years' standing; complete dislocation of tibia backwards and perfectly useless limb; excised October 12th, 1871. In this case, I for the first time tried the side-incisions; but, difficulties arising from the malposition of the bones, I completed the incision and performed the ordinary operation. The result was good; he could run and play leap frog before leaving the hospital, and remained quite well a year afterwards.

3. H. B., aged 11, male; disease of two and a half years' standing; operation August 29th, 1872; side-incisions and patella left. There were ulcerations of cartilages and total disorganization of the joint. The result was good, with a movable joint.

4. M. B., aged 23, female; disease of eight years' duration; operation October 19th, 1872; side-incisions; patella sliced. There were gelatinous degeneration of the synovial membranes and ulcerated cartilages. The result was good. She was leading an active life up to last Christmas.

5. G. W., aged 8, male. His knee had been excised at a London hospital, and he came down with the tibia completely dislocated backwards, the leg hanging like a flail to the thigh, without any bony union. I excised again, with a perfectly good result, as shown in the photograph.* This dislocation, I found reason to believe, might have been brought about by the muscular throes attending masturbation, to prevent which vice I removed the foreskin.

6. M. S., aged 20, female; operation August 20th, 1874, by

* Photographs were shown of all these cases, except the fatal one and the last excised.

side-incisions; gelatinous degeneration of the synovia membrane, with erosion of cartilage. This was a most promising case; but the patient died a fortnight afterwards from pyæmia, and there was reason to fear that she had been infected by a sponge which had been used in a case of septic poisoning. I have never used a sponge since.

7. E. H., aged 8, female; disease of three years' duration; excised September 22d, 1875, by side-incisions. The bone-surfaces were carious, with numerous sinuses about the joint. Some of the sinuses were difficult to heal, and this patient is only now leaving the hospital. She has a perfectly sound limb.

8. W. S., aged 9, male; excised July 18th, 1876, by the ordinary operation. I did not use the side-cuts in this case, as the patella was much diseased, and there were sinuses and wounds about the front of the joint. The ends of the bones were found carious. The wound has healed, and he is now getting about on crutches, wearing the splint applied at the time of operation.

I will now, with your permission, describe a new mode of performing the operation, which I may fairly call my own, and which, I venture to think, has in suitable cases certain decided advantages over the usual plan. The object of this operation is to leave the tissues in front of the joint uninjured, to preserve the natural covering of the joint, and to keep intact the extensor tendon with its attachments. The bones are sawn *in situ*.

First. I make a semilunar incision about three inches in length on each side of the joint, the lowest point of each incision being thoroughly dependent for the exit of pus or serum.

Secondly. I divide the lateral ligaments on each side, and reflect the tissues till the synovial cavity in front is well opened. If there be adhesions in front, they are divided. A wide director is passed behind the joint in front of the posterior ligament, and with a narrow bistoury the crucial ligaments and any adhesions there may be between the bones are divided.

Thirdly. A metal retractor is inserted in front of the bones to secure from injury the tissues in front and the skin and tissues loosened from the sides, while the bones are being sawn. The blade of a Butcher's saw is passed behind the joint; and, this being connected with its frame, a thin slice is sawn from the joint-ends of each bone. The sawn surface of this slice is the exact counterpart of the surface left behind; and if, on examination, it appears to be healthy, I pass on to the patella, which is left if healthy, or sliced if its cartilage be ulcerated. I formerly used a chain-saw for the sections, but have relinquished it in favor of Butcher's.

The following are the chief advantages to be derived from this mode of operating.

1. Decided improvement in the after-appearance of the limb. The front view shows little difference from the other limb.

2. Greatly increased power of extension. After ordinary ex-

cision, extension is often feeble from the divided and shortened extensor tendon; the leg is inclined to drag, and the patient catches his toe in walking. With this operation, they are able to lift the leg even before union is firm; and they get increased advantage from the additional power and handiness of the limb.

3. The extensor tendon being still attached to the tibia in front, whilst the posterior ligament is intact behind, the bones are not so loose and the tibia is not so likely to become displaced.

4. This mode of operating partakes of the nature of a subcutaneous operation. The sawn surfaces are still left under their natural covering; they are not exposed under an extensive wound, which will sometimes gape in spite of care; but, being well protected, they unite, I believe, more kindly and readily than with the usual operation. I may add that this is, after a little practice, a very easy operation.—*British Medical Journal.*

TRAUMATIC TETANUS CURED BY STRETCHING THE NERVES OF THE BRACHIAL PLEXUS.

Professor Vogt, of the University of Griefswald, reports this case in the *Centralblatt für Chirurgie*, No. 40, 1876 (abstracted in *New York Medical Journal*). A laborer, aged 63, sustained an injury of the right hand from a falling stone. At the end of two weeks the palmar wound was healed, and on the dorsum, opposite the lower end of the third metacarpal bone, a healthy granulating surface existed, when trismus was observed. Severe opisthetonous and clonic convulsions of the lower extremities followed, in spite of the free use of opium. There was no tenderness in either wound, nor over the course of the nerves in the arm or forearm; but the brachial plexus in the neck was very tender, and pressure gave rise to spasms of the muscles The operation was performed and the treatment conducted with all antiseptic precautions. The brachial plexus was exposed on the right side of the neck, in the triangle enclosed by the trapezius, omo-hyoid, and scaleni muscles, its sheath opened, and the separate trunks drawn out and well stretched. The sheath, appearing strongly injected, was loosened from the surrounding tissues as far as the spinal canal. In the hand, the palmar cicatrix was separated from the sheath of the flexor tendons by a crucial incision and subsequent dissection, and the cicatrising edge of the dorsal wound was excised. Immediately on waking, the patient could open his mouth and protrude his tongue, and all symptoms disappeared except some slight spasms of the muscles of the neck, which followed vomiting (on the second day). On the tenth day after the operation, the wounds were nearly healed. The patient had had no other medicine than

opium, for restlessness at night, and felt no morbid sensations beyond occasionsal prickings in the fingers.—*British Med. Jour.*

PARALYSIS TREATED BY NERVE-STRETCHING,

The *Aerztliches Intelligens-Blatt*, No. 8, 1876, reports the following case. The patient, a Polish gentleman, aged 35, had for eleven years suffered from paraplegia, the result of an injury in the sacral region. There had been an almost total loss of sensation, while voluntary motion was completely annihilated. The bladder and rectum were affected, and incontinence of urine followed. After administering chloroform, the following operation was performed. A curved incision was made in the right groin, over and along the course of Poupart's ligament. The fascia was divided, and the anterior crural never exposed and separated from the vein and artery. The operator hooked his finger under the nerve, and raised it with such force that the foot was moved. He then seized it between the thumb and finger, and made traction downward, until it appeared to be elongated. The inguinal wound having been carefully dressed, a longitudinal incision was made on the same side, midway between the tuber ischii and the great trochanter, so as to expose the sciatic nerve, which was also elevated from its bed and pulled forcibly upward and downward. These operations were followed by the immediate cessation of the spasmodic movements with which the limbs had been affected since the time of the accident, on the side on which the operation had been performed. The wounds healed rapidly, and the operation was repeated on the left side in a fortnight, with the most satisfactory result. The relief afforded was complete, and the patient, who for years had been confined to his bed, was subsequently able to get up and move about on crutches, the paralyzed limbs being furnished with mechanical support.—*The British Medical Journal.*

TREATMENT OF RINGWORM BY GOA POWDER.

By A. Hughes Bennett, M.D , M.R.C.P.,

Medical Registrar, Westminster Hospital.

In several articles recently published in the *British Medical Journal*, the virtues of this remedy have been discussed. Having formerly been a resident in the East for nearly two years, and having treated a large number of cases of the so-called "Doby's ringworm," or tinea circinatus, both among natives and Europeans, I may add my mite to the inquiry. This disease, which is so common in India and China that almost every indi-

vidual becomes at some period affected with it, is successfully treated with several external applications, such as tincture of iodine, solutions of mercury, etc. Undoubtedly, the most certain and rapid is that of Goa powder. I have found, in acute cases, that one application was usually followed by recovery. In chronic cases, two or three may have been necessary to thoroughly eradicate the disease. In no single instance do I remember the employment of this drug to have failed in effecting the object desired.—*British Medical Journal.*

TREATMENT OF RINGWORM BY THE TINCTURE OF PERCHLORIDE OF IRON.

By James Dobbie, M,D., F.F.P.S. Glas., Hillhead.

Amongst the many remedies that have been recommended for this common and sometimes intractable disease, I have observed lately notices of the Goa powder, cassia lata, and chrysophanic acid, but have failed to observe any reference to the treatment of the disease by the use of the tincture of perchloride of iron. I have tried it on several occasions with most satisfactory results; sometimes, one application being sufficient to effect a complete cure. It is a clean and simple remedy, well worthy of attention. I have known cases do well under the application of common ink; this, I presume, must be owing to the iron it contains.—*The British Medical Journal.*

REPAIR OF DIVIDED TENDONS.

At a recent meeting of the Société de Chirurgie, a discussion took place as to the advisability or otherwise of enlarging the wound in a limb in cases where the tendons have been severed, in order to approximate the cut ends and endeavor, by means of sutures, to obtain union by the first intention. This is the practice adopted by most surgeons in and out of France; but MM. Duplay, Tillaux, and Terrier are of opinion that it is not absolutely necessary that the cut ends of a tendon should be brought into contact; that, for all practical purposes, it is sufficient to graft them, as it were, to the neighboring tendons having similar actions or nearly so, and thus save the patient the torture of having his limb dissected by the surgeon in search of one or other of the cut ends of a tendon. With respect to the hand, these gentlemen have been successful with this mode of treatment; but it is only the lower or peripheric portion of the tendon that could be dealt with in this way, as it is more superficial. Then the question arose as to what became of the upper retracted

portion, to which MM. Tillaux and Terrier replied that, in superficial wounds, adhesion takes place between the tendon and the skin, and motion is thus restored; but, when the wounds are deep, the cut ends should be drawn as near as possible by proper manipulation and dressing, and the cure may be effected by the immediate union of the tendons without any adhesion of the skin. Sir James Paget long ago described the progress of union between the separated ends of divided tendons by the effusion and organization of plastic matter. *See his Surgical Pathology*, third edition, pp. 197 *et. seq.*—Ed. B. M. J.]—*British Med. Jour.*

OPEN DRESSING OF WOUNDS.

In a recent lecture at the Westminster Hospital, Mr. Davy enumerated his excisions and amputations of the past two years—thirty-three in all, including two excisions of the hip, one amputation of the thigh, five Syme's, and two Chopart's—and all treated by the open method, with not a single death. He states that the results of open treatment are equally as good with the antiseptic system, and he intends to employ it until proofs are brought that there is any better method.—*British Medical Journal.*

SUCCESSFUL REMOVAL OF THE SPLEEN.

M. J. Pean (*London Lancet*) reports a second successful case of splenotomy. Patient was a young married woman, æt. twenty-four, well developed; had been confined four times. Tumor was first noticed eighteen months before the operation. Grew very rapidly; interfered with digestion and respiration. The tumor was removed in much the same way as an ovarian tumor and the pedicle secured the upper part of the abdominal wound. No complication retarded the recovery, so that in a month she was allowed to go home. Five months after operation she was reported as doing well. This is the sixth recorded case of splenotomy, the two successful ones by Mr. J. Pean, the others by Kiichler, Spencer Wells, and Kœberle.—*Detroit Medical Journal.*

NEW METHOD OF WOUND-DRAINAGE.

Mr. Chiene describes (*Ed. Med. Journ.*, September, 1876), a new system of drainage of wounds which consists in the substitution of hanks of catgut prepared in carbolic acid solution for the india-rubber drainage-tubes. The number of threads in each skein must depend on the size and importance of the wound

"In a large wound," he says, "as far as I am able to judge, eight or sixteen threads should be sufficient in each skein, the number of the skeins depending on the shape and size of the wound. In cases in which very profuse discharge is expected, either in a specially large wound, or after a tedious operation, in which the wounded surface is necessarily exposed for a considerable time to the irritation of the carbolic spray, it will be better to increase the number of separate skeins, stitching them to different parts of the wounded surfaces in order to keep them in position, than to depend on one or two thick skeins. I am led to form this opinion from the result in the case of the excision of the knee. If it is ever necessary to use a skein of more than sixteen threads, one thread of catgut prepared in chromic acid should be added to act as a drain, if required, during the absorption and molecular disintegration of the drain. Chromic-acid gut should also be used to stitch the drain in position when such a procedure is necessary.

"As regards the thickness of gut, I have used three thicknesses. The finer the gut, the more numerous and the smaller will be the capillary tubes between the threads. The fineness of the gut will not interfere with the capillary action through the threads. For these reasons, I am of the opinion that the finest gut should be used; by its use, the better will be the drain for any given thickness of skein.

"It may be a question how much of the action is due to capillarity through and between the threads, and how much to the drain acting as a lead to the discharges. Capillarity has, I believe the chief place.

"I have hitherto used the gut prepared in the usual way by soaking in carbolic acid. Simple soaking of the drain in carbolic lotion for a quarter of an hour before using will be sufficient in cases in which prepared gut is not at hand.

"As long as the drain is acting, there will be a current of fluid along and around the threads (as well as in them), separating them from the living tissue, by means of which the process of absorption mainly takes place. When the flow ceases, then absorption of the column of fluid will first take place, the living wall of the canal will then reach the threads, and absorption will then commence. If this is a true explanation of what happens, then it is evident that it will not be necessary to use catgut specially prepared (as Mr. Lister, for instance, has shown by chromic acid) in order to delay absorption.

"Further experiments may show that, in many wounds, all that will be necessary will be to bring the catgut ligatures out at the corners of the wound instead of cutting them short. This was my first idea; but I have been so satisfied with the skein, that I have not yet made trial of it.

"I make no allusion in this paper to the use of catgut in draining suppurating wounds, or in wounds not treated antiseptically.

"I beg to recommend, as worthy of the notice of the profession, the principle of drainage by utilizing capillary forces through the skeins of an absorbable material like catgut, if, by its use, the evils of the drainage-tube, already referred to, are got rid of.

"We may now anticipate a time when, with catgut stitches instead of silk, horsehair, or silver wire, catgut drains instead of india-rubber tubing, and chromic-acid gut fixing together the buttons instead of silver wire, it will not be necessary to uncover our wounds from first to last during healing, when the deep dressing need never be shifted, and when the outer dressing will only require to be removed when soaked with discharge. The amount of discharge, in its turn, will be reduced to a minimum by the use of an absorbable animal material like cat-gut instead of non-absorbable foreign bodies like silk, silver wire, and india-rubber."—*American Journal of Medical Science.*

RECENT PROGRESS IN SURGERY.*

By J. C. Warren, M.D.

Excisions of the Shoulder-Joint for Gunshot Injury.†—Preceding the section of Dr. Otis's valuable work devoted to this subject is an interesting account of five hundred and five cases of shot fractures of the shoulder treated on the expectant plan. The small mortality of less than one third is accounted for by the fact that the cases of least severe injury were selected for this mode of treatment. Dr. Otis says, "While the opinion offered in my preliminary report of 1865 may have been expressed too emphatically, as deduced from insufficient data, it may still be held that the proportion of cases of shot fracture at the shoulder in which an expectant treatment is expedient is comparatively small, and that recourse should generally be had to excision, unless concomitant injuries of the blood-vessels or nerves, or extended lesions of the soft parts or of the shaft of the humerus, render amputation imperative.

There were eight hundred and eighty-five cases of excision at the shoulder reported, and the results as to fatality have been ascertained in all save nine. There were fourteen cases of partial excision of the head of the humerus, with one death. The results showed the comparative safety of free openings into the shoulder-joint after shot injury, but do not prove that when the head of the humerus is grazed or grooved by a ball it is safer to slice off the injured portion rather than to decapitate

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* Concluded from page 733.

† The Medical and Surgical History of the War of the Rebellion. Part II, Vol. II. George A. Otis, M.D. Washington, 1876.

the bone. Anchylosis was too frequent to permit much to be said in favor of partial excisions in this region. A useless arm is recorded in seven instances. The results of intermediary decapitations of the humerus were found to be much less satisfactory than primary operations; of one hundred and seventy-five of the latter, fifty-six died; of the former, twenty-one out of fifty-five survived. The mortality was twelve per cent. greater than in secondary operations, which were attended by better results than all the other varieties of operations.

Of excisions of the head and portions of the shaft of the humerus there were five hundred and seventeen cases. The two hundred and ninety-three cases of primary excision gave a mortality of 27.3 per cent. In the one hundred and fifty five cases of intermediary excisions there was a mortality of 41.2 per cent. There were fifty cases of secondary excisions of this class with a fatality of twenty-four per cent Of the whole eight hundred and seventy-six cases of excision in which the result was known there was a mortality of 34.8 per cent.

In the Franco-German the mortality of this operation among the Germans was thirty-eight per cent. and among the French 62.5 per cent. The number of cases in both these instances was much smaller than in our war. Apart from those given in the surgical history of the war there have been collected but three hundred and ninety-eight cases of excisions at the shoulder for shot injury. The recoveries were somewhat more than sixty per cent.; 36.6 per cent. of the excision on the right side died. while 29.8 per cent of the excision on the left side proved fatal. These results are not in accordance with the inference of Esmarch that "the operation on the left side seems to give less favorable results than on the right."

There was a steady increase in the relative frequency of excisions of the shoulder as the war progressed, and the surgeons acquired experience. The utility of the limb after this excision for shot injury is stated by Dr. Otis to be generally less than is recovered in some instances of anchylosis after disease, though greater than might be inferred from the reports of the pensioners.

The anterior longitudinal incision was the favorite procedure in operating. There were no reported instances of real subperiosteal excisions, nor any examples of reproduction of bone to any great extent. The necessity for amputation after excision seldom arose. Among the conclusions drawn by Dr. Otis in regard to gunshot injuries of the shoulder we may notice the following: (1) In slight shot injuries of the shoulder-joint an expectant conservative treatment is justifiable. (2) If the ball is impacted in the head of the bone, or if the epiphysis is much comminuted, unless there is injury to the blood-vessels and nerves, or very grave injury of the other soft parts, primary excision should be practiced. (3) Concomitant fractures of the acromial end of the clavicle, or of the neck or processes of scapula, or of

the upper third of the humerus, do not necessarily contraindicate excisions at the shoulder.

Excisions at the Elbow-Joint for Shot Injury will be considered in a future report.

Excisions at the Wrist for Shot Injury.—Ninety-six such operations were returned and are distributed into subdivisions according to the part excised. Six cases are described as total excisions or extirpations of both rows of carpals with resection of the distal ends of the radius and ulna. Ninety partial excisions consisted in the removal in whole or part of one or more of the bones entering into the carpal articulation. Fifteen cases or 15.6 per cent. resulted in death—a higher mortality rate than was observed in amputations in the forearm for shot injury in general, but not much greater than the death rate in amputations in the forearm on account of shot fractures at the wrist.

Of the six complete excisions at the wrist, one proved fatal after recourse had been had to amputation in the forearm. The five others recovered with the function of the hand much impaired, but, all things taken into consideration, in a better condition than if they had been subjected to amputation. Of the ninety partial excisions, twenty one in whom the hand was preserved, nearly all recovered with anchylosis and extreme deformity. Generally the hand was strongly deflected to the radial side, often at right angles, the fingers rigidly fixed in flexion or extension, the end of the ulna projecting, and the integument over it irritable and exposed to accidental injuries; yet two of the men reënlisted, and in several the deformed hand appears to have been preferable to any prothetic appendage. There were no such triumphs as were achieved in excisions at the shoulder, and, in less proportion, at the elbow, yet the mortality attending the excisions was not excessive, and the results in a few of the cases not altogether unsatisfactory. Dr. Otis states that "the first total excision of the wrist-joint was performed in about 1800 by the younger Moreau." Fergusson and others brought about a sort of revival of the procedure in cases of caries in young subjects, but reported rather unfavorably as to its utility, and the general verdict of systematic writers was that the results were discouraging. The methods employed involved great injury to the tendons and frequently to the blood-vessels and nerves. Such were those employed during our war. Dr. Otis thinks the plan devised by Lister in 1864 "as revolutionary in this branch of conservatism as his celebrated antiseptic method is likely to prove in the entire domain of operative surgery." Dr. Otis concludes this section with the following remark: "But the question whether the wrist-joint from its complexity is altogether unfitted for the favorable performance of excision for injury is still not fully elucidated."

The mine of valuable facts, contained in this work, bearing upon some of the most important problems of modern surgery

can be fully appreciated only by those who compare the work here accomplished with the annals of all military surgery. The vast material here accumulated gives an adequate idea of the scale on which our war was carried on. Too great credit cannot be awarded to Dr. Otis for the skill with which he has handled so huge a subject.

Popliteal Aneurism cured by the Application of Esmarch's Bandage.—Dr. Walter Reid reports a case of popliteal aneurism of three weeks' standing cured in this manner.*

The aneurism was of considerable size, and occurred in a healthy seaman of middle age. After numerous attempts with various forms of compression which failed to arrest the pulsations, Esmarch's bandage was applied to the whole limb, the aneurism being passed over lightly. The limb assumed a death-like pallor, and its temperature diminished. The aneurism remained of its usual size but was pulseless. The elastic tubing was removed at the end of fifty minutes and a Carte's compressor was substituted. On raising the latter a few minutes later no pulsation was detected. Light and intermittent compression was continued during that day and the next. The pulsation did not return. Dr. Reid suggests that "the loss of temperature, and that particular condition of the tissues closely allied to death may have had some effect in the formation of the coagulum." The use of Esmarch's bandage in a case of necrosis, when the operation had lasted over an hour without evil result following, had suggested to him the practicability of the application of this bandage where it was necessary to arrest the circulation for a considerable length of time.

Another case treated in the same way occurred under the care of Mr. Wagstaffe at St. Thomas's Hospital.† A barman, aged thirty-two years, when pushing a heavy cask some five months previously, had felt "something snap" in his right popliteal space. On admission there existed a pulsating tumor at that point two inches long, filling the upper half of the space, terminating opposite the junction of the femur with the tibia, together with considerable œdema of the leg. An Esmarch's bandage was applied tightly over the foot and leg up to the lower border of the popliteal space, carried lightly over the tumor (a thin layer of cotton-wool intervening), and then continued tightly over the thigh to within three inches and a half of Poupart's ligament. The bandage was left on for one hour, during which time the patient was very restless and complained of pain. One third of a grain of morphia was given subcutaneously. At the end of this time a tourniquet was placed on the femoral artery, and Esmarch's bandage removed. A second tourniquet alternated with the first, and pressure continued for twenty hours; pulsation had ceased at the end of two hours and did not recur after the tourniquet was finally removed.

* The Lancet, September 25, 1875.

† The Lancet, September 30, 1876.

Extirpation of the Larynx.—Dr. Maas* performed this operation in a case of cancer of the larynx of nine months' duration. Tracheotomy had been performed previously owing to difficulty of respiration. The various steps of the operation were: incision on the median line exposing the larynx; section of the hyo-thyroid and hyo-epiglotidean ligaments after the larynx had been peeled out from its bed on each side by a periosteum elevator; next, separation from the œsophagus; and finally from the trachea close to the cricoid cartilage. The operation lasted one hour. The wound was plugged with cotton-wool. The patient rallied well from the operation, and on the ninth day was able to leave his bed, but on the twelfth day he had a chill, and died of pneumonia on the fourteenth day. The operation was performed at the residence of the patient. To prevent the flow of blood into the trachea a footstool was placed under the patient's back, thus directing the flow of blood towards the head. A rubber tube was kept permanently in the œsophagus for the purpose of feeding the patient, and caused no discomfort. The reporter to the *Weiner Presse* states that this operation has been performed seven times, with three deaths.—*Boston Medical and Surgical Journal.*

PRACTICAL HINTS IN TREATMENT OF FRACTURE OF FEMUR.

Dr. Wight makes the following conclusions:

"1. We need not expect in all cases of fracture of the femur to give the patient lower limbs of equal length. In other words, we can not always prevent the so-called *shortening*. The number of shortened limbs can not be accurately fixed.

"2. In a certain number of cases of fracture of the femur the injured limb will remain shorter than the other—no matter what the treatment may have been.

"3. Excessive efforts persisted in to bring the injured limb down and make it as long as the uninjured one will sometimes fail, and are calculated to do harm; since the strong fascia of the thigh offers great resistance, and since the injured limb may have been shorter than the other before the injury.

"4. If need be, complete relaxation of the powerful muscles of the thigh by etherization will enable an ordinary and admissible degree of extension and counter-extension to give the injured limb a maximum length; or extending weights gradually applied will 'tire out' the muscles; at first apply four pounds, then add to that four more pounds, then make the weight twelve pounds, now increase the extension to sixteen pounds, and in some instances make the extending weight twenty pounds, removing a certain part of the extension as may be considered necessary.

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* Langebeck's Archiv, xix. 3. Wiener medizinische Presse. October 1, 1876.

"5. The possibility of having the injured limb longer after treatment than the other must be recognized, and the most probable explanation of such a result must be given.

"6. These conclusions conform to the practice and agree with the results of the best surgeons.

"Finally, perhaps I ought to add, that the variation in the length and obliquity of the neck of the femur, incident to the age of the patient, may not occur during the same time and with equal pace in the femoral necks, and that this may be one cause in some instances of a difference in the normal lengths of lower limbs. At any rate it may be noted that there is a remarkable approach to an agreement between the differences in the length of normal lower limbs, and the difference in length of lower limbs, one of which has had the femur broken; only the average difference is somewhat greater in case there has been a fracture of the femur. But in general, the tendency of a fracture of the femur is to shorten the limb to which it belongs. And we may fairly regard assertions of always having lower limbs of equal length, after treating fracture of the femur, as open to just criticism. Such assertions are calculated to put individual surgeons in peril of suits at law for malpractice when they do not deserve it; and they are, if found to be untrue, a sure means of throwing discredit on a useful and an honorable profession."—*Louisville Medical News.*

AMPUTATION OF THE ARM BY MEANS OF THE ELASTIC LIGATURE.

In the *Lyon Medicale* this operation is recorded as performed by Prof. O. G. Silvestri, of Vicenza. Surgeons naturally hesitate to perform resection or amputation in cases of white swelling of the knee or elbow. The process not being arrested on account of inadequate remedial measures, the patient loses strength, and becomes extremely emaciated; it is at this period of the disease that the operation is usually performed, though the general condition of the patient would almost contraindicate any active interference.

Silvestri, who first introduced the elastic compression known under the name of "Esmarch's method," has proposed the employment of the elastic ligature in the above cases, and has published a case in which the result was most gratifying. It was that of a young man, twenty-two years old, of a scrofulous constitution, who for six months had suffered from caries of the sixth, seventh, eighth, and ninth ribs, in their convexities; there was complete caries of the left elbow-joint, and the right hand was threatened with the same condition. There were high fever, colliquative sweats, and diarrhœa, which would yield to no treatment; absolute anorexia, intense pains in the elbow, and extreme emaciation. Though the condition of the elbow-joint indicated

an operation, the feebleness of the patient contraindicated it. But, as the patient was urgent to have something done, Silvestri, with the consent of his colleagues, resolved to apply the elastic ligature.

On the 8th of May, 1874, accordingly, the patient's arm, below the insertion of the deltoid, was enveloped with a gum-elastic band, about two millemetres in diameter, and covered with silk thread. Twenty turns of the band were made, the latter being always kept in its greatest extension, and the two ends were tied with a silk band. The patient received seven and a half grammes of chloral, which produced sleep. No pain was experienced. The pressure exercised, calculated according to the elasticity of the band, was equal to twenty-one killogrammes at each point, consequently forty-two killogrammes for the whole diameter. The pulse, at the time of operation, was 100; five hours after, 112; and six hours after, 100. There was no fever on the following day; the sweats and diarrhœa ceased, and the appetite returned. Milk diet was ordered, under which the patient soon began to gain flesh.

Gradually the bands penetrated the soft tissues, and at the same time lost their parallelism. The circumference of the arm, where the bands were applied, was eighteen centimetres at the time of operation; four days after it was eleven centimetres; six days after, ten and a half centimetres, and ten centimetres on the 26th of May. On the evening of May 29th it was found to be nine and one-quarter centimetres, and on June 3d it was reduced to eight centimetres.

On June 18th the arm and bands fell off spontaneously, the process having lasted forty days. The stump, in its upper portion, had cicatrized. The remaining portion was dressed with dry lint. The further course of the case was favorable.

The author draws the following conclusions:

1. The compression exercised intercepts all communication between the limb and the rest of the body; the morbid material from the seat of the disease cannot, therefore, enter the circulation; furthermore, drainage from the morbid *foyer* ceases.

2. There is no loss of blood.

3. Cicatrization takes place slowly, and the patient bears it easily.

4. The patient's forces are economized.

The author does not hesitate to employ this method in all those cases where the general condition of the patient offers no prospect of success to the performance of a bloody operation.—*N. Y. Medical Journal.*

LISTER'S ANTISEPTIC METHOD IN OVARIOTOMY.

Dr. J. Marion Sims, of New York, contributes to the *Medical*

Record, a case of the application of the antiseptic method to this operation; the first, it is believed, on record.

The patient, forty-seven years of age, noticed a tumor the size of an orange, in the right iliac region, last April. This was pronounced to be an ovarian tumor. Dr. Thomas, of New York, and Dr. Atlee, of Philadelphia, were consulted, and agreed in the diagnosis previously made by her family physician, but both declined to operate while the tumor occasioned so little trouble. Dr. Sims was consulted September 20th, and also declined to operate, notwithstanding the entreaties of the patient. Vomiting, emaciation, and debility, with a slight attack of peritonitis, made their appearance early in November, hence Dr. Sims concluded to defer the operation no longer. This was done on November 23d last. Dr. Sass directed the spray, from his new apparatus, which covered the seat of the operation with a delicate carbolic mist. The hands, sponges and instruments, were all dipped in carbolic water. The operation and dressing lasted forty minutes, the spray being kept up all the time. It (the spray) could have been continued two hours, if necessary. There were no adhesions. The peritoneal cavity contained six or eight ounces of a reddish serum. The peritoneal membrane was everywhere deeply congested. This fact explains the presence of reddish serum, and the previous attack of peritonitis.

The pedicle was very short, and at least three inches broad. It was tied in three sections with strong twine, and drawn out and fixed in the lower angle of the wound, clamp-fashion.

The external incision was closed by sutures, and a carbolized dressing applied.

The pulse never rose above 90, nor the temperature over 101°.

Convalescence was fully assured in forty-eight hours, and the patient is now quite well. The tumor was polycistic, on right side, and weighed fifteen pounds.

Dr. Sims thinks that Lister's antiseptic method will prove as valuable in ovariotomy as it has in general surgery.

He bears testimony to the great value of Dr. Sass' spray apparatus, and thinks he has rendered the profession a great service by bringing it forward at this time.—*Atlanta Medical and Surgical Journal.*

A NEW SUGGESTION IN TRANSFUSION.

The London *Medical Times and Gazette* quotes from the St. Petersburg *Medical Wochenschrift*, that Drs. Istomin and Welikij, of St. Petersburg, observes that a great obstacle to the success of transfusion is the coagulation of the blood transfused, and the formation of thrombi. They have, therefore, instituted experiments to ascertain how far this may be obviated by employing the vessel of a living animal as a canula. For this purpose a portion of the jugular or femoral vessels was cut out from

a living animal and passed into a glass tube four or five millemetres shorter than the excised portion of the blood-vessel, the ends of which were secured to the tube by silk thread. As a means of comparison, a similar glass tube was employed without having the blood-vessel attached to it. Another plan was to cut out large portions of the blood-vessels, and only to arm their free ends with glass tubes. The last plan is most suitable when venous blood is employed, and this the author prefers to arterial. The experiments showed that while blood on entering the simple glass tubes immediately formed small coagula, that which passed through the "living canula" remained fluid, provided that no lesion of the inner wall had taken place, which would give rise to coagulation. The blood-vessels thus removed from the animals retained their power of maintaining the fluidity for an hour and a half. During the experiments the stream of blood was often interrupted, and again allowed to flow, without any coagulation being induced, while the whole calibre of the simple glass tube became blocked up in seven minutes.—*Medical and Surgical Reporter.*

ENDOCARDITIS FROM GONORRHŒA.

In the *Archives Gen. de Medicine*, December, 1876, Dr. Marty sums up what he believes is known concerning this rare affection, as follows: 1. Gonorrhœa may be complicated with inflammation of any of the serous membranes, acting directly upon them. 2. Rheumatism is by no means a necessary intermedium of the specific lesion of the serous membrane, although the coexistence of the two complications most commonly occurs. 3. The organism, when attacked, reacts according to its predisposition. 4. Cardiac complications are very rare; the aortic orifice seems to be the one most frequently attacked. 5. This specific endocarditis presents the same symptoms and the same dangers as simple endocarditis. 6. The endocardium seems to be as often attacked as the pericardium, if not oftener.—*Medical and Surgical Reporter.*

GALLIC ACID IN URINO-GENITAL DISEASES.

In a letter from Dr. R. B. Boynton, of Massachusetts, the writer remarks: "The use of gallic acid has proved so effectual in my practice in certain affections of the urinary organs, particularly albuminuria, incontinence of urine, and hæmaturia, that I was early led to the use of it in cases of impotency and spermatorrhœa. I use a saturated solution of the acid, tablespoonful three times daily, and Squibb's fluid extract of ergot at night, together with a well regulated regimen.—*Medical and Surgical Reporter.*

RECENT PROGRESS IN THE TREATMENT OF CHILDREN'S DISEASES.*

By D. H. Hayden, M.D.

Intussusception.—At a meeting of the Berlin Medical Society, held May 3, 1876,† Herr Senator reported a case of invagination of the lowest portion of the intestine in a boy three months old. The invaginated part could be felt by the finger introduced into the rectum. Replacement was easily effected, but the invagination would immediately return, for which reason after each reposition long-continued injections of water or of air were used, and later a rectal bougie was introduced and allowed to remain until expelled by an operation of the bowels. After each reposition the child's condition improved, but with the return of the invagination again became worse, and during the first three days that the child was under observation there was vomiting of fæcal matter. On the fourth day there was distention of the abdomen, with tenderness on pressure, and the temperature reached 102° F. The treatment for these symptoms consisted of compresses of ice-water over the abdomen, which were used with good effect. Reposition was made for the last time on the fourteenth day of the disease. Eight days afterwards the child was discharged, well, and during the several weeks that have since elapsed he remains in perfect health.

Herr Henoch remarked that this case was illustrative of what we know by experience, namely, that in earliest infancy invaginations rarely cause the formation of adhesions, and therefore that such cases were apparently suitable for attempts at reposition. He considered such manipulations, however, accompanied with great danger, and thought that it was a question if it were not better to act on the *ne quid nimis* principle, and trust to the ice-and-opium treatment which keeps the intestine quiet and favors the formation of adhesions and the subsequent separation of the invaginated portion. In the case reported the possibility of such adhesion and separation seemed very good, as there were bloody discharges every time the reposition was discontinued. These bloody discharges are due to venous stagnation caused by the intussusception, and after these have made their appearance necrosis and separation could easily follow. Although in Herr Senator's case recovery took place, symptoms of diffuse peritonitis, which is an especially fatal accident in infant life, made their appearance during the course of the disease.

Herr Senator did not agree with Henoch as to the treatment of this disease in infants, and considered the first duty in such cases to be the attempt to reduce the invagination. One must naturally be sure of the diagnosis, and must proceed with the greatest care and delicacy. The ice-and-opium treatment is

* Concluded from page 139.

† Berliner klinische Wochenschrift, August 28, 1876.

rightly the most approved method with adults, since with them the invagination is rarely situated deep down, as is the case with infants, and for this reason diagnosis and reposition are both more difficult. In spite of the ice-and-opium treatment death often takes place, and the fear of rupturing adhesions that may have formed should not deter us from attempting replacement. When the invagination continues without replacement, peritonitis and gangrene always ensue, which is far more dangerous than a peritonitis that may be set up after a replacement, and often there is no peritonitis at all. Reposition, therefore, should always be resorted to when practicable, and is a far more rational method of treatment than to leave the disease to nature. In the case reported the speaker did not consider that there was a veritable peritonitis, but the symptoms were simply those of irritation, and there were no adhesions formed. He believed, in fact, that by reposition peritonitis was prevented, and considered it very doubtful if, when adhesions to any extent were formed, reposition could be effected.

Herr Fränkel considered the indication of first importance in intussusception, as in strangulated hernia and in typhlitis stercoralis, to be the removal of the cause. As soon, however, as peritonitis or irritation of the peritoneum has made its appearance, we should desist and rely entirely on opium.

Herr E. Küster and Herr Baginsky agreed with the views expressed by Herr Senator, the former considering that careful attempts at reposition should be made, even if there existed symptoms of peritoneal irritation.—*Boston Medical and Surgical Journal.*

OBSTETRIC EXCERPTA.

BY JOSEPH HOLT, M.D.

HÆMORRHAGE FROM THE FUNIS.

By H. Crisp Lawrence, L.R.C.P. Lond., etc.,

Honorary Physician North-West London Free Dispensary for Sick Children.

The expressions umbilical hæmorrhage and hæmorrhage from the funis, though often employed synonymously, differ manifestly in signification.

Hæmorrrhage from the funis is essentially a primary form of hæmorrhage, while umbilical hæmorrhage is virtually a secondary form.

The distinction is an important one for several reasons, not the least being this practical one, that whereas the umbilical form of hæmorrhage is frequently a serious and sometimes a fatal malady, hæmorrhage from the funis is, if promptly dealt with, an easily controlled affection.

The differential diagnosis between the two is also important,

to avoid the error of overlooking the existence of an umbilical hæmorrhage on one hand, and on the other of attributing a hæmorrhage, which has proved or may prove fatal, to an umbilical source, when in reality the hæmorrhage has occurred owing to an insufficient treatment of the recently divided funis.

As regards the *causation* of hæmorrhage from the recently divided funis, it may be noted first that a rare variety, described by Dr. Dewees, sometimes arises from rupture or ulceration of one of the varicose dilatations of the umbilical vein: and of this it may be now stated that the hæmorrhage occurs at the side of the funis, and for its arrest a ligature should be applied below the site of hæmorrhage.

With this exception, the causes of hæmorrhage from the funis may be said to include imperfect application of the ligature; imperfect and hence improper material employed as a ligature; improper handling of the ligatured end of the funis by unskilled hands. Next to these, oozing of the Whartonian jelly from the ligatured end of the funis; laceration of the funis during sudden labour, or by force applied to it after delivery; inefficient mechanical laceration.

The above include avoidable difficulties, if the usual laceration which has attended sudden labour in the upright position be excepted. A special line of demarcation should be drawn between such cases and those more serious forms of hæmorrhage which are in reality connected with some affection of the umbilicus. For practical purposes the funis may be said to present two typical forms. One variety is the broad, thick funis, distended with Whartonian jelly, twisted and feebly pulsating. The second form of funis is thin, flaccid, less tortuous, and somewhat forcibly pulsates, being but little distended with the Whartonian fluid.

In the thick form of funis the Whartonian jelly, in surrounding and protecting, also supports and exerts some pressure upon the umbilical vessels passing through the funis,

When a thick funis has been ligatured the vessels appear, after division of the cord, fully secured; for they are comparatively small owing to the support and pressure exercised by the Whartonian jelly; hence they do not at once attempt to bleed, but it is after a few minutes that hæmorrhage may and often does occur.

Hæmorrhage from the end of such a funis, recently ligatured and divided, arises from three causes: first, the Whartonian jelly begins to ooze from the ligatured end; secondly, the vessels, previously supported, relax; and thirdly, the ligature which at first was sufficient to prevent, now permits the escape of blood. Such hæmorrhage, if unchecked, may speedily prove fatal.

It is the thick form of funis which should always have two ligatures applied, one above the other, leaving space between them for the application of a third one if need arise.

The thin funis pulsates forcibly at birth, and can be easily and effectually ligatured.

The *material* for the ligature is important. Ordinary stout white-brown thread is best, three or four lengths being tied together by knotting the ends. A larger number of threads makes the ligature too thick and too broad to exert sufficient constriction; a less number would incise the funis if the ligature were tightened too forcibly and too quickly.

The most effectual method of *application* is to tighten the ligature gradually, securing it by a double knot.

The *time of applying the ligature* is also important. After pulsation has ceased is preferable, both as regards the life of the infant being established and maintained. It is well to note, however, that the first flaccidity of the cord, which is coincident with the cessation of pulsation, is dependent upon the establishment of respiration, and the alteration of circulation connected therewith. As soon, however, as the circulation and respiration forces balance each other, the funis becomes more or less tense again, and may exhibit a modified pulsation. This is noteworthy, for it indicates the necessity of seeing that the ligature which sufficed to prevent hæmorrhage during the flaccid state of the funis, is equally effectual when circulation in the cord becomes temporarily reëstablished. By attention to this point life may be saved.

Improper handling by unskilled hands may in a great measure be prevented by giving explicit instructions to the nurse to be careful in all her manipulations of the funis. Then, it is desirable to see that a convenient length only is left of the funis; if too long the nurse is often at a loss how to cover it; if too short an impression exists that something ought to be done, and the ligature is too often examined and handled. The funis should be laid vertically flat on the abdomen. The piece of linen in which the cord is wrapped generally, has a circular aperture made in the centre through which the cord is to pass. Practically this method is less convenient and safe, when the cord begins to separate, than another one now frequently employed. From one free edge a cut is made with scissors to near the centre of the piece of linen; a second short cut, about half an inch long, is made at right angles to this. In this way the funis may be easily placed in the centre of the wrapper and properly covered. This method has especial advantages over the circular hole; when the cord begins to separate, the margins along the lines of incision can be readily separated, and no unnecessary traction need be exerted on the base of the funis.

The form of hæmorrhage arising from oozing of the Whartonian jelly has already been discussed, and the importance of applying one or two additional ligatures insisted on.

The other forms of hæmorrhage from the funis practically arise from laceration of the cord, induced by Nature or art; and in this we have a testimony how, as a rule, Nature works more

perfectly than art. Laceration of the funis from sudden rupture or traction may prove speedily fatal; but if it do not, the natural method will be found to assimilate in character with that employed by the lower animals, who in biting through the funis induce a serated laceration thereof; as a necessary result, this suffices to prevent hæmorrhage owing to the method in which the vessels are divided.

When laceration is attempted by art it is important that Nature's substitute should be as nearly efficient as possible in action as Nature is herself. Herein it is that a line should be drawn between the employment of art as a necessity and art as an aid to Nature. It is not that laceration would not suffice to restrain hæmorrhage, when duly performed and watched; but whether mechanical laceration is a safe and proper substitute for the ligature? In a question of this kind it is deeply necessary to decide whether it be safe to employ it by unskilled hands, even though a skilled practitioner may employ it with efficiency? In the manufacturing districts many lives are dependent upon the skill of the local midwife, and it is a powerful means to place in the hands of such a quasi-professional person, to encourage the use of mechanical laceration of the funis, in preference to ligature, the value of which becomes thereby depreciated instead of maintained. But a worse evil is that, indirectly, the belief is fostered that it matters little whether the ligature be carefully tied or not. Hence, since there is a tendency in many minds not to incur trouble, inefficient ligature is apt to supersede careful ligature, and thus discredit, undeservedly, becomes associated with the use of the ligature, even when properly applied.

A carefully applied elastic ligature, employed after the plan advocated by Esmarch, would probably prove a valuable auxiliary, yet to insure safety an ordinary thread ligature should be applied as well.

Such severe vital depression as must of necessity ensue upon any considerable hæmorrhage from the funis places the practitioner in the greatest anxiety. To maintain the action of the heart, besides using stimulants by the mouth and maintaining warmth by friction and external heat, the hypodermic injection of ether may help to save life, as it has already done in severe post-partum hæmorrhage.—*Obstetrical Journal.*

THE MECHANISM OF SPONTANEOUS VERSION.

In the *Annales de Gynécologie* for June, 1876, Dr. Geneuil relates the following case: A woman, aged twenty-eight, who had previously had three children, and had a full-sized pelvis, was pregnant for the fourth time. At full term slight labor pains commenced about midnight. By noon on the next day the pains had assumed an expulsive character, and the mem-

branes ruptured in the presence of a midwife who was attending, and who then detected an abnormal presentation. Dr. Geneuil, on being summoned, found the left arm, swollen and blue, hanging from the vulva, the fœtal head being in the right iliac fossa. The os was tightly closed round the shoulder, and the hand could not be introduced into the uterus. Dr. Geneuil therefore decided that it would be impossible to attempt version, and resolved to perform embryotomy. At the end of half an hour, having made his preparations, he laid his hand upon the uterus, and was astonished to find that on the left side there was strong contraction, while upon the right there was none. Thinking, therefore, that since the pelvis was large, spontaneous version might be accomplished, he left the case to nature. By 4 p. m. the shoulder began gradually to recede, and by 4 30 p. m. the breech was presenting. The contractions then became uniform on the two sides of the uterus, soon increased in vigor, and at ten minutes past five a dead female child, rather above the average size, was expelled. The author believes that his observation in this case explains the mechanism by which spontaneous version is accomplished, and that the powerful contractions on the left side of the uterus forced the breech down, while its comparative laxity on the right side allowed the head, lying in the right iliac fossa, to recede.—*The Obstetrical Journal.*

INDUCTION OF PREMATURE LABOR.

In the *Archives de Tocologie* for May, 1876, Dr. Chassagny describes a new apparatus for the induction of premature labor. It consists of a double dilating bag, each bag being filled by a separate tube, so that the tube which communicates with the upper bag passes through the lower. The lower bag is made of thick india-rubber. It is inserted into the vagina, and dilated with air or water, the effect of which is to induce uterine contractions. The upper bag, which is made of extremely thin india-rubber, is then filled with water. As it is supported by the thick bag below, the effect of this is that it insinuates itself into every pouch of the vagina, and sends out a finger-like projection into the cervix, which, as the author believes, effects its dilatation with far greater mechanical advantage than even the natural pouch of the liquor amnii. By experiments on models made to represent the vagina and cervix, he has satisfied himself that this projection of a finger-like pouch into the cervix does actually take place, even when the cervix forms at first a prominence, and the os is undilated. He therefore considers that his double dilating bag is far superior to the dilating bag of Gariel, or the colpeurynter of Braun, which merely distends the vagina, and often brings on active labor pains only after a long interval. It is also far easier of application than intra-uterine dilators, which require to be frequently re-inserted, and it can be used

even when there is, at the commencement, no dilatation whatever of the os. The methods of puncturing the membranes, of dilating the os with tents, or of introducing an elastic bougie, the author considers to be exploded as means of inducing labor.

A case is related in which the method was successfully applied. The patient, aged, forty-seven, was reduced to the last extremity by uncontrollable vomiting, and induction of labor was commenced about three weeks before full time. The os was extremely high up, hard, rigid, and nodular, and would not admit even the point of the finger. Pains were brought on soon after the introduction of the bags, the os was dilated to the size of a franc after five hours, and labor was completed after about twenty-four hours, although on two occasions the bags were removed for some hours, during which time pains entirely ceased, and the os became again contracted. This cessation of pains appeared to be due to the exhausted state of the patient.

The application of the double dilating bag is not confined to the induction of labor, but in the author's practice, it supersedes all other means in many other cases. Thus it is used instead of tents to dilate the cervix of the unimpregnated uterus, in order to explore its cavity, to restrain hemorrhage, to remove polypi, or to make intra-uterine applications. In cases of placenta prævia it effects a complete dilatation of the cervix without allowing the slightest hemorrhage to continue, an effect which the author has observed in a dozen cases. When the insertion completely covers the os, he pierces the placenta through the centre, and finds that the bag insinuates itself into this opening with an equally good result. But it is in post-partum hemorrhage that the results are most striking. The uterus is first emptied of all clots, and the bags are then introduced and dilated with water. The thin bag then insinuates itself into the uterus, and completely fills it, compressing the open mouths of all the bleeding vessels. When the uterus begins to contract, it may be allowed to expel the water, the open mouth of the tube being kept at a high level. There is then perfect security that no cavity is formed into which hemorrhage could take place. The author has saved by this method two patients who would otherwise inevitably have perished, all other means having been used in vain.—*The Obstetrical Journal.*

INSTRUMENTAL DELIVERY WITHOUT THE KNOWLEDGE OF THE PATIENT.

By James Braithwaite, M.D., Lond.,

Lecturer on Diseases of Women and Children at the Leeds School of Medicine: Assistant Surgeon to the Hospital for Women and Children; Co-Editor of Braithwaite's "Retrospect of Medicine."

There are many cases of lingering labor owing to failure of

expulsive pains or to slight disproportion, in which the accoucheur hardly likes to use the forceps, although he well knows that they would at once relieve his patient from her suffering, and at the same time decrease the liability to still-birth. Ergot would answer the first of these desiderata, but not the second. There is, however, a sort of quiet opprobrium attending the use of the forceps; as the friends and neighbors discuss the propriety of the operation afterwards, often to the detriment of the man who really has simply done his duty. During the last twenty-two months, before which period I had not noted my midwifery cases, the forceps have been used in my practice 38 times in 384 deliveries; and 37 of the children were born alive, and all the mothers did well, no complications of any kind following, except in one case, *pelvic cellulitis*, which ended without suppuration. Some of these cases were very difficult, requiring the use of a powerful pair of long forceps; but to this class of cases I make no reference in this paper, only to cases of slight disproportion, or of failure of expulsive pains when the head is low down in the pelvis. Looked at in their true light, however, some artificial assistance is really very important in these cases as well as in the others, to save the strength of the patient and the life of the child. As, however, human nature is after all only human nature, and we cannot always afford to go too strongly against public female opinion, I have for many years been in the habit of merely casually mentioning to the nurse or friend that I proposed to "give a little assistance" to the patient, but have not thought it always necessary to do so to the patient herself at the time—invariably, however, in that case mentioning it afterwards, before leaving the house or else the next day. When this plan is adopted, the patient estimates at its really small importance the nature of the operation, and is generally very grateful that she had not been told of it at the time.

Now, however, I come to the point. With the ordinary forceps—in any of its forms this cannot be done—but with the forceps which I described in 1869 (*British Medical Journal*, Dec. 25th, p. 673, and June, 1870, p. 581) it is perfectly easy; for they can be applied with but little manipulation, and without any disturbance of the position of the patient. The article to which I refer excited at the time so much interest, judging from the numerous letters I received, that I venture, after the lapse of seven years, again to draw attention to the subject—especially as I have in some slight particulars improved the instrument. Its peculiarity consists in both blades being introduced at once directly into the hollow of the sacrum. The blades and handles are accurately fitted to each other, the convexity of the inner blade to the concavity of the outer one, and this adaptation is maintained by a metallic clip on the handles. They are thus practically one blade during introduction, and before separation by removal of the clip. There is nothing peculiar in the blades when separated. If a pair of Simpson's short forceps is arranged

with one blade inside the other, a very good idea of the instrument will be obtained. Although, however, I made Simpson's short forceps the model of mine, the blades of the latter are rather lighter and narrower, to lessen the weight and facilitate introduction. (The total weight with the clip is about 10½ ounces.) The introduction of the blades into the sacral hollow is not felt, because the external parts of the mother are not touched by them. Being small and narrow they are passed between the first two fingers of the left hand and the fœtal head. The clip is to be loosened a little before introduction, and after introduction is to be removed altogether; the blades are then to be glided round the head in opposite directions and locked in the ordinary way. I generally do this as each pain comes on, not during the complete absence of pain, nor during the intensity of one. When the blades are locked, the extremity of the upper blade, in the first or common position of the head, will lie on the right temporal ridge, just within the line of the hairy scalp; and the lower blade will lie behind the left ear; in the second position this will be reversed. The long forceps seize the fœtal head in the same manner, and to my mind it has some advantages over the side to side grip; these I stated in the original paper. When the head is emerging the blades should be unlocked and allowed to lie flat upon the head, when the handles will cross one another; or the instrument may be entirely removed, the expulsion being completed by the natural pains. This plan avoids the risk of rupture of the perineum. Three or four years after the publication of my previous paper on this subject, Dr. Vacher, of Liverpool, described a pair of forceps invented by himself, but really only differing from mine in the handles being almost done away with, and what remains joined by a hinge. The blades are passed together, as in the way described, and then glided round the head in opposite directions. I cannot, with all deference to Dr. Vacher, see that there is much "principle" in joining the blades together by a hinge; the principle of the instrument is the introduction of both blades as practically one. I consequently think Dr. Vacher's instrument merely a modification of mine. When the blades are inseparably joined by a hinge and a catch they become merely tractors, and can have no power of compression. As a result of this the traction must be made by the extreme ends or tips of the blades, which from the limited area of the pressure are more likely to injure the soft parts of the head. Moreover the space between the blades when separated and in position on the head is always the same, whereas the size of the head varies a good deal. A tractor is useful in a more limited class of cases than an instrument by which a certain amount of compression can be produced, and which gives a pretty powerful grip of the head if necessary. I do not see the advantage of giving up the possession of a power which need not be exercised if not necessary, unless we get some advantage in another way by it. The forceps I use were made

by Messrs. Joseph Gray & Co., of Sheffield; but they may also be obtained from Messrs. Joseph Wood & Co., of York, and Messrs. Weiss, of London. They are so small and light that they can be slipped into the coat pocket and taken to every labor—a great advantage in country practice—and the accoucheur may have the comfort of knowing that they will do for pretty difficult cases of impaction if the head is low down in the pelvis, and he is too far from home to send conveniently for a larger and stronger pair. I will conclude with one case—the only one in which I tried delivery without saying anything to either friends or patient, and that in a difficult case—chosen simply to test the powers of the instrument. The pelvis was rather small, and the head had after many hours come well down, but then became impacted and the pains more feeble. One woman was leaning over the foot of the bed, close to the patient; another was behind her, supporting her back; and a third was sitting behind me, and to my left, about two yards off; yet I delivered this woman with my forceps, and neither she nor any of her three attendants knew that she had received any artificial assistance until half an hour after the labor was over. Mother and child did well. Ergot would probably have killed this child, and if I had had to send home for the instrument the delay might equally have been fatal to it.—*Obstetrical Journal.*

SECONDARY HÆMORRHAGES.

By A. D. L. Napier, M.B., C.M., etc.

Hæmorrhage is, and always must be, one of the most important subjects which the obstetrician has to consider. It is one of the most dangerous consequences attending parturition; yet, fortunately, with clearly arranged ideas, and the prompt execution of remedial measures, our treatment is usually attended with speedy and marked success. Secondary hæmorrhages may be divided into two great classes—(1) Dependent on the muscular portion of the uterus; (2) Dependent on the vascular uterine system.

(1) This class is not generally recognized as secondary hæmorrhage, probably because it frequently escapes attention. The physiological action of the uterine muscular layers, subsequent to labor, has been long admitted; if the contraction is insufficient, what is known as sub-involution is the consequence.

Sub-involution may occur (α) after prolonged and difficult labors; (β) after very rapid and easy labors in women of relaxed tissues, more especially in multiparæ; (γ) in consequence of uterine disease, tumors, etc.; (δ) in consequence of too early resumption of the erect posture; (ε) from retained secundines. In short, sub-involution may arise from any source which causes insufficient uterine contraction.

As a general rule this affection is sub-acute, the discharge being most frequently a prolongation of the colored lochial flow; in these cases, absolute rest, and the exhibition of ergot, gallic acid, or iron is usually all that is required. A case, which proved an exception to this rule, came under my treatment in January, 1876. The subject was an unmarried girl, servant to a gentleman residing about eight miles from Fraserburgh; she informed me that she had been "quite regular," but that her "present illness had lasted three weeks." I ordered the usual treatment, and did not see her again for several days, when she was a little better, and was ordered absolute rest in bed. I saw her again on 28th January (six days from my last visit), and finding her no better, insisted on making a thorough examination. The os was soft and open; the uterus measured longitudinally 4½ inches. On the night of 29th January I was sent for. On my arrival I found she had been up the previous day after my visit, and that the discharge had been considerably increased; notwithstanding she again rose on the evening of the 29th, when a great gush of blood came on, and had been flowing incessantly since. The patient was quite blanched, insensible, and almost pulseless. Losing no time, I cleared the vagina, and the os being patulous, injected a solution of the perchloride of iron, which eventually arrested the bleeding; a vaginal tampon of cotton wool, saturated with glycerine and liquor ferri perchlor. was applied, and a full dose of ergot ordered every three hours; pads were firmly fixed over the uterus. In an hour or two she was much better, but I did not feel justified in leaving that night. Next day she was much improved; the vaginal plug was removed; a vaginal injection of perchloride of iron and water was ordered to be given twice or thrice daily if the hæmorrhage should be excessive. Visited again on 1st February, when the discharge was in very moderate quantity. On the 6th February I found that, to make matters sure, the iron injections had been duly continued, although the bleeding was stopped. By 8th February she was quite recovered, and the uterus restored to almost its normal dimensions. It is right to add that in this case I was fully persuaded that the girl had aborted, though her vehement denial at first staggered me.

Secondary hæmorrhage proper is distinguished from sub-involution by this simple fact: in the former the lochial flow is not prolonged beyond usual, but without any warning a sudden and excessive hæmorrhage occurs. This is owing to the condition of the uterine vessels, and may result from (1) imperfect thrombosis of a uterine vessel, which may be owing to (α) a deficient power of fibrination in the blood; (β) too early retraction of the vessel, by which, so to speak, the vessel is pulled away from its plug; (2) imperfect, or rather irregular uterine contraction, giving rise to insufficient thrombosis. This is distinguished from the formerly described thus:—In sub-involution the inertia is general, in secondary hæmorrhage partial, so that

for a time the pressure from the surrounding contracted tissues is adequate to sustain the closure of the sinus; but eventually, when the other vessels are sufficiently occluded, and the uterus begins to lose tonicity, the relaxed tissues become insufficient, the imperfect thrombus is detached, and bleeding begins. Again, under this variety we have the formation and subsequent detachment of polypoid tumors; bleeding on account of uterine malpositions which, after the process of involution, become rectified in part only, etc.

It may be objected that I would establish a distinction, without a real difference, but without such distinction it seems impossible to realise the import of some cases.

As cases of secondary hæmorrhage are comparatively rarely seen, I may be excused for giving the following:

Ann C., residing in the village of Broadsea, unmarried, was delivered by Mrs. S., midwife, on 2d November, 1876. Labor was natural, and from the midwife's experience I have every reason to believe she was properly treated. The sanguinous discharge ceased on 7th November, the fifth day; on the 9th November, she rose, had her bed made, and felt very well; 10th Nov., rose at 11 a. m., sat by the fire; she did not exert herself in any way; the only thing she did at all accounting for the after symptoms was, to use her mother's words, "took a pull at the cradle." About 7 p. m., while sitting by the fire, a frightful gush of blood suddenly came from her, and she lost an enormous quantity before she could be removed to bed. The midwife who attended her was immediately sent for, and did what she could to arrest the bleeding, but failed to do so satisfactorily. About nine o'clock I was desired to see her, and at once visited.

On my arrival the condition of the girl was: Face quite blanched, perfectly colorless, eyes sunken, mouth slightly open, skin of body cold and clammy; the pulse could hardly be felt at the wrist, and beat over 120 a minute; respiration was very slow and sighing. I took a hurried glance at the clothes which had been used to protect the bed, and it is no exaggeration to write that four or five large flannel petticoats, besides as many other pieces of cloth of like size, were perfectly saturated; the bed was completely soaked. The quantity of blood lost must have been immense. On making an external examination I found the uterus floating in the lower part of the abdomen, and thereon made a vaginal exploration. The lower part of the canal was filled with clotted blood, which I removed in great quantity: the posterior cul-de-sac also contained a number of clots, so that the vagina was almost full, yet blood continued to flow freely. Having emptied the vagina, after soaking both my hands in very cold water, I proceeded to explore the uterus; one hand fixed the organ externally and the other was applied internally. I found the os sufficiently open to admit two fingers, and removed some clots from the lower part of the womb. I

then had the satisfaction of feeling the organ contract under my hand. After taking away as much clotted blood as I could, I broke up all I could reach, and by this time the hæmorrhage was controlled. I prescribed ergot in the fluid form, combined with liquor strychniæ and liquor morphiæ, and ordered cloths steeped in cold water to be applied over the uterus and vulva, to be renewed every ten or fifteen minutes for an hour and a half, thereafter the binder to be applied; also that half an ounce of brandy every two hours and beef tea *ad lib.* were to be given. 11th November.—A small quantity of red discharge, no return of hæmorrhage; the patient's condition was wonderfully improved. She was ordered a vaginal douche of cold water, and to continue her medicine. 12th November.—I was informed that some clotted blood came away on the afternoon of the previous day; uterine contraction was good. By the 14th the discharge had ceased, and she was able to renew the nursing of her baby. The above is a typical case of secondary hæmorrhage, occurring as it did on the eighth day, three days after the colored lochia had disappeared. "Of twenty-five cases recorded by Drs. M'Clintock and Hardy, only one occurred so late as the seventh day" (Churchill, p. 487).

Briefly to resume our consideration of these hæmorrhages. It is evident that as they are different in themselves, so must we consider them essentially different in their causation. I have adverted to the retention of part of the secundines as a cause of sub-involution, but I wish to qualify the assertion. Secundines, unless in large quantity, are not apt to cause sub-involution, and if in large quantity, other results are more likely to accrue. If in small quantity, especially in certain conditions of the uterine lining, they will more probably give rise to irregular contraction, and hence to secondary bleeding. Again, in sub-involution we see simply an impairment of a normal condition; in secondary hæmorrhage, purely an abnormal phenomenon, probably resulting from a special dyscrasia. Mental emotion may in some measure tend to the production of the latter. It is allowed (Dr. Ayre) that liver disease has brought about secondary hæmorrhage, nervous influences acting on the heart and general blood supply may likewise do so. Be this as it may, I imagine that in the foregoing case mental distress was at least partly to blame. I found, on inquiry, that my patient had been seduced, and that the man had not fulfilled his promise of marriage, in consequence of which she had been greatly distressed.

In distinguishing the two, the best clinical distinction is the state of the os, but the size of the uterus and the previous history will also guide us.

Treatment.—I have already indicated that in most cases of sub-involution, medical treatment, rest, and properly applied uterine pressure are sufficient. We should have no fear of using iron injections in such cases, because the os is patulous, and the

return of the injected fluid almost certain. The absorptive function is not active, which fact was demonstrated in the first case cited, so that we may have nothing to fear from pyæmia. In secondary hæmorrhage medicines may be of use to a certain extent, but we have not time for their action. At first we must cause contraction, which will be best done manually. Galvanism has been shown to be uncertain as a stimulator to uterine contraction; besides we have not always a battery at hand; the intra-uterine injection of perchloride of iron would be dangerous with a contracted os, and we cannot spare time to dilate it; if we feel clots which the finger cannot reach properly they might be carefully broken by some instrument introduced into the uterus. A cold water vaginal douche may be of service, as it undoubtedly frequently causes contraction; plugging the vagina is worse than useless, unless we can exert sufficient pressure on the uterus from above. I do not here consider the special treatment applicable to these secondary hæmorrhages which arise from special causes, such as rupture of a vein at the cervix, ulceration of the cervix, or rupture of a varicose vulvular vein. Of internal treatment, brandy, with beef tea, and ergot must stand foremost; and in connection with ergot, I must utter conviction of the greatly increased specific action of this drug if we add strychnia to it. This, if I mistake not, has been advocated by the Dublin School, notably by Dr. Atthill, and deserves due consideration. To sum up. In sub-involution, all other things failing, try to form artificial thrombi; in secondary hæmorrhage, let us first gain uterine contraction.—*The Obstetrical Journal.*

ON THE IMPORTANCE OF THE UTERINE EBB AS A FACTOR IN PELVIC SURGERY.*

Upon returning to England from a four years absence upon the Continent, I was informed by Dr. Marion Sims at Sheffield, during the session of the British Medical Association, that a project, often discussed during 1870–71 between myself and my then associates, Drs. Warner and Bixby of Boston, had at last been carried out, in the establishment of the American Gynæcological Society. At Professor Alexander Simpson's in Edinburgh, I have since been shown the prospectus of the Society,

* The above paper was presented to the American Gynæcological Society at its first annual meeting (New York, 15th Sept., 1876), and by unanimous vote of the council. Drs. Fordyce Barker, Marion Sims, and Munde, of New York, Byford, of Chicago, Atlee and Goodell, of Philadelphia, Parvin, of Indianapolis, and Lyman and Chadwick, of Boston, received the thanks of the Society, as communicated by the Secretary, Dr. Chadwick. By the kindness of the Society the writer has been permitted to decide where the paper shall be published.

and perceiving that papers are solicited for the first annual meeting, it gives me pleasure to add my mite towards elucidating one of the important problems for whose settlement the Society has been formed.

Practitioners of experience in pelvic surgery will have been struck by the difference in result of operations upon cases apparently similar as to character of the lesion, age and constitutional condition of the patient, method of operating, the preparatory and prophylactic measures resorted to, and those attending the periods of wound and of convalescence. With every care, and with the utmost skill on the part of the operator, some cases will as it were persist in going wrong, while others will rapidly and surely recover under the most unfavorable circumstances. It has long been my belief that this is not wholly a matter of accident, nor of "personal equation" among operators; and only recently Dr. Thomas Keith, who has had, unless we except Mr. Spencer Wells, the most continuous runs of recoveries after ovariotomy, has confirmed my opinion by expressing to me his conviction that the true secret of insuring convalescence had not yet been reached. The selection of cases, and employment of skilled assistants and nurses, no doubt go far towards compassing a cure, but even with these a patient will often perish when every thing has seemed in her favour. To consider, then, whether there may not be essential points as yet unappreciated or lost sight of, may well engage the Society's attention.

It has seemed to me, on studying with some care the statistics of pelvic operations common to the two sexes, and the details of individual histories, that there existed a difference, alike as to success in isolated cases and in series more or less extended in number. There are necessarily but few of these common operations, the most frequent perhaps being for strangulated hernia and for hemorrhoids and anal fistula; for in vesical calculus all the conditions vary so greatly in the two sexes, and extraction by dilatation is ordinarily so easily performed in the female, that the other methods adopted, whether cutting or crushing, are hardly to be compared. Nevertheless, it is my impression, that allowing for the difference arising from previous habits of life, there are to be detected variations in the rate and certainty of convalescence explainable by sex only. In the male, the general constitutional condition may be said to be in stable, and in the female during a great part of her life, and owing to constant and special physiological causes, in unstable equilibrium, and therefore more prone at times to take on undue inflammatory action, and at others less sure to undergo even that degree of it, without which convalescence after an operation can hardly be hoped.

Such being the fact, it is not unreasonable to search for the disturbing factor of surgical pelvic averages among influences essential and functional, and not as has been done hitherto,

either to consider it personal to the operator, or peculiar to the individual patient—in other words, an accident. This point, so far as I am aware, has hardly been dwelt upon with emphasis by writers, and to the extent to which I am inclined to develop it, it is practically ignored by surgeons.*

There are no less than two general conditions that require attention before grave pelvic operations are attempted upon the female, namely, that of the body and that of the mind. In most cases of men we may safely enough leave the latter of these conditions to take care of itself, though all will acknowledge that convalescence is frequently hastened by the mere existence of cheerfulness, fortitude, and hope, and that it is as often retarded or prevented by apparently so trivial a fact as their absence. *A fortiori*, these influences for or against recovery are exerted with infinitely greater certainty and power in women, with whom they are not so much the effect of temperament, surroundings, confidence in the attendant, or other fortuitous circumstances, as essential to their sex. Scarcely a healthy woman in whom the observer cannot after a while detect traces of this phenomenon; while in the insane, in whom the tendency may be uncontrollable, either by the will or by the checks of ordinary domestic and social life, the mental disease often plainly evidences, by its exacerbations and other changes, the time, almost the very day indeed of the personal month.† In both sane and insane, these personal time-variations are easily enough to be ascertained and made practical use of. They will be found to constitute an important, and perhaps the most important, factor in pelvic surgery.

If this is so true concerning the mind, one cannot wonder that, to the general physical, or rather physiological condition, upon which the rise and fall of the mental barometer so absolutely depend, I have been led to attribute a great influence in deciding the result of surgical procedures. The menstrual molimen is something more than a mere technical phrase. It is a reality, that not merely determines, and is evinced by, the normal catamenial discharge, but that affects reflexly, and probably even more directly, the woman's whole being. The respiratory system is materially influenced, alike in the amount and character of its work, as Andral and Gavarret long ago proved. The circulatory rhythm, and its general and local force, are all

* Since the above was sent to America, the writer has been happy to learn from Mr. Spencer Wells (Nov., 1876) that he and other London surgeons were more and more acting upon the principle alluded to, in practice.

† To the importance of the above and collateral points the writer long ago called the attention of the profession in a series of papers upon the causation, course, and rational treatment of insanity in women, read before the American Academy of Arts and Sciences, the American Medical Association, and elsewhere, the first of which was published in the Boston Medical and Surgical Journal early in 1864, and others, in the Transactions of the American Medical Association for 1865, etc., thus antedating by several years the communications of Prof. Louis Mayer to the Obstetrical Society of Berlin.

for the time altered, as can be seen by the sphygmograph and the thermometer. Both assimilation and waste share in the disturbance, if this term can be properly applied to a phenomenon so natural; while extreme nervous excitement reveals itself by its direct results, the various changes to which allusion has now been made.

To consider the catamenial function as wholly a local one in effects and in origin, as many general practitioners and even gynæcologists seem still, both in theory and in practice, to be inclined to do, is not merely scientifically wrong, but it has doubtless often occasioned the death of a patient. Were the ovaries the only seat of the molimen, it were impossible to account for the thousand localities of vicarious menstruation. To say that this is merely a diseased or weakened tissue replacing the uterine suppression may be a true statement of fact, but does not explain its cause. The cases pronounced so important by Brown-Séquard, that I have myself put upon record, of uterine menstruation after the removal of both ovaries, and of vaginal menstruation after the removal of the entire uterus as well as both ovaries,* and subsequent reports of the kind from the experience of other operators, settle beyond doubt, that while the ovaries are the normal seat of the periodical explosion, the influence which occasions it is one that affects with more or less distinctness the entire organism. Putting aside all momentary and accidental variations of the heart's action, there normally occurs, however we may phrase it, and during the woman's whole menstrual life, a regular and constant disturbance that we call periodical, but which is none the less unceasing. The sun's rising is periodical, but it also sets. Spring periodically comes, but so also do autumn and winter. We must take care that we are not misled by a single and the most patent phase of the catamenial circle, and forget that there exists even here a low as well as a high tide, and that while there regularly occurs a condition of slowly increasing local congestion and hyperæmia, there as regularly takes place a distinct uterine ebb, whose influence as a factor in pelvic surgery has not sufficiently been recognised.

That the consecutively occurring general and constitutional conditions now indicated should have their importance for surgeons ought not to have seemed improbable, even had not theory in this instance proved the goal instead of starting point. It is

* This was in 1865. (American Journal of the Medical Sciences, Jan, 1866, p. 119.) Cases of Menstruation after double ovariotomy, by the writer, are reported in the Canadian Medical Journal for 1868, and the American Journal of the Medical Sciences for January of the same year. Dr. Atlee, of Philadelphia, has mentioned in his work upon the Medical and Surgical Diseases of Women (1867), that he had twice noticed menstruation where both ovaries had been removed at different periods, and twice where it had been done simultaneously. Reeves Jackson, of Chicago, Peaslee, Meadows, and others have subsequently reported similar cases. Dr. Battey, of Georgia, in his paper upon Normal Ovariotomy, read before the Medical Association of that State, has adverted to their physiological interest. (Atlanta Medical and Surgical Journal, 1873.)

not logical to closely compare things that are in some respects dissimilar, but roughly to do so will at times assist one's purpose. Physiological periodicities are different from ordinary physical phenomena, and yet in some respects they resemble them, and they are governed by analogous laws. In our language, for default of a better nomenclature, we have to allude to the tides, and speak of a uterine ebb. Were not the correlative expression already attached to the condition of menstrual culmination, we might as properly call the period preceding this the uterine flow. They have their separate safeties and their separate dangers, to be seen in different states of health, and in different stages and varieties of disease. To several of these I have already called the attention of the profession in former years. Whatever the ultimate decision in the ether-chloroform controversy, the fact that I first clearly pointed out many years ago,* that anæsthesia, even if profound, may be borne during childbirth without danger, has been accepted as true, and also the theory by which it was explained, normal parturition occurring at a menstrual period, when the lungs and indeed general system are under very different conditions than during the interval. Like day and night, with their plainly perceived effects on health and on life, so the uterine ebb and the uterine flow. In the night, and not through chance, most births occur, and most deaths; and so, during the menstrual molimen, and at the menstrual period resulting from it, a patient with fibroids or epithelioma is most likely to die of hemorrhage.

Before appreciating the importance of this doctrine in all its entirety, it had occurred to me that for certain operations it might be better to select the menstrual period itself, on the ground that the natural blood-letting then taking place and continuing after the operation would likely tend to ward off peritoneal or other pelvic inflammation. In two or three instances of ovariotomy, I accordingly did what other operators, deterred by an indefinite fear that had found no expressed explanation, seem then not to have ventured, and I made the section during the catamenial period.† These cases have been published, and, if I recollect rightly, they each recovered. I now believe that I had taken a step in the right direction, but think that the argument that had led me to do so, though so far correct, was incomplete. The truth now seems that, with the commencement of menstruation, the uterine ebb, or catamenial reflux, has practically begun. The menstrual nisus passes into abeyance when it has occasioned the fracture of the Graaffian vesicle and detachment of the ovum,

* In a paper read before the Massachusetts Medical Society in 1863, and published in the Boston Medical and Surgical Journal for that year. At the time the writer was living in Edinburgh, during 1854 and 1855, Sir James Simpson, though he may have suspected the fact, had not arrived at its full explanation, and no clue was given to it in his "Memoirs and Contributions," edited in the latter of these years by Dr. Priestly and the writer, under Simpson's direct supervision.

† The first of these cases was at Chelsea, Mass., in 1867, and the operation was

accompanied as this may be either by rupture of uterine capillaries, simple transudation of blood or of liquor sanguinis, or effusion of that stained mucus which, as a periodical leucorrhœa, so frequently unrecognized by the practitioner, precedes the apparently exceptional conceptions, occurring before any marked establishment of puberty, during the amenorrhœa of lactation, or after the menses have finally ceased. The usual persistence of the catamenial discharge for two or three days in no way contravenes this statement. At high tide the water is for a time preserved at a certain level, but the *progressive* force that had steadily lifted it has ceased. To revive the old discussion as to whether the catamenial fluid is chiefly venous in its character, or is arterial blood that has been defibrinated during its cervico-vaginal passage, or both, would in nowise affect the question.

The uterine ebb, again, like that of the tide, is most powerful during the mid interval between its inception and the negative or anæmic point of perfect uterine rest; but as it is well to allow for the week or half-week immediately subsequent to a surgical wound, the days of which are each of them and always more or less critical and anxious ones, danger may be avoided by operating at an earlier period than might otherwise seem necessary. Nature herself gives us an indication through the phenomena of what we call natural labour. This occurs, as has previously been said, at a menstrual period—the tenth—but it is ordinarily completed some hours, or a day or two even, after the molimen itself has undoubtedly ceased. Labour pains are not to be confounded with the menstrual force which has preceded them. It is this that excited them, it is true, but their completion has been reflex and indirect. Fatty degeneration had occurred in the uterine walls and in the placenta, and their separation from each other thus been prepared for. Uterine contraction once initiated, though but in the slightest degree, and though the os uteri be still undilated, the commencing cylindrical wedge of the amnion at once acts as a mechanical stimulant and reflexly excites to a greater degree of contractile action; while the utero-placental effusion of blood, though but to a single drop, from the rupture of but the smallest capillary, produces the accelerating effect—soon, moreover, exerted by the fœtus itself in the no longer distended cavity—of a foreign body which must be expelled. The birth over, the immediate hæmorrhage ceased, and the lochia, or simple drain from the closing placental wound

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performed in the presence and with the kind assistance of Mr. Spencer Wells. It was also the original instance of the writer's procedure, not approved by Mr. Wells, of "pocketing" the pedicle, especially adapted for cases where too short to bring out externally, by including and closing in its extremity between the internal and external limits of the abdominal wound. (American Journal of the Medical Sciences, Jan., 1868; New York Medical Record, Jan., 1868, p. 519; Journal of the Gynæcological Society of Boston, Sept., 1869, p. 147.) In a subsequent case, where there was no pedicle at all, the writer thus pocketed an angle of the uterus itself, and the patient recovered, and subsequently did well. (Loc. citat. p. 137.)

and escape of fat globules and disorganized uterine cells through the general mucous membrane, having set in, the uterine ebb is more distinctly present. It is then that Nature gives us a second and still more manifest indication by the establishment of lactation; a process involving a sudden and fundamental divergence of the whole stress of the circulation from an internal to an external organ, which, in the case of a first labour, has as yet been but partially developed. Intended, no doubt, to relieve the womb by lessening the chance of secondary hæmorrhage, to permit the more rapid progress of involution and discharge of effete uterine tissue, and to tend to prevent subsequent mechanical displacement by thus lessening the weight of the organ, lactation still faces us as a physiological revulsion equaling that ever occasioned by surgery. The removal of a limb causes a tremendous shock to the heart's action, and to the processes of nutrition as well. Were three days allowed for the change, and the blood vessels prepared by previous weeks of shrinkage and anastomosis; the shock would still be a great one; but here it is as though a limb were suddenly removed, and then, even allowing for the development of the breasts during gestation, almost as suddenly reattached to another portion of the body, thereby doubling, instead of lessening, the strain upon the nervous and arterial centres. It could hardly have been possible save during the uterine ebb.

And again, Nature gives us a third pertinent lesson in what we see during the progress of gestation. A pregnant woman may bear a violent fall or a severe blow with no ill effect, and the same woman way miscarry upon the slightest fright or muscular effort. Upon consulting her almanac, it will be probably found that in the latter instance she was at the uterine flow, in the former at the uterine ebb. We may wish, for good reason, to induce premature labour, and to our surprise, may again and again introduce the sound fairly to the fundus, sweeping the membranes from the uterine wall, but without the slightest result; we shall then discover that we have selected the uterine ebb. We wait for a few days until the flow has again commenced, and we find the labour induced by the most trifling exciting cause.

Yet further, the abortive habit is, to many medical men, practically incurable. They appreciate its disastrous effect upon the woman's general health, they recognise its regularity of occurrence, and they know just when to expect a final catastrophy. How few, however, have detected its dependence upon the masked but effectual menstrual molimen, or discovered that preventive measures may be successful if resorted to during the period of uterine flow. One waits till the uterine ebb has fairly commenced, and, because then often too late, adopts the eroneous opinion that threatened abortious, even if occasioned by uteriue or placental disease, cannot be arrested or averted. That they are occasionally checked in a blunderiug way, even after hæmor-

rhage has commenced and dilitation of the os begun, does not invalidate what I have said. The abortion usually results from the morbidly intense menstrual molimen, and the true indication is, by appropriate measures, of which we have already many, to control the molimen itself, rather than to delay till what we are trying to avoid has already practically taken place.

And still again, the extraction of a tooth during gestation, or even the filling of one, if at the uterine flow, may result in the expulsion of the fœtus; while the severest pelvic operations, as the removal of vaginal tumors, and even of ovarian cysts or abdominal fibroids, which may be thought necessary to preserve the life of either mother or child, may be, and have repeatedly been performed without curtailing the progress of gestation. Two chances to one that these successful operations, though performed at haphazard and without suspicion of the fact that gave them their issue, were at the uterine ebb.

The above are all of them points that, thus explained, will come home to every practitioner. The conclusion to be drawn from them is, that for pelvic operations, all other things being equal, it is better to select the week immediately following the cessation of the catamenia, or, as nearly as can be ascertained, corresponding with what would have been this time had they appeared.—*Edinburgh Medical Journal.*

PRACTICAL MEDICINE.

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THE DIGESTION AND DILUTION OF COW'S MILK, IN THE ARTIFICIAL FEEDING OF CHILDREN.

By Jerome Walker, M.D.

The main factor in the problem of artificial feeding of children is now, as it has ever been, the digestibility of cow's milk.

Great stress has been laid upon casein, as the offending ingredient; hence have arisen various methods of rendering it digestible. It is my purpose, this evening, to briefly review the current truths and falsities as to casein—what has already been accomplished (notably within the last twenty-five years) towards a judicious use of cow's milk, and to deduct conclusions.

Milk is composed of water, casein, butter, sugar and salts. These ingredients vary in quantity and mutual relations under various circumstances. In winter water diminishes butter

increases. In summer water increases, as also do the solids—casein, sugar and salts. In dry weather the quantity of milk is less, but the quality richer. "The afternoon milk is richer by one-quarter, on the average, than the morning's, and the last portion of a milking—the strippings—is the richest."

As Affected by Food.—"As long as the food of the cow is sufficient, nutritious and digestible, milk exhibits great constancy of composition, the variation in the diet showing itself in the quantity rather than the quality," says Franklyn. "Carrots increase the sugar, and slightly diminish the amount of casein and butter." (Report of Mass. State Board of Health). Beets and fresh foods increase the amount of sugar. "Cabbage, onions, turnips, saffron, wormwood, madder, fallen and decayed leaves, impure drinking water, may render the milk indigestible for the child, by changing odor, taste or color. Insufficient diet produces impoverishment in the solid materials. Brewers' grains rank under this head, when given as the main food, and are of service only when mixed with meal, hay, etc.

"Fermented food is totally unfit. Yet sour garbage and brewers' grains are much used in and about cities. Distillery slops, by stimulation, increase the quantity of milk, sometimes to a very large amount; yet, according to Sir Edward Smith, the milk is incapable of producing cheese or butter, so deficient is it in albumen or oil. He found in a number of samples, with a specific gravity of from 1013 to 1024, 3½ to six per cent. of cream, with 4 to 8 per cent. of casein, as compared with samples of country milk, 1026 to 1030, 7 to 10 per cent. of cream, and 9 to 12 per cent of casein." Distillery milk fills out the body of the child as distillery slops bloat that of the cow; but it is a question whether there is *healthy* growth.

City Milk.—The milk supplied in cities, according to investigations made in Boston, in 1873, by the Massachusetts State Board of Health, and in Brooklyn, by the City Board, in 1876, contains of fat 2.80 per cent. to 13 per cent.; of casein and salts, 3.66 to 12.9; when it is generally conceded by authorities, in good milk cream should not be less than 9 per cent. nor the solids than 12. These investigations show as others have before,

1st. That the main adulteration is water, 10 to 25 per cent. According to Prof. Chandler, the average milk furnished in New York City contains one quart of water to every four of milk. This adulteration is governed by demand and supply.

2d. That there is no mutual diminution or increase between cream, casein and salts in the various specimens of mik.

3d. That a large amount of cream is *no* indication of the greater richness of milk. The sample of milk containing 13 per cent of cream was diluted 25 per cent., while another, showing only 4 per cent. cream, was diluted 10 per cent. Cream rises from diluted milk with much greater facility than

from that which is pure; generally all has risen by the end of 24 hours, while in pure milk cream continues to rise for several days.

4th. That a small amount of cream is often accompanied by a large amount of casein and salts. Hence poor milk may need more dilution than good, on account of an excess of casein. Very rich milk may need it owing to an excess of fat. The average pure milk may need it, owing to an inherent or acquired inability in the child to digest it without.

Changes in Milk.—Fresh, *warm* milk is generally acknowledged to be most easily digested, owing to its retention of its unexplainable life principal, and the fact that it is quite thin, thickening as it cools. Artificial warmth will not restore this life principal, but it will, in a measure, thin the milk to its former consistency. Mr. Cleaver, Assistant Demonstrator to the Pharmaceutical Society, Philadelphia, states "that six hours after milk is drawn from the cow is the latest time, upon the average, at which milk should be analyzed, for then the natural changes of fermentation and putrefaction *begin* to be perceptible." "These changes are hastened by an atmospheric temperature of from 66° to 68° F. and above, and are retarded by a temperature of from 43° to 44° F." (Chevalier, Dict. of Adulterations of Alimentary Substances). Electrical changes in the atmosphere, jolting, the presence of even the slightest particle of fermenting matter, hastens them.

Casein is soluble in fresh milk, and insoluble in that which is "turned." "Warmth, and contact with the smallest quantity of milk already changed, favor its coagulation, though it is not coagulated by heat alone, but by rennet, gastric juice, alcohol, tannin, and a number of salts, by vegetable and mineral acids, especially if milk is heated to about 75°." Pepsine coagulates but slightly. Mixed milk, containing colostrum, will sometimes be coagulated by heating. So will heat sometimes cause milk to which adulterating substances have been added to precipitate, in a semi-solid mass, its coagulated albumen, entangled with the adulterations. Boiling thins milk, breaks up some of the fat globules, renders others lighter, but carries with them some of the casein. It drives off the contained air, which Dr. Jacobi believes to be the cause of acid fermentation of milk. After boiling, the Dr. removes the coagulated film, as the cream has been removed before. It has always seemed best to myself to thoroughly stir in the filmy coating of albumen, cream and casein. Boiled milk answers well in diarrhœa, and scalded in constipation. "Rennet does *not* coagulate boiled milk either as promptly or completely as normal milk, under the same conditions." (Chevelier.) The throwing down of casein carries with it cream, so that any attempt to remove casein removes cream.

The hardened fœcal passages not uncommon in children in our cities, fed mainly or entirely upon milk, are caused, according to most writers, by the quantity of casein in cow's milk. It

is quite as often due, as was pointed out by Dr. Coley in 1846 (Diseases of Children), to a deficiency of sugar, albumen or oil. Yet it is true that a surplus of casein is generally accompanied by a diminution in sugar. If casein is always the offender, how can we account for the good results obtained by Dr. Simington, of Danville, Pa. (see Trans. Med. Soc. of Penn., 1875), by the use of buttermilk in severe diarrhœas of children?

Again, during dentition the intestinal secretions may be in excess, and produce diarrhœa and indigestion, or from slight causes a catarrh may be set up, with like results, or a *decrease* in the digestive secretions not uncommon at this period, with a diminished peristaltic action, may prevent assimilation even of a normal amount of casein.

As Dr. Logan, of Kentucky, writes: "The digestibility of milk depends more on the *quality* than the quantity of casein." The milk of some women is bulky, and naturally as indigestible as any specimen of cow's milk can be. The milk of sickly, ill-nourished women or of those advanced in life is likely to be so.

Different Modes of Dilution.—Water. The addition of water alone, says Routh, favors the *separation* of casein and renders it harder. In some experiments I found this to be the case. In many cases, Jacobi's method of feeding will answer, viz., giving sweetened water, oatmeal or barley, as the case may be, before feeding, or if the casein does not all digest, then adding mucilage, with sugar and salt, and antacids if necessary. Yet there are children whose stomachs revolt against barley, oatmeal, mucilage or boiled milk. This method of dealing with cow's milk claims, as do all others, that the milk is held in suspension, and the casein rendered lighter and more flocculent.

Lime-water has for a long time been in use, but in the practice of many it has failed. From various parts of the country physicians who use it write—when necessary, or if there is acidity.

Dr. E. N. Chapman, in a series of able articles published in *The Sanitarian* during the latter months of 1875, claims for his method of one sixth lime-water wonderful results.

"Take condensed milk two teaspoonfuls, water 24 (or if plain milk is used, water ½), lime-water 4, powdered sugar ½ teaspoonful, and a small pinch of salt. Bring the water to a blood heat, measure the milk accurately by pouring from one spoon to another. Mix and stir the several ingredients together." He concludes that the good results "are not due to any alkalinity, but to the fact that the casein is held in emulsion, that the salt aids the stability of the emulsion, and the solution of the casein. I have used this method with some good results, yet one child vomited it whenever given. In this family of five children, none had ever been able to retain even the smallest quantity of lime-water."

Eustace Smith says one-third of any milk mixture should be lime water. Routh advocates half ounce to half pint of cream

and water. It is used by physicians throughout the country in from one-fourth to one-tenth.

Other Alkalies.—From experiments, I found that pot. bi-carb., added to milk in a summer temperature of 75° F., produced a hard, firm clot in a few hours, while soda bi-carb. formed one less firm, which was longer in its formation.

Prof. Buckingham, of Harvard, and others, find that practically pot. bi-carb. is the more suitable alkali. He prefers it to lime-water, and writes: "Add pot. bi-carb. 1 or 2 grs. to each ounce of milk, and dilute with water till proper dilution of milk is gained, as the same child would be likely to starve on milk which it does not digest. Then the addition prevents milk from souring for twenty-four hours, and renders the curd softer, like human." "The addition of soda to milk will not prevent the escape of the volatile acids when heat is applied," says Mr. Cleaver.

Pepsine fails in the hands of many, either acting feebly or coagulating milk into firmer clots. In such cases it may be a poor article, or may need an acid yoke-fellow, such as we find in gastric juice. Pepsine, muriatic acid, glycerine and water is an excellent preparation.

Glycerine.—Recommended by Dr. Channing to be used instead of sugar as an addition to milk, is of value, is bland, readily absorbed. For the first month of life he adds four drachms of glycerine to one quart of cream and water. Between the second and third months he gradually substitutes milk for cream, two parts, to water one part, if the child does not need the cream to fatten upon. At six months he gives pure milk.

Two propositions of late years exciting great interest are: First, the one to add cream or fat to milk as a corrective; and, second, the one by Dr. Hiram Corson, of Pa., to give whole milk.

Cream.—Much has been written against the use of fat, its indigestibility—yet in defective nutrition, and in weakened powers of digestion, cream, ol. morrh., fat and butter, if given in sufficiently small quantities and at proper intervals, will be more readily digested than other forms of food.

Various methods are resorted to by advocates of cream.

Dr. F. K. Baily, of Knoxville, writes: "I have carried out the practice for forty years without variation of giving cream one-third, and sweetened water two-thirds." Dr. Jones, of Toledo, uses cream, one part; sweetened water four or five parts.

It is the custom here, in Tuscaloosa, Alabama, writes a physician, to use two-thirds water with cream, but I like one ounce of cream and one of aq. calcis. Some years ago Dr. Cummings, of Georgia, published a pamphlet describing an excellent method of preparing milk. I am sorry that I have it not at hand to quote from, as the pamphlet had, I believe, a limited circulation.

Any proposal to remove, first, the cream, then a part of the casein of milk, and then to return the cream, is not a reliable one, for casein and fat are so intermingled, that the removal of one carries the other, in part, with it. Then all milk is not the same milk. The milk of the Alderney cow will yield from 30 to 40 per cent. cream; Jerseys, 18 to 20; Devon, 17 to 18, etc. Other milk, as that from the Durham breed, is rich in casein mainly. Distillery milk shows much cream, and is poor milk.

Very rich milk may not be the best for the child. From such milk remove one-third cream or dilute with one-fifth water, or more, if necessary. If the milk has an excess of casein, it is much more rational, as Doctor Dawson has suggested, to add cream or fat than water. The severe cases of constipation, caused by such milk, are best remedied by the addition of cream or oil, or by giving the child, if old enough, fat meat to suck.

The latest proposition is to add one scruple of ol. of sweet almonds to every two ounces of milk.

Other Additions.—Some of the old writers advised different preparations of farinaceous food—arrowroot corn-starch, etc.—to be added to milk. Though not now recommended, yet we find the two combined in use in many families, and apparently with good results. The nitrogenous foods answer a better purpose in the majority of cases.

Gelatine.—Similar in its action and properties to gum arabic is gelatine. Dr Meig's Gelatine Food, prepared with cream, still retain a prominent place among the dietetics of infancy, though, like all other foods, it is not a panacea.

Salts.—It is worthy of note that in all the differences of opinion as to food, chloride of sodium is looked upon generally as a necessary addition.

Some go further, and believe that the phosphates are necessary in some form, especially in children who do not thrive upon their cow's milk, or to be added to the milk of cows fed upon poor pasturage, or when the milk lacks salts.

The plan of Dr. Wiggins, of Providence, which has been quite largely used, is as follows:

Commence with one part of milk and two of water, add cream from a quantity of milk equal to that of the water added; also add a pinch of the phosphate mixture, and 40 grains of milk sugar to each meal.

Dr. Wiggins' Phosphate Mixture:

Phosphate of lime, . . .	4 parts.
" " soda, . . .	½ "
Hypophosphate of magnesia,	½ "
Chloride of sodium, . . .	2 "
Carbonate of potassa, . .	2 "

The first week's feeding, writes the doctor, often decides the fate of the child. I gradually increase the quantity of milk.

Warm fresh milk is successful with children of fair digestive powers, and is much resorted to in the country.

Whole Milk.—That this last statement is true, is evident to any one who has seen it tried, or who has had occasion to feel grateful for the ease with which some babies will digest *pure* milk, even in the city, when all other foods have failed; but it *should be* good, wholesome milk.

A baby born dyspeptic, whose mother was of nervous temperament, not able to digest the mother's milk, notwithstanding all care taken to assist the child and remedy the curdling of the milk—rejected milk diluted with water, mucilage, barley, oatmeal, etc. Liebig's Imperial Granum and Cereal Food, with what cream could be obtained, was digested. Going to the country at four months of age, although the mother had been advised to give warm fresh milk, she diluted it, without success. The child then took fresh warm whole milk, and thrived; coming home, it did well on whole milk here, even digesting it cold, though when cold there seemed more of a tendency to constipation.

The milkman's route being sold to another, the child did not do so well as before and was very constipated, passing hardened fæcal balls. An examination of the milk showed it to be much poorer in appearance than the preceding milk, having less cream, and containing over one-half in bulk of casein.

Dr. Corson's faith and practice grew out of the belief which many share to-day, that underfeeding is the prevalent evil—that filling the stomach merely is not affording nourishment. We are to ask ourselves, in each individual case, the question:

Does the food administered contain all the elements of nutrition in such form and quantity that they may nourish the child, through a painless, prompt and easy digestion? as well as the second one:

Does it contain anything injurious, or that cannot be digested?

Eustace Smith has pointed out the great difference between proper and improper artificial feeding, claiming that with the first there is as great success as when children are nursed. Dr. Corson but echoes this when he writes: "I feel quite certain that it is almost as easy to raise children by hand, if they have an abundant supply of good whole milk, as it is by the breast. The plan of diluting milk with water is 'starvation by prescription.' Use no other milk but cow's milk, either given fresh, or after it has stood in a cool place in the cellar—have raised nine children of my own on whole milk, and have an experience with whole milk of over forty years." In a letter he relates the following case, which, for lack of time, and from a fear of taxing your patience, I am compelled to give an abstract of: Child, æt. six months, bottle fed, dilute milk, brandy, blood, etc., reduced to 4½ pounds in weight—pronounced to be a case of hopeless marasmus. I ordered, without regard to consequences, a tablespoonful

of whole milk to be given every hour, and increased the quantity, as soon as possible, to as much as it could take. The first dose it rejected immediately, a part of the second, and retained the third. In a week it ceased to moan, showed improvement, and went steadily on to grow and fatten. It is now a chubby, healthy child of four years."

It is not necessary, writes the doctor, to have the milk from one cow, if it is inconvenient to get it; the ordinary run of mixed milk from a good dairy may be used to advantage.

Condensed milk, though useful, does not in reality represent the mixed fresh milk from a good dairy, any more than canned meat extracts represent the fresh juices of fresh meat. The ordinary mixed milk of the cities may not be digested, for various reasons, as we have already seen.

The rules of the Obstetrical Society of Philadelphia, issued a few years ago, for the management of infants in the hot weather, convey the same meaning.

"If the milk is known to be pure, it may have one-fourth part water added to it; but if it is not known to be pure, no water need be added. When the heat of the weather is great, the milk may be given cold. Do not skim the milk. In very hot weather boil as soon as obtained, and then place in cool place. Whenever pure milk cannot be obtained, give condensed milk."

Dr. Logan, of Shelbyville, Ky, writes: "Don't dilute at all. Numbers of children in this section are raised on pure warm milk, and fully three fourths of them live as long and prosper as well as when nursed. He lays great stress, as we all may with advantage, on the importance of keeping the body cool as an element in aid of digestion."

Prof. Byford says: We consider fresh milk, drawn but a few hours, and from one cow, better than that mixed. Let it stand in a deep, narrow vessel for about three hours in a cool place, then pour off the upper two-thirds for use in summer. Under four months add lime-water, if tendency to acidity, and soft water if no such tendency. If diarrhœa, boil before diluting."

From Greensboro, Ala., comes the statement, that warm fresh milk is used there, and seemingly with as good success as by any other method, selecting, if possible, cows with the youngest calves.

Prof. Goodell writes that warm milk is not used in Philadelphia, as a rule, because it cannot be obtained.

In Schenectady, *cold* fresh milk used with success.

Dr. Thayer, of Binghampton, writes: "We use milk undiluted. It cannot be improved by diluting"

Dr. Hamlin of Bangor, *knows* that artificial feeding with whole milk successful there, if swill milk is not used. It may be given cold or warm.

It is curious to note that in Columbus, O., Reading, Pa., and Athens, Ala., and other cities of the country, pure milk is given

after the first month, or second, or third.—*Proceedings of the Medical Society of the County of Kings.*

THE HYPODERMIC USE OF THE TINCTURE VERATRUM VIRIDE IN PUERPERAL ECLAMPSIA.

By J. W. Griggs, M.D., West Point, Ga.

It is with great diffidence that I present this communication for publication. Nothing but a sense of duty that I owe to the profession actuates me. Hoping that the importance of the subject will command attention, I more confidently assume the task. In the treatment of a case of puerperal eclampsia, I extemporaneously administered the tincture of veratrum viride by hypodermy, succeeding ultimately in checking the spasms. I have been led to try the virtue of the remedy in several cases since; meeting with happy results, I feel warranted in claiming for it a new interest to the profession. Thus my reasons for writing this paper, setting forth my views, and the better to impress the profession with the effects that I claim, I will append my cases, three in number.

Case I. In March, 1875, I was called in consultation with Dr. Cooper, several miles distant, where he had been tied up with a case of obstetrics from early morning until eight o'clock at night. I sent my instruments in advance, and on my arrival at the home of the patient, was informed by Dr. Cooper that the girl (who was a negress), a primipara, had suffered with convulsions all day. On obtaining instruments, he delivered her of a dead child, but convulsions continued without abatement. He asked me to go in and do whatever I thought necessary for her relief. I found she was having the convulsions at from ten to twenty minutes intervals; pulse from 110 to 115 beats per minute. I administered morphia sulph., gr. 1-6, and watched the effect, but convulsions continued. I then inserted two drops of veratrum with $\frac{1}{8}$ grain of morphia, by needle syringe. This produced a marked effect. Shortly, however, symptoms of another convulsion appeared. I find no better term to express it than as an abortive spasm. She rested quietly for two hours, when I injected three drops of veratrum, and was gratified at its sedative action. By this time the circulation showed 60 beats per minute. I continued this treatment until three o'clock a. m., when I retired. At seven o'clock patient was perfectly rational. The treatment consisted in keeping the circulation a little below the normal pulse. The morbid symptoms were attributed to albuminuria.

Case II. In September, 1876, my father, Dr. A. W. Griggs, called me to assist him in a case of eclampsia in a patient whom he had delivered six hours previously of a male child at the full term. The patient was a white woman about 26 years of age,

and had given birth to a child, and suffered an abortion before. When I arrived she was having convulsions every hour regularly, and was entirely unconscious. She had complained greatly of her head; had been well bled, and had taken chloral hydrate, bromide potassium, and cold affusion was applied to the head. There was no abatement of the symptoms from the treatment. The pulse was 100 to 120. We then inserted, by hypodermy, morphia sulph. gr. 1-6, tinct. veratrum viride gtt. 3. The pulse sank in thirty-five minutes to 90, and she did not have a convulsion in two hours and a half. Then we noticed an increase in the pulse before the attack came on, which was not so severe as former paroxysms had been. After this the circulation was closely watched, and the pulse was kept below 70 beats per minute by the occasional introduction of two or three drops of the veratrum hypodermically. There was no further trouble in the case. The patient gradually recovered consciousness, and no unpleasant symptoms followed. The urine showed albumen in abundance by the usual test.

Case III. Mrs. G., aged 23, a primipara, was taken in labor in December, 1876. My father reached her and was with me about night. The labor progressed as usual, only that the patient complained much of her head at the time of each labor throe, until the head of the child began to descend into the inferior straight, when convulsions came on. The patient was bled freely after the second, but had a very severe spasm while she was bleeding, although she had already lost about sixteen ounces. The attacks came irregularly afterwards, occasionally alternating with labor pains. After morphia gr. 1-6, tinct. veratrum gtt. 4 was inserted the fourth time, the pulse was reduced below the normal standard, and mustard friction freely used brought partial reaction; consciousness returned after an hour. She still complained of her head. About five hours elapsed, and as the head of the fœtus was pressing upon the perineum, the unwelcome visitor returned, and immediately after the second, my father applied the forceps and delivered her of a living male child, and the convulsions ceased. She is making a good recovery.

Before veratrum was used the attacks were every thirty or forty minutes, after its use, the *interval was prolonged to five hours.* Allow me to state that cold water was frequently and freely applied to the head, as suggested by my friend Dr. J. E. McMillan, who, with Dr. J. M. Hatchett, my father's old friend, and a veteran in the cause, rendered invaluable assistance in this case. There was but little albuminuria in the case. The symptoms were most likely those of distributed labor, or of reflected irritation. This case shows that some caution must be observed in the use of veratrum, The amount used should be proportionate to the strength and frequency of the pulse. My father has long been in the habit of using veratrum in puerperal and hysterical convulsions, but I think I am the

first to use it in the way described in this paper.—*Atlanta Medical and Surgical Journal.*

ON THE CURATIVE EFECTS OF MILD AND CONTINUED COUNTER-IRRITATION OF THE BACK IN CASES OF GENERAL NERVOUS DEBILITY AND IN CERTAIN CASES OF SPINAL IRRITATION.

By Arthur Gamgee, M.D., F.R.S.

Brackenbury Professor of Physiology in Owens College.

1. I have long been convinced that physicians are very imperfectly acquainted with, and far too sparing in their use of counter-irritation in a class of cases in which I have found it to be of immense service, and I therefore willingly comply with the request of the Editor of the *Practitioner* that I should briefly state the results of my personal experience of counter-irritation of the back in the classes of cases mentioned in the title of this paper.

In the first place, it is of the greatest importance to describe the kind and extent of counter-irritation to which I refer, for as the observations of physicians and the experiments of physiologists teach us, very different effects on the organism are produced by cutaneous irritation of different intensity and extent.

The preparation which I have almost exclusively employed to produce counter irritation of the skin of the back in the cases now under discussion has been the Linimentum Sinapis Co. of the British Pharmacopœia. This preparation owes its activity both to the essential oil of mustard and to the ethereal extract of mezereon. In consequence of the expensive character of the former of the two constituents, it is much adulterated, and the liniment made from it is not at all unfrequently almost inactive. When prepared with pure essential oil of mustard, the liniment should possess a very pungent odor, and should produce an almost painfully acute sensation in the nostrils when it is smelt. If properly prepared a few drops of linamentum sinapis sprinkled over a pad of cotton-wool ten or twelve inches long and four or five inches broad will suffice to produce in a few minutes pretty intense redness of the skin of the back, accompanied by more or less of the painful burning sensation characteristic of mustard. This method of applying the liniment is excellent, and is naturally suggested when it is employed in a sudden emergency in place of a mustard poultice. As a rule, however, where it is deemed necessary to keep up counter-irritation of the back for considerable periods of time, it is best to cause the patient to wear a strip of spongio-piline four or five inches broad, and of the length desired. In the case of persons with tender skins the irritation and pain caused by even a very few drops of the liniment (which is diffused by sprinkling and rubbing one part of the spongio-piline against the other) is so considerable,

that the application cannot at first be continued many minutes. After a day or two the patient usually becomes able to bear the strip for several hours, and finds that the sensation of irritation is decidedly more pleasurable than painful. If, as frequently happens, the patient having experienced benefit from previous applications, has sprinkled too large a quantity of the liniment upon the spongio-piline, the irritation produced may be so considerable as to compel an intermission of the treatment for a day or two. The irritated part then usually remains deeply congested and hot for several hours, only very rarely presenting any vesications.

The great advantages of the linimentum sinapis over any other similar preparation with which I am acquainted, lies in the fact that it produces a remarkably active irritation of the sensory nerves of the skin, which subsides to a great extent when the preparation is removed, but which can be renewed almost indefinitely without leading to any eczematous, pustular, or ulcerative condition.

2. *On the use of counter-irritation in cases of nervous debility.* Perhaps no class of cases demonstrates more convincingly the beneficial action of counter-irritation than cases of nervous debility.

Under the general and somewhat indefinite term "nervous debility," I mean to include cases in which, either as a result of long-continued bodily and mental exertion, or of undue excitement of certain cranial and spinal centres, or of a disturbed nutritive balance of the organism generally, the individual becomes the seat of symptoms which indicate that the nerve centres are in an enfeebled condition, and specially that upon very slight exertion they manifest the symptoms of fatigue. Whilst the intellectual phenomena in these cases are very varying in character and degree, and very often are absent, rarely presenting themselves in a more obtrusive form than by a disinclination or inability for intellectual exertion, usually accompanied, it is true, by some sleeplessness, there are other symptoms which are much more constant; the inability to undertake even moderate muscular exertion, at any rate without distressing exhaustion supervening, the deep seated pain in the dorsal and lumbar regions of the spine, and in males the diminution or abrogation of sexual passion, are amongst the more common symptoms. To these may be added neuralgic pains of the limbs, especially of the legs, and sometimes twitchings of the muscles of the lower extremities. In the latter cases it would appear that the reflex excitability of the cord is increased, or that the inhibitory action of the encephalic over the spinal centres is diminished. Admirable examples of general nervous debility are presented to us by various classes of cases. We see them in women exhausted by rapidly-succeeding pregnancies or over lactation, we observe them as a result of sexual excesses, and they occur in an exquisite form in

association with the intellectual or emotional phenomena of hysteria.

Without in the least wishing to disparage the use of those remedies which we are wont to employ in the treatment of these cases, and which, as in the case of iron, cod-liver oil, and phosphorus, probably act beneficially by supplying to an enfeebled and *materially* exhausted body the food which certain of its tissue elements require, I would insist upon the great value of counter-irritation as a most important adjuvant.

In all the classes of cases referred to above I have tried the effect of more or less longer continued counter-irritation by mustard, and in all with an effect much more obvious than followed other methods of treatment, not omitting the judicious use of the constant current.

The general result of the use of this method of counter-irritation may be very shortly described. On the first or second day of the treatment, the patient, if a delicate hysterical girl, may complain that the pain caused by the mustard is almost unbearable, and she may declare that the application cannot be continued. By diminishing the amount of mustard-oil used, however, all such urgent objections on the part of the patient are removed. As soon as the application has been so controlled as to bring on merely an active glow and not unpleasant tingling of the skin, the patient declares that the increase in her strength is marvelous; the pains in the back and limbs undergo a diminution, or as long as the mustard counter-irritation is kept up, are completely in abeyance, the irritability of temper diminishes, and simultaneously the general health undergoes marked improvement.

The increased feeling of vigor produced by the treatment is not illusory; as a rule I have found that the improvement thus commenced has kept up, so that a hysterical girl who had been for some weeks confined during the day to a couch to which she could with difficulty make her way from her bedroom, has in a few days cheerfully taken walks of considerable length.

In writing this description I have present in my memory the cases of several enfeebled or hysterical girls, one of a medical man, who, after a very severe attack of typhus, which seized him when his strength had been severely taxed by an unusual amount of mental work, presenting many of the features of cases of spinal irritation, and two or three cases of nervous debility resulting from sexual excesses.

Admitting the accuracy of my statements—and here I would insist that they apply only to counter-irritation carried on according to the method which I have described—*can any rational explanation of the satisfactory results be given?* We are in the first place met by the great difficulty that we do not know the exact nature of the physical changes in the nerve-centres, or the exact nature of the altered nutritive processes in those centres,

which coincide with the symptoms of general nervous debility and so-called spinal irritation, and in the second place by the difficulty of asserting with precision what will be the effect upon the system of a certain measure of irritation of sensory nerves. It may, however, be well to examine these questions by the light of our present scientific knowledge.

All acts of the body are associated with material change, and in any given kind of act in any given individual (assuming his condition to remain sensibly constant) the material change bears a certain proportion to the intensity of the activity. Some individuals are wasteful machines, the amount of their available activities being small in comparison with their material receipts; and similarly the individual organs of different individuals, according to their more or less perfect adjustment, out of a certain store of energy-yielding material produce results which differ in quality and quantity.

There is perhaps no exception to the rule that all acts of the body are separated from one another by periods of repose, the period of repose being perhaps always the period of increased nutritive activity. Thus, if we take the case of an organ which at first strikes us as continually in action—the heart—we find that it is at rest during a longer period than it is in action, and the period of mechanical inactivity is the period of high nutritive activity.

Continuous activity of any organ leads to *fatigue*, and fatigue appears to be due partly to an exhaustion of the store of energy-yielding material which every organ possesses within itself, but in great measure to the definite action of chemical substances, which are the result of the operation of activity upon certain structural elements of the fatigued part.

Those organs of our body of which the activities are uncontrolled by our wills cannot be easily fatigued, the conditions of their activity having been so regulated that of necessity a period of rest follows a period of activity. Thus we cannot directly induce fatigue of our hearts, because the very nature of the mechanism of the organ compels an alternation of rest and activity, and provides for a certain measure of constancy in the total amount of work done, even when its distribution in time is altered.

Increased blood supply, it has been said, corresponds with increased activity of the organs, and diminished blood-supply with rest, and the period of rest is the period of recuperation or restoration. At first there appears to be an inconsistency in the assertion, which disappears, however, when we consider it further. All operations of the body which are accompanied with the conversion of potential into kinetic energy are accompanied by oxidation; oxygen is required in increased amount, then, during periods of activity; and it is very probable that the increased blood-supply of the active organ has for its chief objects to supply an abundance of oxygen, to remove the large

quantities of carbonic acid, and the smaller quantities of waste substances, which are injurious and fatigue-inducing.

I would not, of course, commit myself to the absurd statement that the restoration of energy yielding matters in organs does not occur *pari passu* with its consumption, for it is probable that always the two processes of integration and disintegration proceed side by side (in activity the latter, and in rest the former preponderating); but what I would maintain is that, although the amount of blood, and therefore of nutritive matters, supplied to the active organ is absolutely larger than that supplied to the inactive organ, the relative amount of matter available for restoration is greater in the latter than in the former case. An abundant blood-supply, probably, is followed, *as a necessity,* by large tissue changes, and therefore by loss of energy, and the period of restoration is the period in which income exceeds expenditure and stock is accumulated.

It will be remarked by the reader who is acquainted with physiology, that my reasoning is based very much upon that which is known to occur in muscle; that it is applicable, however, to the organs of the nervous system can be easily shown.

The activity of the brain is like the activity of a gland accompanied by an increased blood supply; at any rate we know that functional inactivity, as it is manifested in sleep is accompanied by a greatly diminished blood-supply. That which is unquestionably true for the brain is almost certainly true of the spinal cord. Now up to a certain point the greater the activity of the brain during a certain limited period, the greater is the subsequent tendency to sleep; in other words, the greater has been the call upon the energy yielding store of the organ, the greater tendency there is for it to pass into that condition in which expenditure sinks to a minimum.

If, however, the activity of the brain is carried beyond a certain point, the fatigue of the organ leads to a dream-disturbed sleep, or to a more or less prolonged sleeplessness, followed by sleep, and in either case, when the sleeper awakes, he will probably be still suffering from some symptoms of nervous fatigue; there has not been complete restoration.

Now what is the proximate cause of the dreaming and sleeplessness? Almost certainly, it is due to a continued hyperæmia of the brain centres. As a result of over-exertion, the blood-vessels of these centres lose their power of returning to their original size, and as with the continuance of a large blood-supply we have a continuance of brain activity manifested by dreaming or actual sleeplessness, restoration is not possible, on this view, as long as the blood supply is too abundant.

But we know how serious are the results to the individual if the causes which lead to sleeplessness from over work remain long in operation; he passes then into a condition of almost

chronic brain-fatigue, and he becomes subject to neuralgias, to insanity, and to disorders of the general nutrition.

In the preceding paragraphs I have endeavored to show that the way in which excessive brain-work injures is, at first at any rate, by leading to a certain amount of vaso-motor paralysis of the vessels of the encephalic centres. I would now extend that reasoning to the spinal cord, and argue that in all probability the excessive and prolonged activity of its centres lead to the same results as are observed in the case of the brain, viz., to continuous hyperæmia, and the latter is inimical to restoration. Thus I would argue does excessive and abnormal activity of the centres connected with the organs of generation lead most probably to the symptoms of nervous debility, as these centres are spinal, but in relation to psychical centres of activity, the results of their excessive activity may be either spinal or cerebral, according to the nature of the individual.

That hyperæmia of the cord accompanies the general debility which is observed in the libertine, or in the hysterical girl, appears to me very probable indeed. The vague neuralgic pains in the limbs, the deep-seated back-ache, the spasmodic twitchings which sometimes occur, are probably indirectly produced by a hyperæmia of the nerve centres, and are symptoms which are more probably central than peripheric.

I come now to discuss the mode of operation of extensive but mild counter-irritation of the back in cases of general nervous debility.

As I said in the earlier part of this paper, the observations of physicians confirm the experiments of physiologists, in so far as the effects of irritation of sensory nerves are concerned. A moderate stimulation of the sensory nerves of the skin appears as a most general result to lead to increased vascular tension, due to an increased activity of the vaso-motor centre, the constriction of small arteries which occurs in the body generally being often accompanied by a local vascular dilatation of the irritated part. Now it is true that in experiments on animals it is often found that after a preliminary stage of increased vascular tension, due to the irritation of the central end of a sensory nerve, there is a subsequent reactive dilatation which we may explain as either due to a vaso-motor paralysis or to an increased activity of the vaso-inhibitory nerves; but it is quite conceivable that when we are able, by aid of the sensitiveness of man, to regulate the cutaneous irritation so as to produce only very moderate irritation of the vaso-motor centre, there may be produced a tonic increase of vascular tension, lasting as long as the excitation is kept up.

If it be true that the symptoms of nervous debility and spinal irritation are, at any rate in great part, due to a lowered vascular tone of the nerve centres, we can easily conceive that benefit should result from such counter-irritation as I have recommended, for the vessels of the nerve-centres will gradually be restored to

their normal tone, their abnormal excitability will be depressed, and they will pass into a condition in which restoration is possible.

I have said in the course of this paper that an effect of counter-irritation of the back is to cause the patient to feel increased general strength, and that this frequently leads to excessive applications of the rubefacient.

Now this feeling of well-being appears to be wonderfully like that which cold bathing produces, only not so evanescent, and still more like the feeling which a constant current applied to the skin of the back induces. Now in both these cases the vascular tonus is doubtless largely increased for a longer or shorter time.

The healthy, vigorous man, who is in condition, has a tolerably high arterial tension; his vaso-motor centre is in a state of powerful tonic excitation, and his vaso-motor nerves are not readily inhibited (he cannot be easily made to blush, for instance.)

The circumstances which increase our vascular tonus—as long as our organs are healthy—appear to add to our vigor. Why should it be so? If rest is the period of recuperation or restoration, if a diminished blood-supply be a condition of rest, then a high degree of activity of the vaso-motor centre should tend to health; by preventing waste of energy until each organ is needed (and then the vaso-motor nerves are either centrally or locally inhibited or antagonized), by keeping each organ at rest until its activity is needed, there will be a greater store of energy-yielding material at disposal, and the activity of the tissue elements will be all the more perfect in that they are uninjured by the fatigue-producing substances which are the products of activity: in other words, that man will, *cæteris paribus*, be the most efficient and economical machine whose organs are the seat of the smallest waste *as long as they are inactive*; naturally, however, the quality and quantity of the work will depend very much on the quality of the organ, on its power of storing-up, and on the perfection of the vascular mechanism, in so far that this must permit of as large a supply of blood being given at the required moment for the maximum conversion of energy.

There are two points upon which I think it right to add some observations, so as to prevent my being misunderstood.

1. The facts which are day by day being accumulated point to the existence of local vaso-motor mechanisms, which are subordinated to the general vaso-motor centre (if such a centre really exists apart from the former), so that it is not only conceivable, but certain, that an affection of, or a change in, a local vaso-motor mechanism might be induced without a necessary affection of the general vaso-motor mechanism. A general high tonus does not, for example, imply that its possessor should have a tendency to sleep, for sleep is doubtless due to a positive

cerebral anæmia, to the production of which the activity of a centre, specially connected with the cerebral circulation, probably contributes.

2. Whilst such counter-irritation as I have recommended appears to exert a tonic action on the vaso-motor centre, and on the body generally, I am quite aware that several methods of counter-irritation produce an opposite effect. The shock and great depression which, especially in women, sometimes follow the application of blisters, seem to show that severe counter-irritation very frequently tends to depress rather than to raise the tone of the vascular system.—*The Practitioner.*

NOTICES OF NEW BOOKS.

Myelitis of the Anterior Horns, or Spinal Paralysis of the Adult and Child. By E. C. Seguin, M.D., Clinical Professor of Diseases of the Mind and Nervous System in the College of Physicians and Surgeons, New York. New York: G. P. Putnam's Sons, 182 Fifth Avenue. 1877.

Dr. Seguin informs us in his preface, that this is an effort to apply the inductive method to the study of the diseased conditions under consideration. That the reader may be able to form an opinion of the merits of the work, we copy the chapter devoted to diagnosis.

CHAPTER VI.

DIAGNOSIS.

a. The positive diagnosis of myelitis of the anterior horns is to be made by a careful consideration of the symptoms as grouped together in Chapter IV. In very general terms it may be said that an atrophic paralysis with rapid loss of faradic reaction in the palsied parts, is myelitis of the anterior horns. Of course this does not include cases in which a mixed nerve has evidently been injured, producing peripheral paralysis.

b. Differential diagnosis. This needs to be made from a number of spinal and other affections.

1. Peripheral paralysis. In this case when there is doubt as to the nature of the injury received, a diagnosis can be arrived at by carefully determining what muscles are paralyzed. In a peripheral paralysis the atrophic paralysis is strictly in the range of distribution of the motor filaments of the injured nerve. Mothers have presented children at my clinic with the statement

that the paralysis had been caused by a blow; or by the penetration of a needle near a great nerve, and I have easily arrived at the correct diagnosis of poliomyelitis acuta by the above rule, by the want of chronological agreement between the reception of the injury and the appearance of paralysis, and by the absence of the symptoms of traumatic neuritis (neuralgia, anæsthesia, alterations of nutrition). A few months ago it might have been added that the discovery of the reaction of degeneration in the paralyzed muscles might serve to designate peripheral paralysis, but we now know, thanks to the patient researches of Prof. Erb,* of Heidelberg, that this morbid electrical reaction is likewise present in myelitis of the anterior horns.

2. Paralysis a frigore, rheumatic paralysis wrongly so-called. It appears very doubtful to me whether these cases of limited atrophic paralysis (deltoid, serratus magnus) are not after all instances of very circumscribed myelitis of the anterior horns. The clinical aspects of the two affections are wonderfully similar, and fresh electrical and pathological researches will be necessary to convince me of their non-identity.

3. Atrophy following neuralgia. In many cases belonging to this category there is only moderate wasting of the muscles of the affected part, and these muscles present simply diminished faradic and galvanic reactions In some of these, the atrophy is to be attributed to enforced or instinctive rest, and no error in diagnosis is possible. But I have seen several individuals who after having suffered from severe neuralgic pains (in shoulders, upper arms, or thighs) have developed a true atrophic paralysis with loss of faradic contractility. These I am now inclined to look upon as instances of chronic central myelitis with involvement of the anterior horn. In the moderate atrophy accompanying chronic sciatica (the wasting due to prolonged vascular spasm according to most authorities) there is no marked impairment of faradic contractility.

4. Spinal congestion. Very many of the symptoms of this affection are exactly like those of myelitis of the anterior horns; rapidly developed general, or gradually ascending paralysis without marked anæsthesia or palsy of the bladder, being observed in each disease. But in congestion there are never postitive atrophy and loss of faradic reaction in the paralyzed muscles.

5. Acute ascending paralysis. In the former edition of this essay† I expressed the opinion that this disease, while resembling in many respects myelitis of the anterior horns, was different from it. Dr. William A. Hammond in the last edition of his Treatise considers this view as erroneous, and claims that the

* Ueber acute Spinallahmung (Poliomyelitis anterior acuta) bei Erwachsener. Arch. f. Psych. u, Nervenk., v., p. 758. 1875.

† P. 29.

two diseases are identical.* Without entering into a discussion of the reasons for Dr. Hammond's opinion, I may say that I am fortified in the reiteration of my view by the conclusions recently reached by Prof. C. Westphal.† This high authority after a thorough study of three cases of acute ascending paralysis expresses his belief that there are three strongly marked points of difference between the two diseases. 1. In acute ascending paralysis asphyxia though affection of the medulla oblongata is frequent; 2, In this disease the paralyzed muscles do not lose their faradic contractility; and, 3. In numerous autopsies, including those in his own three cases, no lesion of the central nervous system has been found. To repeat: In acute ascending paralysis we have a rapidly ascending akinesis, involving the respiratory muscles, and rapidly (one to three weeks) causing death by asphyxia. Muscular atrophy is absent and the paralyzed muscles do not lose their faradic contractility. I may add that this recently acquired knowledge should be applied to the criticism of some of the older cases of so-called acute ascending paralysis, and such as exhibited loss of faradic contractility in the paralyzed muscles should be transferred to the category of myelitis of the anterior horns.

6. Central diffused myelitis. In the immense majority of cases there is no reason for confusing this disease with myelitis of the anterior horns. Central diffused myelitis produces besides paralysis and (at times) muscular atrophy, great anæsthesia co-extensive with the paralysis, and the bladder is paralyzed in a positive manner. Besides, the course of the disease is usually very chronic.

7. Hæmatomyelia or hæmorrhage into the gray matter of the spinal cord. This affection produces sudden paralysis (paraplegic or general) just as occurs in very acute non-febrile myelitis anterior, but in addition we have extreme anæsthesia and palsy of the rectum and bladder. In a few days great muscular atrophy may set in, and the muscles may lose their faradic contractility, as in poliomyelitis.

8 Progressive muscular atrophy. The sub-acute non-febrile and chronic forms of myelitis of the anterior horns may simulate muscular atrophy. It should be borne in mind that in the latter disease the progress of atrophy is much more gradual and irregular than in the former. In progressive muscular atrophy a muscle perishes by bundles of fibres, while in chronic myelitis anterior the whole muscle gradually wastes. Besides, in progressive muscular atrophy faradic contractility is preserved in the wasting muscles as long as any muscular tissue remains, while in myelitis anterior whole muscles show diminished or lost contractility. Still there can be no doubt that the two diseases

* Op. cit. p. 482.

† Beobachtungen u. Untersuchungen uber die Krankheiten des centralen Nervensystems. Ueber einige Faile von acuter todlicher Spinallahmung. Arch. f. Psych. u. Nervenk., vi., 3, p. 765. 1876.

are very closely allied, the only difference between them being, probably, that in progressive muscular atrophy the degeneration of ganglion cells of the anterior horns takes place cell by cell and very gradually in each cell, whereas in myelitis anterior groups of cells primarily or secondarily undergo a destructive change.

In the Nosological Scale, myelitis of the anterior horns, in adults and children, is closely related, on the one hand to spinal congestion and acute ascending paralysis, and on the other to progressive muscular atrophy and labio-glosso-laryngeal paralysis.

The mechanical execution of the book is remarkably well done. It may be ordered from Eyrich's Book Store, 130 Canal Street, N. O., price $1 50.

Transactions of the Medical Society of Virginia. 1876.

The meeting took place at Charlottesville, October 17th, 18th and 19th. The first of the list of the papers published is the Address of the President, F. D. Cunningham, M.D, of Richmond.

Among the noteworthy points of his discourse are some animadversions on the requirement of what is termed a *license* of medical practitioners, which is granted to all applicants on payment of a stipulated sum; and on the low standard of professional qualifications, in the absence of a system of examinations under authority of a State Examining Board. In these respects Virginia is no worse off than most other States, though there may be small consolation in such a fact. He also laments that the State Board of Health is rendered helpless by want of funds. Here there may be some consolation, inasmuch as the ignorant laymen who refuse supplies for the prevention of disease are sure to suffer more than physicians educated both to prevent and cure. Finally, he makes a plea for legislation restricting the sale of poisonous drugs. This is sound doctrine, but the sovereigns of our free and happy country want the privilege of finding out the folly of everything, each one for himself.

Another address follows, by G. McDonald, M.D., who had been previously appointed as the Orator of the occasion. His theme is "The Doctor," and he describes his ideal of that personage.

Prof. J. W. Mallet, M.D., of University of Virginia, formerly of University of Louisiana, presented, as Chairman, the Report of the Committee on Advances in Chemistry, Pharmacy, Materia Medica, and Therapeutics. Prof. M. reports in particular for chemistry, on the composition of alkaloids and albuminoid bodies, stating their formulæ by the new graphic method.

Dr. W. H. Taylor, of Richmond, gives the Advances in Pharmacy; Dr. J. Spotswood Welford, of Richmond, confines himself to Some Sources of Danger in the Administration of Chloroform; Dr. M. Fauntleroy, of Staunton, reports on the Therapeutics of several new and some old remedies.

Dr. Benjamin Blackford, of Lynchburg, reports on the Advances in Surgery, particularly on the Antiseptic System of Lister.

A brief report on Practical Medicine is made by Dr. S. W. Carmichæl, of Fredericksburg.

Dr. J. L. Caball, of University of Virginia, contributes a very elaborate and interesting report on Hygiene and Public Health.

Some brief remarks on Aspiration follow, by Dr. William D. Hooper, of Lynchburg, and the closing report is that of the Committee on Necrology.

On the whole, we feel bound to commend the papers published in these Transactions as generally quite meritorious, and superior to the average volumes emanating from State Medical Societies. S. S .H.

Second Annual Report of the Board of Health of the State of Georgia, 1876. Atlanta, Ga.: James P. Harrison, State Printer. 1877.

This report comprises a number of valuable papers, and is worthy of emulation by every State of the Union.

The United States Pharmacopœia and the American Medical Association.

This is an energetic though fairly stated argument in opposition to Dr. Squibb's resolution proposing that the American Medical Association shall control the United States Pharmacopœia as it respects its general arrangement and revision. The

paper is from the pen of Prof. H. C. Wood, of Philadelphia. It may be obtained by addressing him at No. 1631 Arch Street, Philadelphia.

Full Term Extra-uterine Gestation of the Tubo-ovarian form; with Special Examination of the Sac, Uterus and Appendages. By A. Sibley Campbell, M.D., Augusta, Georgia, Demonstrator of Anatomy in the Medical Department of the University of Georgia. With two woodcuts. Reprinted from the American Journal of Obstetrics and Diseases of Women and Children, Vol. IX., October, 1876. New York: William Wood & Co., 27 Great Jones Street. 1876.

General Index to the New York Medical Journal from April, 1865, *to June*, 1876 (twenty-three volumes). By James B. Hunter, M.D. New York: D. Appleton & Company, 549 and 551 Broadway, 1877.

Transactions of the Nebraska State Medical Society, at its Sixth, Seventh and Eighth Annual Meetings. Lincoln, Nebraska. Journal Company, State Printers. 1877.

CORRESPONDENCE.

VERMILLIONVILLE, LAFAYETTE PARISH, LA.,
March 1st, 1877.

Dr S. M. Bemiss, New Orleans:

Dear Sir—While at the office of one of my best friends, and at the same time a confrére, Dr. J. D. Graham, we were entertaining each other with discussing the small pox, and whilst doing so, we naturally passed to the subject of vaccination, and I then told him of Dr. Charles D. Meigs' views about the great importance of never vaccinating a pregnant woman, and he immediately suggested the idea that I should communicate with you concerning the matter, and ascertain directly through you what had been your experience as regards that particular point. Hence it is that I will write out in full Professor Meigs' remarks on the subject. He says (see Obstetrics, pp. 501-2-3, sec. 732): "Never to vaccinate a pregnant woman. My earnest desire in introducing this section here is, in the first place to point out the great neces-

sity there is for pregnant women scrupulously to avoid the contagion of variola; for I think I am quite correct in stating that the sentiment of the profession is almost unanimous that the woman who is confined during small-pox dies (that we are all aware of); and secondly, to let the student beware not to expose his gravid patient to the least danger of variolous infection; and therefore, never to venture, under any circumstance, to vaccinate a pregnant woman, and one recently confined. To give this precept is the essential motive I had for introducing this article into my work, and I am the *more desirous* to attract the attention of the student to this point, because I know that the *brethren in general* are *not* the *least* suspicious, that to vaccinate a pregnant woman is to expose her to great hazard. If the virus of the small-pox is eminently inimical to the life of a pregnant female, I aver that the virus of the vaccine inoculation is little less so than that of unmitigated small-pox. If the student will take two clean lancets, and insert the points of them into a mature small-pox pustule, he may send one of them a hundred leagues eastward and with it inoculate an unprotected individual, who will receive from it the infection of variola; and consecutive inoculation from this link would repeat variola for centuries. Let him send the other lancet a hundred leagues westward, and with it inoculate the udder of a healthy cow. He will in this way communicate to the animal a vaccine infection, from which vaccine inoculation of human beings may be consecutively repeated for centuries. So that a variolous pustule in the human being has communicated the vaccine infection to the cow, which vaccine infection may afterwards be repeated without modifying it further, through an unknown series of human bodies. The generic force of the inferior animal has modified a poison produced by the generical force of the human being. It has *changed* it, *not destroyed* it. It retains a portion of its variolous power which is inimical to the pregnant woman, and to expose one to its rage is a *gross imprudence* and *misapprehension* which I hope no student reading this book will ever be guilty of. The shocking spectacles of distress that I have witnessed from the vaccination of pregnant females, have so impressed my mind with the enormity of the imprudence, *that nothing*, I think, could tempt me to commit it myself. The most furious phlebitis, which is endangitis, and which becomes pyæmic fever, is one of the consequences likely to result from every track of spurious

vaccination of a pregnant female. I am firmly convinced that it is *far better* for the physician, during an epidemic of small-pox, to leave his pregnant patient to the chance of a natural infection than to certainly bring her within the range of its virulent power by a vaccine inoculation, which is but a variolous inoculation modified by the generical force of an inferior zoological genus. Can we conscientiously trust to anything of that sort, and remain a mere spectator with the disease staring us in the face under these circumstances, I ask? If I venture to put forth such opinions as the above, it is hardly incumbent upon me further to protest against the temerity of those who, during the existence of a small-pox epidemic, recommend, and even proffer, what is called revaccination to those who, having been already vaccinated, might be held to be protected—I mean, to pregnant women. I have seen pregnant women nigh to term unnecessarily revaccinated, with consequences so terrific that I would not, for a thousand golden crowns, either vaccinate or revaccinate any woman knowing her to be pregnant.

Hoping to hear from you some future day,

I remain, very respectfully,

GEO. SCRANTON, M.D.

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During all my professional life I have never hesitated to vaccinate pregnant women when circumstances of danger, or of apprehended danger, called for such practice. I have kept no record, and cannot even offer a conjecture in respect to the number of vaccinations performed upon pregnant females. I have never seen any accident or mishap to either mother or fœtus.

But while this positive declaration may be made as a practical answer to the question discussed, it must be admitted that theoretically, Prof. Meigs' position is a defensible one. If variola is so fraught with danger to the pregnant woman, the difference is simply one of degree between it and that modification of the malady to which we apply the term vaccinia. But measured in respect to danger to life, and the distance between them is too great to afford estimates based upon theory alone.

It is however unquestionably true, that with certain pregnant women the tendency to abortion is so great that even the constitutional revulsion of the vaccine process may occasion the impending disaster. So may bleeding, tooth extraction, or catharsis. No doubt it is also true that the wise physician,

when called upon to do any operation upon pregnant women, or to subject them to any considerable perturbation of either body or mind, will endeavor to select those periods of diminished uterine irritability supposed to be due to lessened volume of blood currents, and termed states of uterine ebb.—[EDITOR.]

LOUISVILLE, KY., April 12th, 1877.

S. M. Bemiss, M.D.:

Dear Sir—At the late meeting of the Kentucky State Medical Society, the accompanying "Resolutions" passed unanimously. It is hoped that your local and "State Societies" will take some action upon the important subject of *Free Quinine.*

I have directed a pamphlet to be sent to your address which contains some arguments pro and con.

Hoping to hear from you,

I remain Very Respectfully,

Yours truly,

J. A. LARRABEE, M.D.,
Treas. Ky. State Med. Society.

TARIFF ON QUININE.

At the late meeting of the Kentucky State Medical Society Dr. Larrabee, after a few remarks in explanation, read the following resolutions which were adopted.

Whereas, it has come to our knowledge that a bill, known as the "Morrison Bill," for the discontinuance of the "tariff on quinine" is at this time before the Committee on Ways and Means in the Congress of the United States; and

Whereas, the welfare of a large portion of the people in the Western States and Territories is concerned in the issue of this bill, as well as any movement which will enable them to obtain quinine at a less cost than the enormous prices now paid by the consumer; and

Whereas, the opposition to this bill set forth by the manufacturers and trade, does not represent the desire of those who are engaged in the relief of suffering and want, but ignores entirely the necessities of this large population, many of whom are engaged in cultivating the soil and opening up new sources of wealth to the Government in the malarial districts; and

Whereas, principles of justice and humanity alike demand free quinine and an open market for the competition of European manufacturers; and

Whereas, we, the members of the Kentucky State Society in

Convention represent the sentiments of the people of this Commonwealth upon this important subject, therefore be it *resolved*:

First. That we endorse the "Morrison Bill," and further, pray that your honorable body will hear our petition.

Second. That a copy of these resolutions (printed) be sent to similar organizations of physicians, meeting in the various States.

Third. That these resolutions, with the signatures affixed, be furnished to our Senators and Representatives in Congress of the United States at its next meeting.

(Signed) R. W. GAINES, *Pres.*

CLOVERDALE, SONOMA COUNTY, CAL.,
April 12th, 1877.

Prof. S. M. Bemiss, New Orleans, La.:

Dear Sir—Please pardon my presumption for making this unsolicited communication. My excuse for same is an article in the *New Orleans Medical Journal* for September, 1876, from your pen, in which you treat of Splenic Enlargement and its treatment. As my lot was cast for some years in localities where malarial diseases were common—in the lower Mississippi River valley—I would beg to mention certain observations, some of which I have never published, and some were published in the *Nashville Medical Journal*, and others in the *Pacific Journal of Medicine and Surgery*. But to the text. Both for the cure of chronic "chills," and enlarged and indurated liver and spleen, I found iodide of potash, in 15 to 30 grain doses three times a day, to be the most efficient remedy I tried—and I tried many. I used other auxiliary treatment, but this I know was much the most potent drug of any I tried, and it was more or less successful in the great majority of cases. I gave it in 15 to 30 grain doses three times a day, continuously for several weeks, and in obstinate cases for two or three months; but I never gave it more than two weeks without giving brief—4 to 6 days—intermission. For keeping the bowels soluble, I used the following anti-constipation pill, devised by myself.

℞—Extract belladonna;
" Nux vomica, aa ⅛ grain;
Powdered ipecac, . ¼ "
Socot. aloes, - - ij. "
M. Ft. pill and s. cath.

I have Reed & Carnrick, of New York, to make these pills for me, 2000 or 3000 at a time. They are a very useful combination, and seem to exert a good influence, above ordinary purgatives, in derangements of the liver and spleen. The usual dose of them is one pill, one to three times a day. Before I became familiar with the use of *galvanism*, I left malarious regions; but from my experience of the past two or three years in its use, I am satisfied that it could be used with great benefit to relieve splenetic enlargement, and we think it more than possible that it will ere many years become *the* remedy for the relief of enlargement of the liver and spleen; and it has already proved itself so for reducing enlargements of other glands. To recur: I sometimes painted the region of the spleen and liver with a strong ethereal camphorated tincture of iodine, and it was often followed by good results. The painting was repeated as often as the *skin* would allow. I found the extract of cinchona much better than quinine for the relief of malarious diseases. I used the form called amorphous quinine, in pills, and combined muriate ammonia and sol. ext. buchu with it. A very common recipe with me was, ℞—iodide potash, pow. cinchona bark aa ℥j., whiskey a pint. M. ft. S. Tablespoonful three times a day, just after meals. This amount will generally prevent a recurrence of "chills" for the season, and the patient will grow strong and hearty, skin clear, and run all right till the following autumn, at least.

Please present kind regards to my good teacher, Prof. Joseph Jones, M.D.

Yours very respectfully,

Q. C. Smith, M.D.

EDITORIAL.

Close of Vol. IV., "New Series."

This number will close the fourth volume of the New Orleans Medical and Surgical Journal, since it came under the editorial supervision of the present writer. This period has comprised four years of political uncertainty and financial adversity which were positively unfavorable to any scientific enterprises whose growth was dependent upon voluntary subscrip-

tions. But, thanks to the steadfastness of its friends, the JOURNAL has survived these years of famine, and, as we trust, is now entering upon a long series which shall each be crowned with plenty, and with equal benefit both to him who gives and to that which receives. With such cheerful visions in our horoscope, we shall enter upon the duties of the fifth volume of the JOURNAL with renewed efforts to increase its interest and usefulness.

American Medical College Association.

The following extracts are from a circular sent to the deans of the medical schools of the United States, and explain the plan and purposes of the projected association. It is a movement which will meet with support and encouragement by every member of the medical profession who has its real advancement in view. Unless some kind of check is put upon those gross irregularities which are now habitually practised by some medical schools, the future will bring the profession even greater shame than that which it at present endures. Hitherto, every effort to reach or correct these malfeasances has proved a failure. As soon, however, as an association like the one contemplated has become general, and is put in effective working order, it may refuse affiliation with schools conducting themselves improperly, and at the same time decline to recognize their diplomas or tickets. A medical school discredited in this manner, is no more capable of existence than a discredited bank.

NEW YORK, Dec. 20th, 1876.

To the Dean of.....

Sir: At the Convention of American Medical Colleges, held at Philadelphia, June 2d and 3d, 1876, the following resolutions, looking to the establishment of a Permanent Association of American Medical Colleges, were adopted:

Resolved, 1. That this Convention now proceed to form a Provisional Association of American Medical Colleges, under its present officers.

Resolved, 2. That when the Association adjourns, it shall adjourn to meet at the call of its President.

Resolved, 3. That the various medical colleges be invited to take into consideration the project of forming, at the next meeting of this Provisional Association, a Permanent Association of American Medical Colleges.

Resolved, 4. That for the furtherance of this object, a committee of three be appointed at this meeting to confer by letter with the various colleges, and invite their views on the proper object and plan of such proposed organization; and upon the receipt of the same, to draft a constitution and by-laws for a permanent Association, to be submitted at the next meeting of this Association.

Resolved, 5. That the advisory resolutions upon matters of college policy passed by this Convention be printed and forwarded to all regular medical colleges in the United States for their consideration.

The undersigned were appointed as the Committee called for by the resolutions, and in furtherance of the objects of the same, they have herewith the honor to transmit a hypothetical Constitution, By-laws and Articles of Confederation, for an Association of Medical Colleges. You are respectfully requested to submit the same to your Faculty, and invite their criticisms thereupon. Upon the receipt of opinions from the various colleges, the Committee will frame their final report.

Communications should be addressed to EDWARD CURTIS, M.D., 27 Washington Place, New York, and an early response will be deemed a special favor.

Very respectfully,

Your obedient servants,

T. A. ATCHISON, M.D.,
Of the Medical Department, Vanderbilt University, Nashville, Tenn.
EDWARD CURTIS, M.D.,
Of the College of Physicians and Surgeons, New York City.
L. P. YANDELL, Jr., M.D.,
Of the Medical Department, University of Louisville, Louisville, Ky.
Committee.

From the Constitution:

"ARTICLE II. OBJECTS.

"The objects of this Association shall be the advancement of medical education in the United States, and the establishment of a common policy among medical colleges in the more important matters of college management."

It is encouraging to note in connection with this matter, that the Kentucky State Medical Society, at its last session, voted unanimously in favor of the following resolutions.

Dr. Baker, of Shelbyville, offered the following resolutions, which were adopted unanimously:

Resolved, That this society is in full accord with the American Medical College convention, seeking to elevate the standard of medical education in this country.

Resolved, That summer schools, which enable students to graduate after from eight to nine months' study, are exerting an evil influence upon the profession.

Resolved, That a winter and summer course by the same school, and graduation at the end of each, tends to deteriorate the standing of the medical profession.

Since the above was written, we learn from the *Arkansas Gazette* that the Arkansas State Medical Association, at its late meeting, passed a resolution "in relation to securing a higher standard of medical education, by pledging the members to recommend no student to attend medical lectures unless he has a good English education, with a knowledge of at least the rudiments of the Latin language; by discountenancing those schools having two graduating sessions a year; and, also, the acceptance of beneficiary scholarships; and, also, commending those colleges offering the option of a graded course of instruction extending over three annual courses of medical lectures."

The following call for a meeting of this Association has just been promulgated:

A meeting of the Provisional Association of American Medical Colleges will be held at the Palmer House, Chicago, on Saturday, June 2d, 1877, at 10 o'clock, A. M. All colleges represented at the meeting of the Association held June, 1876, are invited to send delegates to the ensuing meeting, and all chartered medical colleges in the United States recognized as "regular" by the colleges already represented in this Association, are also invited to send delegates from their Faculties to the said meeting.

J. B. BIDDLE, M.D., *President.*

Prof Busey's Paper.

Professor Busey's valuable contributions on Occlusion and Dilatation of Lymph Channels will be continued in the July issue.

Professional Change in University of Louisiana, Medical Department.

On account of ill health, Prof. T. J. Heard has resigned the chair of Materia Medica and Therapeutics and Clinical Medicine in this institution. The vacancy has been filled by the election of Prof. John B. Elliott, of the University of the South. This gentleman has a favorable and widely-extended reputation as a

teacher, and the School may claim the congratulations of its friends because of this accession to its corps of teachers.

Arkansas Medical Imbroglio.

Private letters from some of the leading physicians of Arkansas, as well as a circular addressed to the Judicial Council of the American Medical Association, have convinced us that the American Medical Association committed a grievous error in the recognition of the *new* medical society in the place of the Arkansas State Medical Association.

History of the Medical Literature of Kentucky.

Dr. L. P. Yandell, Sr., proposes to publish by subscription "a History of the Medical Literature of Kentucky. The work will embrace: 1st An account of everything written by Kentucky Physicians. 2d. Biographical Sketches of the deceased writers, so far as materials for them can be obtained. 3d. Histories of the Medical Institutions of Kentucky. To which will be appended a review of American Medical Literature, from its beginning down to 1876. All will be comprised in an octavo volume of about 600 pages, and delivered to subscribers at $5 00."

Cyclopædia of the Practice of Medicine.

The 13th volume of this great work, by Dr. Von Ziemssen, has reached us too late for critical notice. It trests of Diseases of the Brain and its Membranes, and the contributors are Professors Nothnagel, Hitzig, Obernier, Heubner, and Huguerien.

The Louisville Medical College.

The suit against the Louisville Medical College, referred to in a former number of this Journal, has been decided in favor of the plaintiff. It will be remembered that Sale sued "for the recovery of fees paid to the concern, claiming that the college was not a legally constituted institution, inasmuch as there had been great irregularities in the election of the board of trustees."—*Cincinnati Clinic.*

METEOROLOGICAL REPORT FOR NEW ORLEANS.

Table I---March.

Day of Month.	Temperature.			Mean Barometer Daily.	Relative Humidity—Daily.	Rain fall—inches
	Maximum.	Minimum.	Range.			
1	68	58	10	29.747	88	3.00
2	68	53	15	29.920	61	.00
3	71	47	24	30.050	73	.00
4	72	57	15	30.135	73	.00
5	64	47	17	30.247	72	.00
6	60	40	20	30.269	64	.02
7	69	46	23	30 039	71	.00
8	70	58	12	29.775	76	.20
9	58	44	14	30 239	56	.00
10	55	39	16	30.417	50	.00
11	64	44	20	30 317	66	.00
12	73	55	18	30.163	81	.02
13	69	60	9	30.052	86	.89
14	75	56	19	30.058	75	.00
15	70	58	12	30.149	66	.00
16	74	57	17	29.988	76	.00
17	67	49	18	30.165	74	.00
18	63	43	20	30.318	56	.00
19	70	46	24	30.152	68	.00
20	74	57	17	29.910	78	.38
21	72	60	12	29.988	59	.00
22	70	52	18	30.039	49	.00
23	72	51	21	29.974	62	.00
24	70	56	14	29.863	70	.41
25	56	42	14	29.970	67	.00
26	69	50	19	30.059	61	.00
27	77	54	23	30.036	54	.00
28	72	55	17	30.052	77	.00
29	73	61	12	30.112	76	.00
30	76	62	14	30.114	73	.00
31	75	60	15	30.080	81	.00
Mean..	68.9	52.2	16.7	———	69.0	Total. 4.95

Table II---April.

Day of Month.	Temperature.			Mean Barometer Daily.	Relative Humidity—Daily.	Rain fall—inches
	Maximum.	Minimum.	Range.			
1	75	63	12	30.104	79	.94
2	73	66	7	30.131	83	.82
3	70	57	13	29.974	89	.12
4	74	61	13	29.941	72	.23
5	80	61	19	30.014	74	.00
6	78	63	15	29.918	87	.00
7	77	67	10	29.556	79	.07
8	75	65	10	29.484	61	.00
9	74	61	13	29.676	56	.00
10	72	58	14	29.902	59	.00
11	73	60	13	29.885	68	.00
12	65	57	8	29.605	73	1.83
13	63	55	8	29.823	71	.00
14	71	56	15	30.056	53	.00
15	74	55	19	30.123	66	.00
16	74	56	18	30.096	65	.00
17	74	62	12	29.982	70	.00
18	74	67	7	29.781	73	.09
19	82	62	20	29.779	58	.00
20	75	60	15	29.889	59	.00
21	77	59	18	30.090	61	.00
22	78	60	18	30.195	65	.02
23	71	63	8	30.189	84	.02
24	71	63	9	30.085	85	.10
25	78	62	16	29.989	76	.00
26	78	64	14	29.886	73	.00
27	79	68	11	29.760	75	.04
28	—	—	—	———	—	.51
29	—	—	—	———	—	—
30	—	—	—	———	—	—
						Total.
Mean..	74.2	61.1	13.1	29.926	70.9	4.79

Mortality in New Orleans from February 26th, 1877, to April 29th, 1877, inclusive.

Week Ending	Yellow Fever.	Malarial Fevers.	Consumption.	Small-Pox,	Pneumonia.	Total Mortality.
March 4.....	0	4	13	42	14	153
March 11.....	0	5	28	49	15	156
March 18.....	0	6	19	70	15	187
March 25.....	0	5	15	44	6	143
April 1.....	0	5	15	55	8	149
April 8.....	0	7	14	52	7	150
April 15.....	0	10	13	43	4	129
April 22.....	0	14	20	38	10	156
April 29.....	0	6	11	24	4	120
Totals.....	0	62	148	417	83	1343

OBITUARY.

"One after one, into the silent lake."

Death of Dr. B. M. Wible.

It is our painful duty to announce the death of Dr. B. M. Wible, which took place in this city on the 26th inst. He was in his sixty-third year, and had passed forty-three years in the practice of medicine, graduating at the Ohio Medical College in 1834. Beginning his professional life in Nelson county of this State, of which he was a native, he removed to Louisville shortly afterward, and for more than a third of a century was a prominent occupant of this field. He served as a surgeon in the war with Mexico, and in the civil war, during which he was for a time in the Second Kentucky C.S.A., commanded by the celebrated Roger Hanson. Subsequently he was on hospital duty in the confederacy.

Dr. Wible possessed well-marked traits of character, prominent among which were tenacity of opinion, a gentle heart, and simple bravery. He had a very large circle of acquaintanceship and devoted friends. The meeting of the physicians called in respect to his memory was the largest of the kind which has been held in this city since Louis Rogers died, and the church where his funeral obsequies were held was filled by the profession and people.—*Louisville Medical News.*

Dr. George Ffrost Mellen.

George Ffrost Mellen, M.D., died at Satartia, Miss., on the 23d inst., aged 52 years. Dr. Mellen was born at Durham, New Hampshire, and was descended from some of the best of the old New England families, Sir William Peperell, an old Colonial Governor, being one of his ancestors. He was a graduate of Bowdoin College, Brunswick, Maine, and took his Bachelor's Degree with the class of 1846. He subsequently read medicine under the direction of Dr. Hall, at Saco, Maine, and took his Doctor's Degree at the Jefferson College, Philadelphia, with the class of 1851. In August of that year he removed to Yazoo City, Miss., and the following December settled at Satartia. He resided in New Orleans about one year in 1857 or '8, and was

with Walker in his last expedition to Nicauragua, and was wrecked on the ill-fated Susan on the coast of Honduras. He returned to Satartia and remained until May, 1861, when he went as a soldier of the line and served one year with the army in Virginia. He then practiced at Satartia until the fall of Vicksburg, in 1863, and then rejoined the army and served as a hospital surgeon in Georgia until the close of the war. He then returned to Satartia and practiced until his death.—*Satartia Sentinel.*

In Memoriam.

ROOMS OF THE NEW ORLEANS MEDICAL AND SURGICAL ASSOCIATION, April 28th, 1877.

At a regular meeting of the New Orleans Medical and Surgical Association, held April 28th, 1877, the following memorial address by Dr. Samuel Logan, and the preamble and resolutions of the committee, were unanimously accepted and adopted. It was further resolved that the Secretary furnish a copy to the family, and also one for publication.

HOWARD SMITH, M.D., *President.*

W. H. WATKINS, M.D., *Secretary.*

Mr. President and Gentlemen—For the first time since the organization of this Association, we are called upon to mourn the loss of a member.

At our last meeting we adjourned because death had dropped from our rolls the name of one we all admired, respected and loved.

Victor Grima, one of the founders of this Association, and one of its most zealous supporters, will no longer answer at its roll call. For weeks we have missed him at our meetings; him who was so regular in attendance till the dark shadow crossed his pathway, casting an increasing gloom over the short remainder of his life, chilling his blood with its cold breath and benumbing his wonted energy with its prophetic influence.

For weeks it has been my province when his name was called to answer with increasing pain, sick, sick, sick; while hope of his return grew fainter, and yet fainter each time, till hope had died, and I felt, indeed, that he was truly sick, yea, sick even unto death.

He has now passed away, and "the place that once knew him shall know him no more." He had long looked calmly at this result, fully appreciating the tendencies of his case, and he died as he lived, clothed with the unostentatious and gentle dignity

so peculiarly his own, leaving a record free from all stain, and graced with all the best characteristics of the true gentleman, the enlightened scholar, the faithful friend, the devoted son, the loving brother, the practical philanthropist. His, my confréres, was a character we may well emulate; would that this world had more such, and that the few we have like him were longer spared us. "Death loves the shining mark," and his unerring shaft has stricken Victor Grima from our ranks, as his first victim.

We shall long miss our courteous, our able, our beloved brother in medicine; our valued member, our cherished friend and genial confrére. May his special influence remain with us always. His name will appear on a blank page in our minutes; blank, however, only to the physical sense; for as we each in coming years fondly gaze upon that silent token of the dear departed, a loving memory will fill the page with glowing reminiscencies of all his gentle traits, his noble virtues, and his good deeds.

I am accorded by the committee the sole privilege, Mr. President, of reporting the following resolutions:

WHEREAS, It is with feelings of profound regret we are called upon to record the first death in our organization, that of Dr. Victor Grima, one of our founders, who has been called from among us when in the midst of his professional usefulness; therefore,

Be it resolved, That in his death this Association and the medical profession at large loses a worthy and enlightened member, who can ill be spared from our ranks, the community one of its best citizens, and the poor a truly disinterested friend and charitable adviser.

Be it resolved, That feeling, as we do, so keen an appreciation of our great loss, we deem it but meet, as a body, to tender to his afflicted family and relatives our heartfelt sympathies in this their sad bereavement.

Be it further resolved, That a page of our record be reserved to his memory, and his name be inscribed thereon.

WILLIAM P. BREWER, M.D., *Chairman.*
SAMUEL LOGAN, M.D.
JOSEPH HOLT, M.D.

Dr. Grima lectured in the Medical Department of the University of Louisiana, upon the Eye and its Diseases. The many students who attended his lectures will lament the untimely death of a teacher, who combined in one character unusual personal grace and personal worth, with unusual scientific attainments and remarkable skilfulness as an operator. While always modest and unassuming in his deportment, in the exercise of his profession he exhibited the boldness and self-confidence which are the offsprings of ripe knowledge and tried experience.—[ED.]

The Weekly Medical and Surgical Reporter.

THE HALF-YEARLY COMPENDIUM OF MEDICAL SCIENCE.

The Physician's Daily Pocket Record and Visiting List.

The publications whose titles are given above merit the attention of all physicians who would keep abreast of the literature of the profession.

THE REPORTER

Is published every Saturday, in pamphlet form, neatly bound and cut. It contains twenty to twenty-four large, double-columned pages of reading matter, printed on fine paper, in clear and new type.

The REPORTER ranks among its contributors many of the most eminent practitioners and surgeons of the United States. Not to go beyond the numbers for the first volume of the current year, we find among their names those of Professors D. H. AGNEW, J. M. DA COSTA, W. W. DAWSON, A. HEWSON, A. JACOBI, R. J. LEVIS, W. PEPPER, L. A. SAYRE, J. S. WIGHT, J. R. WOOD, Drs. J. SOLIS COHEN, A. M. HAMILTON, S. WEIR MITCHELL, L. TURNBULL, and numerous others.

The REPORTER aims especially to be a *practical* journal, and gives its chief attention, therefore, to the diagnosis and treatment of disease.

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Forms a volume of three hundred large octavo pages. It appears on the first of January and July. It covers the whole ground of Medical Science, distributed under the following headings:—I. Anatomy, Physiology, and Pathology. II. Physics, Botany, Chemistry, and Toxicology. III. Materia Medica and Therapeutics. IV. General Medicine and Sanitary Science. V. Clinical Medicine. VI. Obstetrics and Diseases of Women and Children. VII. Surgery.

No article appears in both the REPORTER *and* COMPENDIUM. None is duplicated in these two journals. The latter is intended to supplement and complete the former in the departments of medicine which are less immediately practical.

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SPECIAL RATES AND PREMIUMS.

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Any present subscriber to the REPORTER who obtains for us another subscriber, and remits for both, will receive a POCKET RECORD, with name stamped on tuck, *gratis.*

Any present subscriber who obtains for us two new subscribers, and remits for the three, will receive a copy of the new edition of Naphey's *Modern Therapeutics* (new edition, $4.00, ready January 1st).

A specimen copy of the COMPENDIUM (January, 1875) will be sent for 50 cts.

A specimen copy of the REPORTER will be sent on application, *gratis.*

Any one can have the REPORTER on trial for three months for $1.00.

WE ASK PHYSICIANS TO TRY THESE PUBLICATIONS FOR ONE YEAR, convinced they will not regret it.

Address all letters and make all checks, etc., payable to

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Freshly prepared every week, taken from selected heifers, at the Pennsylvania Vaccine Farm, conducted by Dr. B. Rush Senseny.

This extensive establishment has been especially fitted up for the purpose of supplying pure, fresh bovine virus in any quantity. This virus is from the celebrated Beaugency stock, imported expressly, and has never passed through the human subject. It is *safer*, and more *efficient* than humanized virus; is free from all contamination, and is now recommended by the best authorities on vaccination. A circular, with full explanations, sent with each package, or on application, *gratis*.

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Ivory points, charged, per dozen,	$1.50
Quill slips, each, charged,	25
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TO THE MEDICAL PROFESSION.

A NEW AND IMPORTANT REMEDY.

LACTOPEPTINE.

LACTOPEPTINE contains all the agents of digestion that act upon food, from mastication to its conversion into chyle, and is therefore the most important remedy for Dyspepsia that has ever been produced.

The digestive power of LACTOPEPTINE is seven times greater than any preparation of Pepsin in the market, as it has the important advantage of dissolving all aliment used by mankind, while Pepsin acts only upon plastic food.

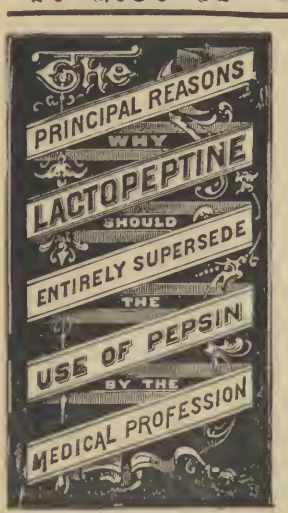
This preparation has now been in the hands of the Medical Profession for two years, during which time its therapeutic value has been most thoroughly established in cases of **Dyspepsia, Intestinal diseases of Children, Chronic Diarrhœa, Constipation, Vomiting in Pregnancy or Dyspepsia, Headache, and all diseases arising from Imperfect nutrition.**

One of the most important applications of LACTOPEPTINE *is in those cases where the digestive organs are unable, from debility, to properly prepare for assimilation the remedies indicated. In such cases combine it with the remedy indicated.*

LACTOPEPTINE, *as well as all other preparations of our manufacture, is prepared strictly for the use of the Medical Profession, and is kept invariably in their hands.*

FORMULA OF LACTOPEPTINE.

Sugar of Milk,	20 *Ounces.*	*Veg. Ptyalin or Diastase,*	1 *Drachm.*
Pepsin,	4 "	*Lactic Acid,*	2½ *fl. Drachms.*
Pancreatine,	3 "	*Hydrochloric Acid,*	2½ *fl.* "
	Powder and Mix.		



1st.—It will digest from three to four times more *coagulated albumen* than any preparation of Pepsin in the market.

2d.—It will emulsionize and prepare for assimilation the oily and fatty portions of food, Pepsin having no action upon this important alimentary article.

3d.—It will change the *starchy* portions of vegetable food into the assimilable form of Glucose.

4th.—It contains the natural acids secreted by the stomach (*Lactic and Hydrochloric*), without which Pepsin and Pancreatine will not change the character of coagulated albumen.

5th.—Experiments will readily show that the digestive power of the ingredients of Lactopeptine, when two or more are combined, is much greater than when separated. Thus, 4 grs. of Pepsin and 4 grs. of Pancreatine mixed, will dissolve one-third more albumen than the combined digestive power of each agent separately in same length of time.

6th.—IT IS MUCH LESS EXPENSIVE TO PRESCRIBE. It dissolves nearly four times as much coagulated albumen as Pepsin, besides digesting all other food taken by the human stomach. *An ounce of Lactopeptine is, therefore fully equal in digestive power to seven ounces of Pepsin, yet it is furnished at about the same price.*

All the statements made in this Circular are the result of repeated and careful experiments.

The palatability and digestive power of LACTOPEPTINE has been more than doubled during the past two months, by producing several of its component parts free from all extraneous matter, and we now believe it is not susceptible of any further improvement.

Physicians who have not given LACTOPEPTINE a trial in their practice, are respectfully requested to read the following opinions of some of our leading Practitioners as to its merits as an important remedial agent.

IN ADDITION TO THE FOLLOWING RECOMMENDATIONS, WE HAVE RECEIVED OVER SEVEN HUNDRED COMMENDATORY LETTERS FROM PHYSICIANS, A LARGE NUMBER OF WHICH ENUMERATE CASES WHERE PEPSIN ALONE HAD FAILED TO BENEFIT, BUT FINALLY HAD BEEN TREATED SUCCESSFULLY WITH LACTOPEPTINE.

——oo——

The undersigned, having tested REED & CARNRICK'S preparation of Pepsin, Pancreatine, Diastase, Lactic Acid and Hydrochloric Acid, made according to published formulæ, and called *Lactopeptine*, find that in those diseases of the stomach where the above remedies are indicated, it has proven itself a desirable, useful and well adapted addition to the usual pharmaceutical preparations, and therefore recommend it to the profession.

NEW YORK, *April 6th*, 1875.

J. R. LEAMING, M. D.,
Attending Physician at St. Luke's Hospital.

ALFRED L. LOOMIS, M. D.,
Professor of Pathology and Practice of Medicine, University of the City of New York.

JOSEPH KAMMERER, M. D.,
Clinical Professor of Diseases of Women and Children, University of the City of New York.

LEWIS A. SAYRE, M. D.,
Professor of Orthopœdee Surgery and Clinical Surgery, Belevue Hospital Medical College.

EDWARD G. JANEWAY, M. D.
Professor Pathological and Practical Anatomy, and Lecturer on Materia Medica and Therapeutics and Clinical Medicine.

SAMUEL R. PERCY, M. D.,
Professor Materia Medica, New York Medical College.

J. H. TYNDALL, M D.,
Physician at St. Francis' Hospital.

JOSEPH E. WINTERS, M. D.,
House Physician Belevue Hospital.

GEO. F. BATES, M. D.,
House Surgeon Belevue Hospital.

——oo——

INEBRIATE ASYLUM, NEW YORK, March 25th, 1875.

I have carefully watched the effects of *LACTOPEPTINE*, as exhibited in this institution, for about six months, especially in the treatment of Gastritis, and it gives me pleasure to be able to say that I have found the best results from it, supplying as it does an abnormal void of nature in the secretions of the stomach. N. KEELER MORTON., M. D.

——oo——

BRANDON, VT., March 31st, 1875.

I desire to say that I have used *LACTOPEPTINE* for a year, not only on my friends, but also in my own case, and have found it one of the most valuable aids to digestion that I have ever used. A. T. WOODWARD, M. D.,
Late Professor of Obstetrics and Diseases of Women and Children Vermont Med. College.

——oo——

EXTRACT FROM A REPORT UPON THE USES OF LACTOPEPTINE,
BY J. KING MERRITT, M. D., FLUSHING, L. I.

About six months since I saw a notice of *LACTOPEPTINE* and its analysis in a Medical Journal, and having long ago recognized the inability of Pepsin to reach those cases in which the several processes of digestion are all more or less involved, I immediately commenced the use of *LACETOPEPTINE* in my own case. This was, in brief, an inherited, fostered, persistent condition of General Dyspepsia, which I had treated for several years with Pepsin, finding in its use good service, although the general results were discouraging.

A large proportion of diseases are the result of imperfect digestion.

In all cases when the stomach is unable to digest and appropriate the remedies indicated, they should be combined with Lactopeptine.

The effect of *LACTOPEPTINE* on my powers of digestion has far surpassed my expectations, and its remedial qualities in numerous cases, more or less complicated, have been all that I could desire. In these cases *LACTOPEPTINE* was associated with other remedies indicated, for the purpose of facilitating their assimilation, which is so often nullified by a disordered and debilitated condition of the digestive organs.*

I will now give, in brief, an epitome of a case recovering under the use of *LACTOPEPTINE*. She was a married lady, who five years ago became afflicted with diarrhœa, which had baffled every mode of intelligent treatment. She had an intestinal flux, body much emaciated, and her entire health was greatly impaired. I treated her with *LACTOPEPTINE*, in conjunction with other remedies, many of which had been formerly used without avail. She is now rapidly recovering.

I shall only add that the more my experience, in its varied applicability, extends, the more its beneficial effects appear.

——oo——

NEWTON, IOWA, May 10th, 1875.

I have been using *LACTOPEPTINE* for several months, and after a careful trial in stomach and bowel troubles, find that it has no equal. In all cases of indigestion and lack of assimilation, it is a most splendid remedy. H. E. HUNTER, M. D.

——oo——

WEST NEWFIELD, ME., June 14th, 1875.

LACTOPEPTINE seems to be all that it is recommended to be. It excels all remedies that I have tried in aiding a debilitated stomach to perform its functions.

STEPHEN ADAMS, M. D.

——oo——

WOLCOTT, WAYNE CO., N. Y., June 29th, 1875.

From the experience I have had with *LACTOPEPTINE*, I am of the opinion that you have produced a remedy which is capable of fulfilling an important indication in a greater variety of diseases than any medicine I have met with in a practice of over 45 years. JAMES M. WILSON, M. D.

——oo——

BROWNVILLE, N. Y., August 3d, 1875.

Some time since I received a small package of *LACTOPEPTINE*, which I have used in a case of long standing Dyspepsia. The subject is a man 40 years of age; has had this ailment over 10 years. I never had so bad a case before, and I have been practicing medicine 21 years. Your *LACTOPEPTINE* seems just the remedy he needs. He is improving finely, and can now eat nearly any kind of food without distress. I have several cases I shall take hold of as soon as I can obtain the medicine.

W. W. GOODWIN, M. D.

——oo——

EDDYVILLE, WAPELLO CO., IOWA, May 5th, 1875.

I have used the *LACTOPEPTINE* in my practice for the last eighteen months, and find it to be one of our great remedies in all diseases of the stomach and bowels. I was called last fall to see a child three years old, that was almost in the last struggles of death with Cholera Infantum. I ordered it teaspoonful doses of Syrup of Lactopeptine, and in a few days the child was well. I could not practice without it.

F. C. CORNELL, M. D.

——oo——

CORTLAND, DE KALB CO., ILL., August 12th, 1875.

I received recently a small package of *LACTOPEPTINE* with the request that I should try it in a severe case of Dyspepsia. I selected a case of a lady who has been a sufferer over 30 years. She reported relief after the first dose, and now, after using the balance of the package in doses of three grains, three times daily, says she has received more benefit from it than from any other remedy she had ever tried.

G. W. LEWIS, M. D.

* We desire particularly to call the attention of the Profession to the great value of LACTOPEPTINE when used in conjunction with other remedies, especially in those cases in which the digestive organs are unable, from debility, to properly prepare for assimilation the remedies indicated.

One drachm of Lactopeptine will digest ten ounces of Coagulated Albumen, while the same quantity of any standard preparation of Pepsin in the market will dissolve but three ounces.

One drachm of Lactopeptine dissolved in four fluid drachms of water will emulsionize sixteen ounces of Cod Liver Oil.

CHILLICOTHE, MO., September 4th, 1874.

I have used *LACTOPEPTINE* this summer with good effect in all cases of weak and imperfect digestion, especially in children during the period of dentition, cholera infantum, &c. I regard it, decidedly, as being the best combination containing Pepsin that I have ever used. J. A. MUNK, M. D.

——oo——

FORT DODGE, IOWA, November 15th, 1874.

I have fairly tried, during the past summer and fall, your *LACTOPEPTINE*, and consider it a most useful addition to the list of practical remedies. I have found it especially valuable in the *gastro-intestinal* diseases of children. W. L. NICHOLSON, M. D.

——oo——

WHITE HALL, VA. January 4th, 1875.

A short time since I sent for some of your *LACTOPEPTINE*, which I used in the case of a lady who had been suffering with dyspepsia for over twelve months, and who had taken Pepsin, and other remedies usually prescribed in that disease, with very little benefit. I ordered the *LACTOPEPTINE*, and was pleased to find a decided improvement after a few days, which has steadily increased. At the present time she appears to have entirely recovered. Very truly, E. B. SMOKE, M. D.

——oo——

INDIANOLA, IOWA, December 11th, 1874,

I consider the *LACTOPEPTINE* a heaven-sent remedy for all digestive troubles. I gave it to a lady troubled with exhaustive nausea and vomiting from pregnancy, with immediate and perfect relief, after all other remedies had failed. She was almost in *articulo mortis*. The third day after taking the *LACTOPEPTINE* she was able to be up. I was called in council the other day to a case of Intussusception; the patient was vomiting stercoracious matter; had retained no nutrition for several days. I gave the *LACTOPEPTINE* with immediate relief. Ingestion was retained I relieved the bowels by inflation, got an operation, and the patient will recover. I consider the *LACTOPEPTINE* was his *sheet anchor*. I am now using the *LACTOPEPTINE* in Cancer of the Stomach—the only medicine that gives the patient any relief. It seems to act as an anodyne in his case more so than morphine. C. W. DAVIS, M. D.

——oo——

CONTOCOOK, N. H., November 25th, 1874.

After a thorough trial, I believe *LACTOPEPTINE* to be one of the most important of the new remedies that have been brought to the attention of physicians during the last ten years. I have used it in several cases of vomiting of food from dyspepsia, and in the vomiting from pregnancy, with the best of success. The relief has been immediate in every instance. In some of the worst cases of Cardialgia, heretofore resisting all other treatment, *LACTOPEPTINE* invariably gave immediate relief. It has accomplished more, in my hands, than any other remedy of its class I ever met with, and I believe no physician can safely be without it. It takes the place of Pepsin, is more certain in its results, and is received by patients of all ages without complaint, being a most pleasant remedy. I have used *LACTOPEPTINE* in my own case, having been troubled with feelings of weight in the stomach and distress after eating, but always have obtained immediate relief upon taking the elixir in teaspoonful doses. GEO. C. BLAISDELL, M. D.

——oo——

MO. VALLEY, IOWA, November 12th, 1874

Some months since I saw in a medical journal a notice of your *LACTOPEPTINE*. Having in charge a patient in whose case I thought it was indicated, I prescribed it in 5 gr. doses. He used it about a week and was greatly benefited. I failed to procure more just then, so I gave him Pepsin instead, the patient thinking it to be the same prescription. After two days he returned to my office saying that "the last medicine did'nt hit the spot, but that which you gave me last week was just the thing, and has given me more relief than any medicine I have ever taken." I consider this a fair test (so far as it goes) of the merits of this new, and I think, invaluable remedy. G. W. COIT, M. D.

One drachm of Lactopeptine will transform four ounces of Starch into Glucose.

Pancreatine and Diastase are more important digestive agents than Pepsin.

COMMUNICATIONS FROM MEDICAL JOURNALS.

We have for several months been prescribing various preparations of medicine containing *LACTOPEPTINE* as an important aid to digestion. It may be advantageously combined with cod liver oil, calisaya, iron, bismuth, quinine and strychnia. *LACTOPEPTINE* is composed of pepsin, ptyalin, pancreatine, lactic acid and hydrochloric acid—pepsin, lactic and hydrochloric acids being in the gastric juice, ptyalin in the saliva, and pancreatine emulsionizing fatty substances. The theory of its action being rational, we have prescribed the various preparations referred to above with more evidence of benefit than we ever observed from pepsin.—*St. Louis Medical and Surgical Journal*, September, 1874.

—oo—

AN ARTICLE ON LACTOPEPTINE, BY LAURENCE ALEXANDER, M. D., OF YORKVILLE, S. C., IN THE *ATLANTA MEDICAL AND SURGICAL JOURNAL*, NOVEMBER, 1874.

Some time ago a small box, labelled "Physicians' Samples *LACTOPEPTINE*" was placed in my hands, with the request that I would give it a trial upon some one suffering from dyspepsia. Having, like other physicians, a large *per centum* of just such cases always on hand, in which various medicines and remedies had been used without success, I gladly consented, hoping that something had really been found at last to supply the want felt by every practitioner in the treatment of this troublesome complaint. After several months' experience in the use of this preparation, in which it has been thoroughly tested upon a large number of patients with such gratifying results, I am induced to recommend it to the consideration of the profession, feeling confident that, with due care in their diagnosis, and the many little cautions always necessary, such as restricting the excessive use of fluids while eating, etc., and a little patience on the part of the sufferer, its good effects will be seen beyond a doubt.

While I employ it extensively in many deranged conditions of the bowels incident to infancy and childhood, I find it equally efficacious in constipation and all diseases arising from imperfect nutrition in the adult. In sickness of pregnancy it answers well, far exceeding, in my hands, oxalate of cerium, extract lupulin, or the drop doses of carbolic acid, so highly extolled by some practitioners. In its combination with iron, quinine and strychnia, we have the advantage of using, in cases of great nervous depression and debility peculiar to the dyspeptic, our most valuable agent in a truly elegant form.

TO TEST THE DIGESTIVE POWER OF LACTOPEPTINE IN COMPARISON WITH ANY PREPARATION OF PEPSIN IN THE MARKET.

To five fluid ounces of water add one drachm of Lactopeptine, half drachm of Hydrochloric Acid, 10 ounces Coagulated Albumen, allowing it to remain from two to six hours at a temperature of 105 deg., agitating it occasionally.

Lactopeptine is prepared in the form of Powder, Sugar Coated Pills Elixir, Syrup, Wine and Troaches.

LACTOPEPTINE is also combined with the following preparations:

EMULSION OF COD LIVER OIL WITH LACTOPEPTINE.

This combination will be found superior to all other forms of Cod Liver Oil in affections of the Lungs and other wasting diseases. Used in Coughs, Colds, Consumption, Rickets, Constipation, Skin Diseases and Loss of Appetite.

The Oil in this preparation being partly digested before taken, will usually agree with the most debilitated stomach. Although we manufacture seven other preparations of Cod Liver Oil, we would recommend the above as being superior to either of them. It is very pleasant to administer, compared with the plain Oil, and will be readily taken by children

—oo—

EMULSION OF COD LIVER OIL WITH LACTOPEPTINE AND LIME.

Each ounce of the Emulsion contains 16 grs. Lactopeptine and 16 grs. Phosphate Lime.

—oo—

ELIXIR LACTOPEPTINE.

The above preparation is admirably adapted in those cases where Physicians desire to prescribe Lactopeptine in its most elegant form.

REED & CARNRICK manufacture a full line of Fluid Extracts.

BEEF, IRON AND WINE WITH LACTOPEPTINE.

In those debilitated dyspeptic cases when an Iron Tonic, combined with the strengthening properties of Extract of Beef and Wine are indicated, this preparation will be found most efficacious.

——oo——

ELIXIR PHOSPHATE OF IRON, QUININE AND STRYCHNIA WITH LACTOPEPTINE.

There can be no combination more suitable than the above in cases of Nervous and General Debility, attended with Dyspepsia.

——oo——

ELIXIR LACTOPEPTINE, STRYCHNIA AND BISMUTH.

A valuable combination in cases of Dyspepsia attended with Nervous Debility.

——oo——

ELIXIR GENTIAN AND CHLORIDE OF IRON WITH LACTOPEPTINE.

An elegant and reliable remedy in cases of Dyspepsia attended with General Debility.

——oo——

SYRUP LACTOPEPTINE COMP.

Each ounce contains 24 grains Lactopeptine, 8 grains Phosphate of Iron, 8 grains Phosphate Lime, 8 grains Phosphate Soda, and 8 grains Phosphate Potash.

This preparation will be found well suited to cases of General Debility arising from impaired digestion, and also of great value in Pulmonary Affections.

——oo——

FORMULÆ.

The following valuable formulæ have been contributed by J. KING MERRITT, M.D., *who has used them with great success in his practice :*

NO. 1.—FOR INTERMITTENT FEVER WITH CONGESTION OF LIVER.

℞	Liquid Lactopeptine,	dr.	vi.
	Fl. Ex. Cinchona Comp,	dr.	i.
	Fl. Ex. Taraxacum,	—	
	Tinct. Zingiber,	aa dr.	iii.
	Hydrochloric Acid Dilut.,	dr.	i.
	Spts. Lavender Comp.,	dr.	ii.
	Sulphate Quinia,	grs.	xl.

M. *Dose.*—One teaspoonful every two or three hours.
SIG.—Quinine mixture or tonic mixture.

REMARKS.

This mixture should be taken every two hours in the case of a quotidian attack, as soon after the subsidence of the paroxysms as the stomach will accept it, or even during the sweating stage, if the stomach is not especially irritable, and should be continued until the hour of anticipated paroxysms at the same rate, except during the night, from 10 P. M. to 4 A. M., as a general rule. Six to eight doses to be taken during the first interval, and if the attack does not recur, then continue the mixture daily for one week, at a rate diminished by one hour each day.

NO. 2.—FOR INTERMITTENT FEVER WITH IRRITABLE STOMACH.

℞	Liquid Lactopeptine,	dr.	vi.
	Fl. Ex. Cinchona Comp,	dr.	i.
	Tinct. Zingiber,	dr.	iii.
	Spts. Lavender Comp,	dr.	v.
	Aromatic Sulphuric Acid,	dr.	i.
	Essence Menth, Pip. or Gaultheria,	gtts.	x.
	Sulphate Quinia,	grs.	xl.

M. *Dose.*—One teaspoonful with water *ad libitum* every two or three hours, as in Formula No. 1, and in accordance with the type of the attack. Begin at the rate indicated;

that is, if "Tertian," every three hours, and then after first interval, if the paroxysm does not recur, continue mixture at a diminished rate each succeeding day, as indicated in remarks appended to Formula No. 1, to wit: by increasing the period of time between each dose of medicine an hour every day until a week has passed, when the frequency of a dose will be reduced to three times a day, at which rate it should be continued until complete restoration of appetite and strength.

NO. 3.—FOR MALARIAL DYSPEPSIA.

℞

Liquid Lactopeptine,		dr. fl. vi.
Fl. Ex. Cinchona Com.,		—
Tinc. Nux. Vomica,	aa	dr. xi.
Spts. Lavender Comp.,		oz. ss.
Hydrocyanic Acid Dilut,		dr. ss.
Syr. Aromatic Rhubarb,		oz. ss.
Sulphate Quinine,		dr. ss.

M. *Dose.*—One tablespoonful with water *ad libitum* at meals (before or after), and *at bed time if required;* also, use in addition after the meals full doses of Pulv. Lactopeptine with Spts. Lavender Comp. and Lime Water, *in case the patient should suffer from positive signs of indigestion, although the dose of Formula No. 3 has already been taken at the meal time,* either immediately before or after eating, in accordance with the rule or foregoing instruction.

NO. 4.—FOR CHRONIC DIARRHŒA.

℞

Liquid Lactopeptine,	dr. vi.
Liq. Opii. Comp. (Squibbs'),	dr. iii.
Nitric Acid Dilute; or, Aqua Regia Dilut.,	dr. i.
Syr. Aromatic Rhubarb,	dr. ii.
Pulv. Nit. Bismuth,	dr. ss.
Aqua Camph.,	oz. ss.

M. *Dose.*—One tablespoonful with water after each flux from bowels, and as a rule, at bed time, even if the diarrhœa is apparently checked at that hour, and *this rule,* should be *persisted in* for two or three days, or until the diarrhœal tendency has been entirely subdued.

——oo——

PEPSIN—PANCREATINE—DIASTASE.

In addition to *LACTOPEPTINE* we manufacture PEPSIN, PANCREATINE and DIASTASE. They are put up separately in one ounce and pound bottles.

They will be found equal in strength with any other manufacture in the world.

They are all presented in a saccharated form, and are therefore very palatable to administer.

COMP. CATHARTIC ELIXIR.

The only pleasant and reliable Cathartic in liquid form that can be prescribed.

Each fl. oz. contains:

Sulph. Magnesia,	1 dr.
Senna,	2 "
Scammony,	6 grs.
Liquoriee,	1 dr.
Ginger,	3 grs.
Coriander,	5 "

With flavoring ingredients.

Dose,—Child five years old, one or two teaspoonfuls; adult, one or two tablespoonfuls.

This preparation is being used extensively throughout the country. It was originated with the design of furnishing a liquid Cathartic remedy that could be prescribed in a palatable form. It will be taken by children with a relish.

MAINE INSANE HOSPITAL, AUGUSTA, Feb. 25th, 1875.

I am happy to say that we are much pleased with the Compound Cathartic Elixir. It has, so far, proved the best Liquid Cathartic we have ever used in our Institution. It acts effectively and kindly, without irritation or pain. H. M. HARLOW, M. D.

Private Formulas of Pills or other preparations made to order.

Strychnia Compound Pill.

Strychnia, - - -	1-100 grain.
Phosphorus, - - -	1-100 "
Ex. Cannabis Indica,	1-16 "
Ginseng, - - - -	1 "
Carb. Iron, -	1 "

Dose—One to two.

A reliable and efficient Pill in Anaphrodisia, Paralysis, Neuralgia, Loss of Memory, Phthisis, and all affections of the Brain resulting from loss of Nerve Power. Price, 80 cents per hundred.

Sent by mail, prepaid, on receipt of price.

Hæma, Quinia and Iron Pill.

Ext. Blood, - - - -	2 grains.
Quinine Sulph., - -	1 grain.
Sesqui Oxide Iron, - -	1 "

Dose—One to three.

Price, $2.00 per hundred.

Sent by mail, prepaid, on receipt of price.

—oo—

HÆMA PILLS.

We beg to present to the Medical Profession for their special consideration our several preparations of Blood Pills. The use of Blood medicinally, and the importance of its administration in a large class of diseases, has arrested the attention of many of the leading Physicians of Europe, and has received their warmest attestation. Prominent among these may be mentioned Prof. Panum, of the University of Copenhagen, who is using it with great success in the hospital of that city.

At the abattoir in this city, Boston, and in every part of the country, there can be seen numerous persons afflicted with Pulmonary Affections, Chlorosis, Paralysis, Anemia, and other ailments, who are daily drinking the blood of the ox, and many with more benefit than they have derived from any other source.

The blood used by us being *Arterialized Male Bovine only*, is secured as it flows from the animal in a vacuum pan, and the watery portion (85 per cent.), eliminated at a temperature not exceeding 100° F., the remaining mass, containing every constituent of the blood, being the base of our preparations.

HÆMA (Ext. Blood), 4 grs.

Dose.—Two to four.

90 cts. per hundred.

HÆMA COMP.

Ext. Blood, 2 grs.
Lacto-Phosphate Lime, 1 gr.
Pepsin, 2 gr.

Dose.—One to three.

$1.50 per hundred.

HÆMA, QUINIA, IRON AND STRYCHNIA.

Ext. Blood, 2 grs.
Quinine Sulph., 1 gr.
Sesqui Oxide Iron, 1 gr.
Strychnine, 1-75 gr.

Dose.—One to three.

$2.00 per hundred.

Samples sent to Physicians, postage prepaid, on receipt of price.

—oo—

LACTOPEPTINE and most of our leading preparations can be obtained from the principal Druggists of the United States.

—oo—

SUGAR COATED PILLS, TROCHES AND POWDERS CAN BE SECURELY SENT BY MAIL.

—oo—

Price of LACTOPEPTINE by Mail.

One ounce sent by mail, prepaid, on receipt of . . .	$1 00
One pound " " " " " . . .	13 00

A fraction of an ounce or pound sent by mail on receipt of corresponding price.

—oo—

We guarantee all goods of our manufacture.

In ordering, please designate R. & C.'s manufacture.

Send for PRICE LIST, DOSE BOOKS and DISCOUNTS.

Oct. 15th, 1875. Respectfully,

REED & CARNRICK, Manufacturing Pharmacists,

198 FULTON STREET, NEW YORK.

NEW ORLEANS

Medical and Surgical Journal.

(The oldest Medical Journal in the Southwest.)

SAM'L. M. BEMISS, M.D., Editor,

Professsor of the Theory and Practice of Medicine and Clinical Medicine, Medical Department of the University of Louisiana.

Volume IV of the new series began July, 1876. Each volume contains about one thousand pages, mostly original; exhibiting, it is believed, the best exposition of Southern Medicine offered to the profession.

The JOURNAL is issued bi-monthly, on the first of July, September, November, January, March and May. Price of subscription, $5.00 per annum, in advance, postage prepaid.

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We number among our contributors some of the most eminent physicians of the day. The principal papers read before the New Orleans Medical and Surgical Association, and the reports of the Board of Health, appear in every issue.

Original Communications are solicited from every quarter; but they must be in hand at least two months preceding the issue in which they are expected to appear. Friends generally are requested to forward items of medical news, reports of specially interesting cases, etc., and to assist in sustaining the JOURNAL by their influence and favors.

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SAM'L. M. BEMISS, M.D.,
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SEYMOUR & STEVENS,
96 *and* 98 *Common Street,*
NEW ORLEANS, LA.

P. O. Drawer 293.

TO THE MEDICAL PROFESSION.

A NEW AND IMPORTANT REMEDY.

LACTOPEPTINE.

LACTOPEPTINE contains all the agents of digestion that act upon food, from mastication to its conversion into chyle, and is therefore the most important remedy for Dyspepsia that has ever been produced.

The digestive power of LACTOPEPTINE is seven times greater than any preparation of Pepsin in the market, as it has the important advantage of dissolving all aliment used by mankind, while Pepsin acts only upon plastic food.

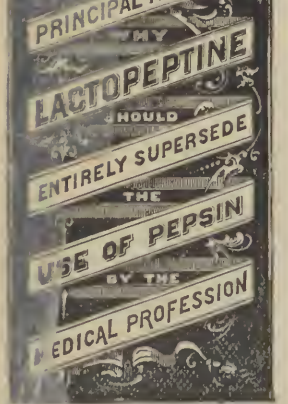
This preparation has been in the hands of the Medical Profession for two years, during which its therapeutic value has been most thoroughly established in cases of Dyspepsia, Intestinal diseases of Children, Chronic Diarrhœa, Constipation, Vomiting in Pregnancy or Dyspepsia, Headache, and all diseases arising from Imperfect nutrition.

One of the most important applications of LACTOPEPTINE *is in those cases where the digestive organs are unable, from debility, to properly prepare for assimilation the remedies indicated. In such cases combine it with the remedy indicated.*

LACTOPEPTINE, *as well as all other preparations of our manufacture, is prepared strictly for the use of the Medical Profession, and is kept invariably in their hands.*

FORMULA OF LACTOPEPTINE.

Sugar of Milk,	20 *Ounces.*	*Veg. Ptyalin or Diastase,*	1 *Drachm.*
Pepsin,	4 "	*Lactic Acid,*	2½ *fl. Drachms.*
Pancreatine,	3 "	*Hydrochloric Acid,*	2½ *fl.* "
Powder and Mix.			



1st.—It will digest from three to four times more *coagulated albumen* than any preparation of Pepsin in the market.

2d.—It will emulsionize and prepare for assimilation the oily and fatty portions of food, Pepsin having no action upon this important alimentary article.

3d.—It will change the *starchy* portions of vegetable food into the assimilable form of Glucose.

4th.—It contains the natural acids secreted by the stomach (*Lactic and Hydrochloric*), without which Pepsin and Pancreatine will not change the character of coagulated albumen.

5th.—Experiments will readily show that the digestive power of the ingredients of Lactopeptine, when two or more are combined, is much greater than when separated. Thus, 4 grs. of Pepsin and 4 grs. of Pancreatine mixed, will dissolve one-third more albumen than the combined digestive power of each agent separately in same length of time.

6th.—IT IS MUCH LESS EXPENSIVE TO PRESCRIBE. It dissolves nearly four times as much coagulated albumen as Pepsin, besides digesting all other food taken by the human stomach. *An ounce of Lactopeptine is, therefore fully equal in digestive power to seven ounces of Pepsin, yet it is furnished at about the same price.*

All the statements made in this Circular are the result of repeated and careful experiments.

The palatability and digestive power of LACTOPEPTINE has been more than doubled during the past two months, by producing several of its component parts free from all extraneous matter, and we now believe it is not susceptible of any further improvement.

Physicians who have not given LACTOPEPTINE a trial in their practice, are respectfully requested to read the following opinions of some of our leading Practitioners as to its merits as an important remedial agent.

IN ADDITION TO THE FOLLOWING RECOMMENDATIONS, WE HAVE RECEIVED OVER SEVEN HUNDRED COMMENDATORY LETTERS FROM PHYSICIANS, A LARGE NUMBER OF WHICH ENUMERATE CASES WHERE PEPSIN ALONE HAD FAILED TO BENEFIT, BUT FINALLY HAD BEEN TREATED SUCCESSFULLY WITH LACTOPEPTINE.

——oo——

The undersigned, having tested REED & CARNRICK'S preparation of Pepsin, Pancreatine, Diastase, Lactic Acid and Hydrochloric Acid, made according to published formulæ, and called *Lactopeptine*, find that in those diseases of the stomach where the above remedies are indicated, it has proven itself a desirable, useful and well adapted addition to the usual pharmaceutical preparations, and therefore recommend it to the profession.

NEW YORK, *April 6th*, 1875.

J. R. LEAMING, M. D.,
Attending Physician at St. Luke's Hospital.

ALFRED L. LOOMIS, M. D.,
Professor of Pathology and Practice of Medicine, University of the City of New York.

JOSEPH KAMMERER, M. D.,
Clinical Professor of Diseases of Women and Children, University of the City of New York.

LEWIS A. SAYRE, M. D.,
Professor of Orthopœdic Surgery and Clinical Surgery, Bellevue Hospital Medical College.

EDWARD G. JANEWAY, M. D.
Professor Pathological and Practical Anatomy, and Lecturer on Materia Medica and Therapeutics and Clinical Medicine.

SAMUEL R. PERCY, M. D.,
Professor Materia Medica, New York Medical College.

J. H. TYNDALL, M. D.,
Physician at St. Francis' Hospital.

JOSEPH E. WINTERS, M. D.,
House Physician Bellevue Hospital

GEO. F. BATES, M. D.,
House Surgeon Bellevue Hospital.

——oo——

INEBRIATE ASYLUM, NEW YORK, March 25th, 1875.

I have carefully watched the effects of *LACTOPEPTINE*, as exhibited in this institution, for about six months, especially in the treatment of Gastritis, and it gives me pleasure to be able to say that I have found the best results from it, supplying as it does an abnormal void of nature in the secretions of the stomach. N. KEELER MORTON., M. D.

——oo——

BRANDON, VT., March 31st, 1875.

I desire to say that I have used *LACTOPEPTINE* for a year, not only on my friends, but also in my own case, and have found it one of the most valuable aids to digestion that I have ever used.

A. T. WOODWARD, M. D.,
Late Professor of Obstetrics and Diseases of Women and Children Vermont Med. College.

——oo——

EXTRACT FROM A REPORT UPON THE USES OF LACTOPEPTINE,
BY J. KING MERRITT, M. D., FLUSHING, L. I.

About six months since I saw a notice of *LACTOPEPTINE* and its analysis in a Medical Journal, and having long ago recognized the inability of Pepsin to reach those cases in which the several processes of digestion are all more or less involved, I immediately commenced the use of *LACETOPEPTINE* in my own case. This was, in brief, an inherited, fostered, persistent condition of General Dyspepsia, which I had treated for several years with Pepsin, finding in its use good service, although the general results were discouraging.

A large proportion of diseases are the result of imperfect digestion.

In all cases when the stomach is unable to digest and appropriate the remedies indicated, they should be combined with Lactopeptine.

The effect of *LACTOPEPTINE* on my powers of digestion has far surpassed my expectations, and its remedial qualities in numerous cases, more or less complicated, have been all that I could desire. In these cases *LACTOPEPTINE* was associated with other remedies indicated, for the purpose of facilitating their assimilation, which is so often nullified by a disordered and debilitated condition of the digestive organs.*

I will now give, in brief, an epitome of a case recovering under the use of *LACTOPEPTINE*. She was a married lady, who five years ago became afflicted with diarrhœa, which had baffled every mode of intelligent treatment. She had an intestinal flux, body much emaciated, and her entire health was greatly impaired. I treated her with *LACTOPEPTINE*, in conjunction with other remedies, many of which had been formerly used without avail. She is now rapidly recovering.

I shall only add that the more my experience, in its varied applicability, extends, the more its beneficial effects appear.

——oo——

NEWTON, IOWA, May 10th, 1875.

I have been using *LACTOPEPTINE* for several months, and after a careful trial in stomach and bowel troubles, find that it has no equal. In all cases of indigestion and lack of assimilation, it is a most splendid remedy. H. E. HUNTER, M. D.

——oo——

WEST NEWFIELD, ME., June 14th, 1875.

LACTOPEPTINE seems to be all that it is recommended to be. It excels all remedies that I have tried in aiding a debilitated stomach to perform its functions.

STEPHEN ADAMS, M. D.

——oo——

WOLCOTT, WAYNE CO., N. Y., June 29th, 1875.

From the experience I have had with *LACTOPEPTINE*, I am of the opinion that you have produced a remedy which is capable of fulfilling an important indication in a greater variety of diseases than any medicine I have met with in a practice of over 45 years. JAMES M. WILSON, M. D.

——oo——

BROWNVILLE, N. Y., August 3d, 1875.

Some time since I received a small package of *LACTOPEPTINE*, which I have used in a case of long standing Dyspepsia. The subject is a man 40 years of age; has had this ailment over 10 years. I never had so bad a case before, and I have been practicing medicine 21 years. Your *LACTOPEPTINE* seems just the remedy he needs. He is improving finely, and can now eat nearly any kind of food without distress. I have several cases I shall take hold of as soon as I can obtain the medicine.

W. W. GOODWIN, M. D.

——oo——

EDDYVILLE, WAPELLO CO., IOWA, May 5th, 1875.

I have used the *LACTOPEPTINE* in my practice for the last eighteen months, and find it to be one of our great remedies in all diseases of the stomach and bowels. I was called last fall to see a child three years old, that was almost in the last struggles of death with Cholera Infantum. I ordered it teaspoonful doses of Syrup of Lactopeptine, and in a few days the child was well. I could not practice without it.

F. C. CORNELL, M. D.

——oo——

CORTLAND, DE KALB CO., ILL., August 12th, 1875.

I received recently a small package of *LACTOPEPTINE* with the request that I should try it in a severe case of Dyspepsia. I selected a case of a lady who has been a sufferer over 30 years. She reported relief after the first dose, and now, after using the balance of the package in doses of three grains, three times daily, says she has received more benefit from it than from any other remedy she had ever tried.

G. W. LEWIS, M. D.

* We desire particularly to call the attention of the Profession to the great value of LACTOPEPTINE when used in conjunction with other remedies, especially in those cases in which the digestive organs are unable, from debility, to properly prepare for assimilation the remedies indicated.

One drachm of Lactopeptine will digest ten ounces of Coagulated Albumen, while the same quantity of any standard preparation of Pepsin in the market will dissolve but three ounces.

One drachm of Lactopeptine dissolved in four fluid drachms of water will emulsionize sixteen ounces of Cod Liver Oil.

CHILLICOTHE, MO., September 4th, 1874.

I have used *LACTOPEPTINE* this summer with good effect in all cases of weak and imperfect digestion, especially in children during the period of dentition, cholera infantum, &c. I regard it, decidedly, as being the best combination containing Pepsin that I have ever used. J. A. MUNK, M. D.

——oo——

FORT DODGE, IOWA, November 15th, 1874.

I have fairly tried, during the past summer and fall, your *LACTOPEPTINE*, and consider it a most useful addition to the list of practical remedies. I have found it especially valuable in the *gastro-intestinal* diseases of children. W. L. NICHOLSON, M. D.

——oo——

WHITE HALL, VA. January 4th, 1875.

A short time since I sent for some of your *LACTOPEPTINE*, which I used in the case of a lady who had been suffering with dyspepsia for over twelve months, and who had taken Pepsin, and other remedies usually prescribed in that disease, with very little benefit. I ordered the *LACTOPEPTINE*, and was pleased to find a decided improvement after a few days, which has steadily increased. At the present time she appears to have entirely recovered. Very truly, E. B. SMOKE, M. D.

——oo——

INDIANOLA, IOWA, December 11th, 1874,

I consider the *LACTOPEPTINE* a heaven-sent remedy for all digestive troubles. I gave it to a lady troubled with exhaustive nausea and vomiting from pregnancy, with immediate and perfect relief, after all other remedies had failed. She was almost in *articulo mortis*. The third day after taking the *LACTOPEPTINE* she was able to be up. I was called in council the other day to a case of Intussusception; the patient was vomting stercoracious matter; had retained no nutrition for several days. I gave the *LACTOPEPTINE* with immediate relief. Ingestion was retained I relieved the bowels by inflation, got an operation, and the patient will recover. I consider the *LACTOPEPTINE* was his *sheet anchor*. I am now using the *LACTOPEPTINE* in Cancer of the Stomach—the only medicine that gives the patient any relief. It seems to act as an anodyne in his case more so than morphine. C. W. DAVIS, M. D.

——oo——

CONTOCOOK, N. H., November 25th, 1874.

After a thorough trial, I believe *LACTOPEPTINE* to be one of the most important of the new remedies that have been brought to the attention of physicians during the last ten years. I have used it in several cases of vomiting of food from dyspepsia, and in the vomiting from pregnancy, with the best of success. The relief has been immediate in every instance. In some of the worst cases of Cardialgia, heretofore resisting all other treatment, *LACTOPEPTINE* invariably gave immediate relief. It has accomplished more, in my hands, than any other remedy of its class I ever met with, and I believe no physician can safely be without it. It takes the place of Pepsin, is more certain in its results, and is received by patients of all ages without complaint, being a most pleasant remedy. I have used *LACTOPEPTINE* in my own case, having been troubled with feelings of weight in the stomach and distress after eating, but always have obtained immediate relief upon taking the elixir in teaspoonful doses. GEO. C. BLAISDELL, M. D.

——oo——

MO. VALLEY, IOWA, November 12th, 1874

Some months since I saw in a medical journal a notice of your *LACTOPEPTINE*. Having in charge a patient in whose case I thought it was indicated, I prescribed it in 5 gr. doses. He used it about a week and was greatly benefited. I failed to procure more just then, so I gave him Pepsin instead, the patient thinking it to be the same prescription. After two days he returned to my office saying that "the last medicine did'nt hit the spot, but that which you gave me last week was just the thing, and has given me more relief than any medicine I have ever taken." I consider this a fair test (so far as it goes) of the merits of this new, and I think, invaluable remedy. G. W. COIT, M. D.

One drachm of Lactopeptine will transform four ounces of Starch into Glucose.

Pancreatine and Diastase are more important digestive agents than Pepsin.

COMMUNICATIONS FROM MEDICAL JOURNALS.

We have for several months been prescribing various preparations of medicine containing *LACTOPEPTINE* as an important aid to digestion. It may be advantageously combined with cod liver oil, calisaya, iron, bismuth, quinine and strychnia. *LACTOPEPTINE* is composed of pepsin, ptyalin, pancreatine, lactic acid and hydrochloric acid—pepsin, lactic and hydrochloric acids being in the gastric juice, ptyalin in the saliva, and pancreatine emulsionizing fatty substances. The theory of its action being rational, we have prescribed the various preparations referred to above with more evidence of benefit than we ever observed from pepsin.—*St. Louis Medical and Surgical Journal*, September, 1874.

—oo—

AN ARTICLE ON LACTOPEPTINE, BY LAURENCE ALEXANDER, M. D., OF YORKVILLE, S. C., IN THE *ATLANTA MEDICAL AND SURGICAL JOURNAL*, NOVEMBER, 1874.

Some time ago a small box, labelled "Physicians' Samples *LACTOPEPTINE*" was placed in my hands, with the request that I would give it a trial upon some one suffering from dyspepsia. Having, like other physicians, a large *per centum* of just such cases always on hand, in which various medicines and remedies had been used without success, I gladly consented, hoping that something had really been found at last to supply the want felt by every practitioner in the treatment of this troublesome complaint. After several months' experience in the use of this preparation, in which it has been thoroughly tested upon a large number of patients with such gratifying results, I am induced to recommend it to the consideration of the profession, feeling confident that, with due care in their diagnosis, and the many little cautions always necessary, such as restricting the excessive use of fluids while eating, etc., and a little patience on the part of the sufferer, its good effects will be seen beyond a doubt.

While I employ it extensively in many deranged conditions of the bowels incident to infancy and childhood, I find it equally efficacious in constipation and all diseases arising from imperfect nutrition in the adult. In sickness of pregnancy it answers well, far exceeding, in my hands, oxalate of cerium, extract lupulin, or the drop doses of carbolic acid, so highly extolled by some practitioners. In its combination with iron, quinine and strychnia, we have the advantage of using, in cases of great nervous depression and debility peculiar to the dyspeptic, our most valuable agent in a truly elegant form.

TO TEST THE DIGESTIVE POWER OF LACTOPEPTINE IN COMPARISON WITH ANY PREPARATION OF PEPSIN IN THE MARKET.

To five fluid ounces of water add one drachm of Lactopeptine, half drachm of Hydrochloric Acid, 10 ounces Coagulated Albumen, allowing it to remain from two to six hours at a temperature of 105 deg., agitating it occasionally.

Lactopeptine is prepared in the form of Powder, Sugar Coated Pills Elixir, Syrup, Wine and Troaches.

LACTOPEPTINE is also combined with the following preparations:

EMULSION OF COD LIVER OIL WITH LACTOPEPTINE.

This combination will be found superior to all other forms of Cod Liver Oil in affections of the Lungs and other wasting diseases. Used in Coughs, Colds, Consumption, Rickets, Constipation, Skin Diseases and Loss of Appetite.

The Oil in this preparation being partly digested before taken, will usually agree with the most debilitated stomach. Although we manufacture seven other preparations of Cod Liver Oil, we would recommend the above as being superior to either of them. It is very pleasant to administer, compared with the plain Oil, and will be readily taken by children

—oo—

EMULSION OF COD LIVER OIL WITH LACTOPEPTINE AND LIME.

Each ounce of the Emulsion contains 16 grs. Lactopeptine and 16 grs. Phosphate Lime.

—oo—

ELIXIR LACTOPEPTINE.

The above preparation is admirably adapted in those cases where Physicians desire to prescribe Lactopeptine in its most elegant form.

REED & CARNRICK manufacture a full line of Fluid Extracts.

BEEF, IRON AND WINE WITH LACTOPEPTINE.

In those debilitated dyspeptic cases when an Iron Tonic, combined with the strengthening properties of Extract of Beef and Wine are indicated, this preparation will be found most efficacious.

—oo—

ELIXIR PHOSPHATE OF IRON, QUININE AND STRYCHNIA WITH LACTOPEPTINE.

There can be no combination more suitable than the above in cases of Nervous and General Debility, attended with Dyspepsia.

—oo—

ELIXIR LACTOPEPTINE, STRYCHNIA AND BISMUTH.

A valuable combination in cases of Dyspepsia attended with Nervous Debility.

—oo—

ELIXIR GENTIAN AND CHLORIDE OF IRON WITH LACTOPEPTINE.

An elegant and reliable remedy in cases of Dyspepsia attended with General Debility.

—oo—

SYRUP LACTOPEPTINE COMP.

Each ounce contains 24 grains Lactopeptine, 8 grains Phosphate of Iron, 8 grains Phosphate Lime, 8 grains Phosphate Soda, and 8 grains Phosphate Potash.

This preparation will be found well suited to cases of General Debility arising from impaired digestion, and also of great value in Pulmonary Affections.

—oo—

FORMULÆ.

The following valuable formulæ have been contributed by J. KING MERRITT, M.D., *who has used them with great success in his practice:*

NO. 1.—FOR INTERMITTENT FEVER WITH CONGESTION OF LIVER.

℞			
	Liquid Lactopeptine,	dr.	vi.
	Fl. Ex. Cinchona Comp,	dr.	i.
	Fl. Ex. Taraxacum,	—	
	Tinct. Zingiber,	aa dr.	iii.
	Hydrochloric Acid Dilut.,	dr.	i.
	Spts. Lavender Comp.,	dr.	ii.
	Sulphate Quinia,	grs.	xl.

M. *Dose.*—One teaspoonful every two or three hours.
SIG.—Quinine mixture or tonic mixture.

REMARKS.

This mixture should be taken every two hours in the case of a quotidian attack, as soon after the subsidence of the paroxysms as the stomach will accept it, or even during the sweating stage, if the stomach is not especially irritable, and should be continued until the hour of anticipated paroxysms at the same rate, except during the night, from 10 P. M. to 4 A. M., as a general rule. Six to eight doses to be taken during the first interval, and if the attack does not recur, then continue the mixture daily for one week, at a rate diminished by one hour each day.

NO. 2.—FOR INTERMITTENT FEVER WITH IRRITABLE STOMACH.

℞			
	Liquid Lactopeptine,	dr.	vi.
	Fl. Ex. Cinchona Comp,	dr.	i.
	Tinct. Zingiber,	dr.	iii.
	Spts. Lavender Comp,	dr.	v.
	Aromatic Sulphuric Acid,	dr.	i.
	Essence Menth, Pip. or Gaultheria,	gtts.	x.
	Sulphate Quinia,	grs.	xl.

M. *Dose.*—One teaspoonful with water *ad libitum* every two or three hours, as in Formula No. 1, and in accordance with the type of the attack. Begin at the rate indicated;

that is, if "Tertian," every three hours, and then after first interval, if the paroxysm does not recur, continue mixture at a diminished rate each succeeding day, as indicated in remarks appended to Formula No. 1, to wit: by increasing the period of time between each dose of medicine an hour every day until a week has passed, when the frequency of a dose will be reduced to three times a day, at which rate it should be continued until complete restoration of appetite and strength.

NO. 3.—FOR MALARIAL DYSPEPSIA.

℞

Liquid Lactopeptine,		dr. fl. vi.
Fl. Ex. Cinchona Com.,		—
Tinc. Nux. Vomica,	aa	dr. xi.
Spts. Lavender Comp.,		oz. ss.
Hydrocyanic Acid Dilut,		dr. ss.
Syr. Aromatic Rhubarb,		oz. ss.
Sulphate Quinine,		dr. ss.

M. *Dose.*—One tablespoonful with water *ad libitum* at meals (before or after), and *at bed time if required;* also, use in addition after the meals full doses of Pulv. Lactopeptine with Spts. Lavender Comp. and Lime Water, *in case the patient should suffer from positive signs of indigestion, although the dose of Formula No. 3 has already been taken at the meal time,* either immediately before or after eating, in accordance with the rule or foregoing instruction.

NO. 4.—FOR CHRONIC DIARRHŒA.

℞

Liquid Lactopeptine,		dr. vi.
Liq. Opii. Comp. (Squibbs'),		dr. iii.
Nitric Acid Dilute; or, Aqua Regia Dilut.,		dr. i.
Syr. Aromatic Rhubarb,		dr. ii.
Pulv. Nit. Bismuth,		dr. ss.
Aqua Camph.,		oz. ss.

M. *Dose.*—One tablespoonful with water after each flux from bowels, and as a rule, at bed time, even if the diarrhœa is apparently checked at that hour, and *this rule,* should be *persisted in* for two or three days, or until the diarrhœal tendency has been entirely subdued.

——oo——

PEPSIN—PANCREATINE—DIASTASE.

In addition to *LACTOPEPTINE* we manufacture PEPSIN, PANCREATINE and DIASTASE. They are put up separately in one ounce and pound bottles.

They will be found equal in strength with any other manufacture in the world.

They are all presented in a saccharated form, and are therefore very palatable to administer.

COMP. CATHARTIC ELIXIR.

The only pleasant and reliable Cathartic in liquid form that can be prescribed.

Each fl. oz. contains:

Sulph. Magnesia,	1 dr.
Senna,	2 "
Scammony,	6 grs.
Liquorice,	1 dr.
Ginger,	3 grs.
Coriander,	5 "

With flavoring ingredients.

Dose,—Child five years old, one or two teaspoonfuls; adult, one or two tablespoonfuls.

This preparation is being used extensively throughout the country. It was originated with the design of furnishing a liquid Cathartic remedy that could be prescribed in a palatable form. It will be taken by children with a relish.

MAINE INSANE HOSPITAL, AUGUSTA, Feb. 25th, 1875.

I am happy to say that we are much pleased with the Compound Cathartic Elixir. It has, so far, proved the best Liquid Cathartic we have ever used in our Institution. It acts effectively and kindly, without irritation or pain. H. M. HARLOW, M. D.

Private Formulas of Pills or other preparations made to order.

Strychnia Compound Pill.

Strychnia, - - -	1-100 grain.
Phosphorus, - - -	1-100 "
Ex. Cannabis Indica,	1-16 "
Ginseng, - - - -	1 "
Carb. Iron, -	1 "

Dose—One to two.

A reliable and efficient Pill in Anaphrodisia, Paralysis, Neuralgia, Loss of Memory, Phthisis, and all affections of the Brain resulting from loss of Nerve Power. Price, 80 cents per hundred.

Sent by mail, prepaid, on receipt of price.

Hæma, Quinia and Iron Pill.

Ext. Blood, - - - -	2 grains.
Quinine Sulph., - -	1 grain.
Sesqui Oxide Iron, - -	1 "

Dose—One to three.

Price, $2.00 per hundred.

Sent by mail, prepaid, on receipt of price.

——oo——

HÆMA PILLS.

We beg to present to the Medical Profession for their special consideration our several preparations of Blood Pills. The use of Blood medicinally, and the importance of its administration in a large class of diseases, has arrested the attention of many of the leading Physicians of Europe, and has received their warmest attestation. Prominent among these may be mentioned Prof. Panum, of the University of Copenhagen, who is using it with great success in the hospital of that city.

At the abattoir in this city, Boston, and in every part of the country, there can be seen numerous persons afflicted with Pulmonary Affections, Chlorosis, Paralysis, Anemia, and other ailments, who are daily drinking the blood of the ox, and many with more benefit than they have derived from any other source.

The blood used by us being *Arterialized Male Bovine only*, is secured as it flows from the animal in a vacuum pan, and the watery portion (85 per cent.), eliminated at a temperature not exceeding 100° F., the remaining mass, containing every constituent of the blood, being the base of our preparations.

HÆMA (Ext. Blood), 4 grs.

Dose.—Two to four.

90 cts. per hundred.

HÆMA COMP.

Ext. Blood, 2 grs.
Lacto-Phosphate Lime, 1 gr.
Pepsin, 2 gr.

Dose.—One to three.

$1.50 per hundred.

HÆMA, QUINIA, IRON AND STRYCHNIA.

Ext. Blood, 2 grs.
Quinine Sulph., 1 gr.
Sesqui Oxide Iron, 1 gr.
Strychnine, 1-75 gr.

Dose.—One to three.

$2.00 per hundred.

Samples sent to Physicians, postage prepaid, on receipt of price.

——oo——

LACTOPEPTINE and most of our leading preparations can be obtained from the principal Druggists of the United States.

——oo——

SUGAR COATED PILLS, TROCHES AND POWDERS CAN BE SECURELY SENT BY MAIL.

——oo——

Price of LACTOPEPTINE by Mail.

One ounce sent by mail, prepaid, on receipt of . . .	$1 00
One pound " " " " " . . .	13 00

A fraction of an ounce or pound sent by mail on receipt of corresponding price.

——oo——

We guarantee all goods of our manufacture.

In ordering, please designate R. & C.'s manufacture.

Send for PRICE LIST, DOSE BOOKS and DISCOUNTS.

Oct. 15th, 1875. Respectfully,

REED & CARNRICK, Manufacturing Pharmacists,

198 FULTON STREET, NEW YORK.

CINCHO-QUININE.

CINCHO-QUININE, which was placed in the hands of physicians in 1869, has been tested in all parts of the country, and the testimony in its favor is decided and unequivocal.

It contains the important constituents of *Peruvian Bark*, Quinia, Quinidia, Cinchonia and Cinchonidia, in their alkaloidal condition, and *no external agents*.

UNIVERSITY OF PENNSYLVANIA, Jan. 22, 1875.

"I have tested CINCHO-QUININE, and have found it to contain *quinine, quinidine, cinchonine,* and *cinchonidine.*"

F. A. GENTH, Prof. of Chemistry and Mineralogy.

LABORATORY OF THE UNIVERSITY OF CHICAGO, February 1, 1875.

"I hereby certify that I have made a chemical examination of the contents of a bottle of CINCHO-QUININE, and by direction I made a qualitative examination for *quinine, quinidine,* and *cinchonine,* and hereby certify that I found these alkaloids in CINCHO-QUININE."

C. GILBERT WHEELER, Professor of Chemistry.

"I have made a careful analysis of the contents of a bottle of your CINCHO-QUININE, and find it to contain *quinine, quinidine, cinchonine,* and *cinchonidine.*"

S. P. SHARPLES, State Assayer of Mass.

In no other form are combined the important alkaloidal principles of Bark, so as to be accessible to medical gentlemen.

In it is found Quinidia, which is believed to be a better anti-periodic than Quinia; and the alkaloids acting in association, unquestionably produce favorable remedial influences which can be obtained from no one alone.

In addition to its superior efficacy as a tonic and anti-periodic, it has the following advantages which greatly increase its value to physicians :—

1st. It exerts the full therapeutic influence of Sulphate of Quinine, in the same doses, without oppressing the stomach, creating nausea, or producing cerebral distress, as the Sulphate of Quinine frequently does, and it produces much less constitutional disturbance.

2d. It has the great advantage of being nearly tasteless. The bitter is very slight, and not unpleasant to the most sensitive, delicate woman or child.

3d. It is *less costly*, the price will fluctuate with the rise and fall of barks, but will always be much less than the Sulphate of Quinine.

4th. It meets indications not met by that Salt.

Middleburg, Pa.,
April 13, 1875.

Gentlemen: I cannot refrain from giving you my testimony regarding CINCHO-QUININE.

In a practice of twenty years, eight of which were in connection with a drug store, I have used Quinine in such cases as are generally recommended by the Profession. In the last four or five years I have used *very* frequently your CINCHO-QUININE in place of Quinine, and have *never* been disappointed in my expectations.

JNO. Y. SHINDEL, M.D.

Gents: It may be of some satisfaction to you to know that I have used the alkaloid for two years, or nearly, in my practice, and I have found it reliable, and *all* I think that you claim for it. For children and those of irritable stomachs, as well as those too easily *quininized* by the Sulphate, the Cincho acts like a charm, and we can hardly see how we did without it so long. I hope the supply will continue.

Yours, with due regard,
J. R. TAYLOR, M.D., Kosse, Texas.

I have used your CINCHO-QUININE exclusively for four years in this malarial region.

It is as active an anti-periodic as the Sulphate, and more agreeable to administer. It gives great satisfaction.

D. H. CHASE, M.D., Louisville, Ky.

I have used the CINCHO-QUININE ever since its introduction, and am so well satisfied with its results that I use it in all cases in which I formerly used the Sulphate; and in intermittents it can be given during the paroxysm of fever with perfect safety, and thus lose no time.

W. E. SCHENCK, M.D., Pekin, Ill.

I am using CINCHO-QUININE, and find it to act as reliably and efficiently as the Sulphate.

In the case of children, I employ it almost exclusively, and deem its action upon them more beneficial than that of the time-honored Sulphate.

W. C. SCHULTZE, M.D.,
Marengo, Iowa.

CINCHO-QUININE in my practice has given the best of results, being in my estimation far superior to Sulphate of Quinine, and has many advantages over the Sulphate. G. INGALLS, M.D.,
Northampton, Mass.

Your CINCHO-QUININE I have used with marked success. I prefer it in every way to the Sulphate.

D. MACKAY, M.D., Dallas, Texas.

We will send a sample package for *trial*, containing fifty grains of CINCHO-QUININE, on receipt of twenty-five cents. or one ounce upon the receipt of one dollar and sixty cents, post paid. Special prices given for orders amounting to one hundred ounces and upwards.

WE MANUFACTURE CHEMICALLY PURE SALTS OF

Arsenic, Ammonium, Antimony, Barium, Bromine, Bismuth, Cerium, Calcium, Copper, Gold, Iodine, Iron, Lead, Manganese, Mercury, Nickel, Phosphorus, Potassium, Silver, Sodium, Tin, Zinc, etc.

☞ *Price List and Descriptive Catalogue furnished upon application.*

BILLINGS, CLAPP & CO., Manufacturing Chemists,

(SUCCESSORS TO JAS. R. NICHOLS & CO.)

BOSTON, MASS.

THE IMPROVED TROMMER'S

EXTRACT OF MALT

This Extract is prepared from the best Canada Barley Malt, by an improved process, which prevents injury to its properties by excess of heat. It is less than half as expensive as the foreign extract; it is also more palatable, convenient of administration, and will not ferment.

Attention is invited to the following analysis of this Extract, as given by S. H. Douglas, Prof of Chemistry, University of Michigan, Ann Arbor.

TROMMER EXTRACT OF MALT CO:—I enclose herewith my analysis of your Extract of Malt:

Malt Sugar (Glucose) 46.1; Dextrine, Hop-bitter, Extractive Matter, 23.6; Albuminous Matter, (Diastase), 2.469; Ash—Phosphates, 1.712, Alkalies, .377; Water, 25.7. Total, 99.958.

In comparing the above analysis with that of the Extract of Malt of the German Pharmacopœa, as given by Hager, that has been so generally received by the profession, I find it to substantially agree with that article,

Yours, truly,
SILAS H. DOUGLAS,
Prof. of Analytical and Applied Chemistry.

This invaluable preparation is highly recommended by the medical profession, as a most effective therapeutic agent, for the restoration of delicate and exhausted constitutions. It is very nutritious, being rich in both muscle and fat producing materials.

By many American physicians, and among others, by such foreign authorities (German, French, and English,) as Niemeyer, Trousseau, and Aitken, the Malt Extract is extolled in the treatment of impaired, difficult, and "irritable" digestion, loss of appetite, sick headache, chronic diarrhœa, cough, bronchitis, asthma, consumption, the debility of females and of the aged—in retarded convalescence from exhausting diseases, and, indeed, most all depressing maladies, in which it has been found very sustaining and strengthening and admirably adapted for building up and invigorating the system. It is often well borne by the stomach, when every kind of food is rejected, thus actually sustaining life.

The presence of a large proportion of *Diastase* renders it most effective in those forms of disease originating in *imperfect digestion of the starchy elements* of food.

A single dose of the Improved Trommer's Extract of Malt, contains a larger quantity of the active properties of Malt, than a pint of the best ale or porter; and not having undergone fermentation, is absolutely free from alcohol and carbonic acid.

The dose for adults is from a dessert to a tablespoonful three times daily. It is best taken after meals, pure, or mixed with a glass of milk, or in water, wine, or any kind of spirituous liquor. Each bottle contains ONE and ONE HALF POUNDS of the Extract. Price $1.00.

In addition to the Extract of Malt with Hops, the attention of Physicians is invited to the following combinations:

Improved Trommer's Extract of Malt—"FERRATED."—Each dose contains four grains of the Pyrophosphate of Iron.—Particularly adapted to cases of anaemia. Price $1.00.

Improved Trommer's Extract of Malt—"with CITRATE OF IRON AND QUINIA."—Appropriate where Iron and Quinine are jointly indicated. Very beneficial in the anæmic state following autumnal fevers, in chlorosis, enlarged spleen, carbuncles, boils, &c. It is a pleasant tonic, the bitter taste being very effectually disguised. Each dose contains four grains of the Citrate of Iron and Quinia. Price $1.50.

Improved Trommer's Extract of Malt—"with HYPOPHOSPHITES." Far superior to any of the "Syrups" of Hypophosphites, and invaluable in anæmia, scrofulous, tubercnlous and other cachectic conditions. In the various affections to which scrofulous children are liable, as marasmus, rachitis, caries of the spine, &c., it is very efficacious. This combination is in certain cases, even more efficient in exhaustion from undue lactation, than the Extract of Malt with hops. Price $1.50.

Improved Trommer's Extract of Malt—"with THE IODIDES OF IRON AND MANGANESE."—The experience of the late Sir J. Y. Simpson and others in the use of this combination of salts, has been fully confirmed by more recent experience. Particnlarly recommended in anæmia dependant upon scrofula, puthisis, cancers, the syphilitic cachexy, enlarged spleen, and in chlorosis where Iron alone has failed. Each dose contains one grain each of the Iodides of Iron and Manganese. Price $1.50.

Improved Trommer's Extract of Malt.—"with ALTERATIVES."—Each dose contains the proper proportions of the Iodide of Calcium and Iron, and of the Chlorides and Bromides of Magnesium, Sodium and Potassium. This combination of the most potent alteratives with tonics and restoratives, has been successfully employed in the different forms of disease dependant npon the "modified scrotulous diathesis" as general perverted glandular action, disease of the bones and cartilages, catarrhal affections of the eye, ear, and naso-pharyngeal mucous surfaces, eczematous and other cutaneous eruptions, in rheumatic arthritis, scrofulous rheumatism, &c. Price $1 50.

PREPARED BY

TROMMER EXTRACT OF MALT COMPANY, — Fremont, Ohio.

For sale by Wholesale Druggists throughout the United States and Canadas.
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Dr. McINTOSH'S
NATURAL
Uterine Supporter.

The attention of the medical profession is invited to this instrument as the most perfect ever invented for treating Prolapsus Uteri, or Falling of the Womb. It is an Abdominal and Uterine Supporter combined.

The Abdominal Support is a broad morocco leather belt with elastic straps, to buckle around the hips with concave front, so shaped as to hold up the abdomen.

The uterine support is a cup and stem made of very highly polished hard rubber, very light and durable, shaped to fit the mouth of the womb, with openings for the secretions to pass out, and which can be bent to any curve desired, by heating in very hot water.

The cup and stem is suspended to the belt by two soft elastic Rubber Tubes, which are fastened to the front of the belt by simple loops, pass down through the stem of the cup and up to the back of the belt. These soft rubber tubes being elastic adapt themselves to all the varying positions of the body and perform the service of the ligaments of the womb.

The instrument is very comfortable to the patient, can be removed or replaced by her at will, can be worn at all times, will not interfere with nature's necessities will not corrode, and is lighter than metal. It will answer for all cases of Anteversion, Retroversion, or any Flexion of the Womb, and is used by the leading Physicians with never-failing success even in the most difficult cases.

Price to Physicians, $8 00; to Patients, $12 00.

Instruments sent by mail at our risk, on receipt of price, with 16 cents added for postage, or by express C. O. D.

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Svapnia consists of the **Morphia**, **Narceia** and **Codeia** of Opium in the combination naturally existing in the drug. It therefore represents the **Anodyne** powers of the drug completely, whereas Morphia is but one of them. Those using Opium habitually will find this preparation preferable to Opium, as it does not produce constipation.

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Turpentine. Pure Oil of Erigoron, Wormseed, Castor Oil, Pure Xylol, Tar, and many other kinds.
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THIRTY-SIXTH ANNUAL SESSION, 1876-77.

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Professor of Diseases of the Genito-Urinary System.

HENRY G. PIFFARD, M.D.,
Professor of Dermatology.

THE PRELIMINARY WINTER SESSION commences September 13th, 1876, and continues till the opening of the regular session. It is conducted on the same plan as the Regular Winter Session.

THE REGULAR WINTER SESSION occupies four and a half months—commencing on September 27th, 1876, and continuing till the middle of February, 1877. The system of Instruction embraces a thorough Didactic and Clinical Course, the lectures being illustrated by two clinics each day. One of these daily clinics will be held either in Bellevue or the Charity Hospital. The location of the College building affords the greatest facilities for Hospital Clinics. It is opposite to the gate of Bellevue Hospital, on Twenty-sixth Street, and in close proximity to the ferry to Charity Hospital on Blackwell's Island, while the Department of Out-door Medical Charity, and the Hospital Post-mortem Rooms, are across the street. The students of the University Medical College will be furnished with admission tickets to these establishments free of charge. The Professors of the practical chairs are connected with one or both of these Hospitals.

Besides the Hospital clinics, there are eight clinics each week in the College building.

The Faculty desire to call attention particularly to the opportunities for dissection. *Subjects are abundant, and are furnished free of charge*, and the Professor of Anatomy spends several hours each day in demonstration in the dissecting room.

THE POST GRADUATE COURSE will begin September 27th, 1876, and continue during the Regular Winter Session.

FEES FOR THE WINTER COURSE.

For course of Lectures	$140 00
Matriculation	5 00
Demonstrator's fee, including material for dissection	10 00
Graduation Fee	30 00

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Students who have attended the Winter Course will be admitted free of charge. Those who have not attended the Winter Course will be required to pay the Matriculation Fee and $30; and should they decide to become pupils for the winter, the $30 thus paid will be deducted from the price of the Winter tickets.

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SESSIONS OF 1876-1877.

THE COLLEGIATE YEAR in this Institution embraces a preliminary Autumnal Term, the Regular Winter Session, and a Spring Session

THE PRELIMINARY AUTUMNAL TERM for 1876-1877 will open on Wednesday, September 13th, 1876, and continue until the opening of the Regular Session. During this term, instruction, consisting of didactic lectures on special subjects and daily clinical lectures, will be given, as heretofore, by the entire Faculty. Students expecting to attend the Regular Session are strongly recommended to attend the Preliminary Term, but attendance during the latter is not required. *During the Preliminary Term, clinical and didactic lectures will be given in precisely the same number and order as in the Regular Session.*

THE REGULAR SESSION will commence on Wednesday, September 27th, 1876, and end about the 1st of March, 1877.

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Professor of Clinical Midwifery and Diseases of Women.

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LEROY MILTON YALE, M.D,
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Lecturer Adjunct upon Clinical Medicine.

A distinctive feature of the method of instruction in this college is the union of clinical and didactic teaching. All the lectures are given within the Hospital grounds. During the Regular Winter Session, in addition to four didactic lectures on every week-day, except Saturday, two or three hours are daily allotted to clinical instruction.

The Spring Session consists chiefly of Recitations from Text-books. This term continues from the first of March to the first of June. During this Session, daily recitations in all the departments are held by a corps of examiners appointed by the regular Faculty. Regular clinics are also given in the Hospital and College building.

FEES FOR THE REGULAR SESSION.

Fees for Tickets to all Lectures during the Preliminary and Regular Term, including Clinical Lectures	$140 00
Matriculation Fee	5 00
Demonstrator's Ticket (including material for dissection)	10 00
Graduation Fee	30 00

FEES FOR THE SPRING SESSION.

Matriculation (Ticket good for the following Winter)	$ 5 00
Recitations, Clinics, and Lectures	35 00
Dissection (Ticket good for the following Winter)	10 00

Students who have attended two full Winter courses of lectures may be examined at the end of their second course upon Materia Medica Physiology, Anatomy and Chemistry and, if successful, they will be examined at the end of their third course upon Practice of Medicine, Surgery and Obstetrics only.

For the Annual Circular and Catalogue, giving regulations for graduation and other information address Prof. AUSTIN FLINT, Jr., Secretary, Bellevue Hospital Medical College.

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This Extract is prepared from the best Canada Barley Malt, by an improved process, which prevents injury to its properties by excess of heat. It is less than half as expensive as the foreign extract; it is also more palatable, convenient of administration, and will not ferment.

Attention is invited to the following analysis of this Extract, as given by S. H. Douglas, Prof. of Chemistry, University of Michigan, Ann Arbor.

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In comparing the above analysis with that of the Extract of Malt of the German Pharmacopœa, as given by Hager, that has been so generally received by the profession, I find it to substantially agree with that article,

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By many American physicians, and among others, by such foreign authorities (German, French, and English,) as Niemeyer, Trousseau, and Aitken, the Malt Extract is extolled in the treatment of impaired, difficult, and "irritable" digestion, loss of appetite, sick headache, chronic diarrhœa, cough, bronchitis, asthma, consumption, the debility of females and of the aged—in retarded convalescence from exhausting diseases, and, indeed, most all depressing maladies, in which it has been found very sustaining and strengthening and admirably adapted for building up and invigorating the system. It is often well borne by the stomach, when every kind of food is rejected, thus actually sustaining life.

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Improved Trommer's Extract of Malt—"with HYPOPHOSPHITES." Far superior to any of the "Syrups" of Hypophosphites, and invaluable in anæmia, scrofulous, tuberculous and other cachectic conditions. In the various affections to which scrofulous children are liable, as marasmus, rachitis, caries of the spine, &c., it is very efficacious. This combination is in certain cases, even more efficient in exhaustion from undue lactation, than the Extract of Malt with hops. Price $1.50.

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CINCHO-QUININE, which was placed in the hands of physicians in 1869, has been tested in all parts of the country, and the testimony in its favor is decided and unequivocal.

It contains the important constituents of *Peruvian Bark*, Quinia, Quinidia, Cinchonia and Cinchonidia, in their alkaloidal condition, and *no external agents*.

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F. A. GENTH, Prof. of Chemistry and Mineralogy.

LABORATORY OF THE UNIVERSITY OF CHICAGO, February 1, 1875.

"I hereby certify that I have made a chemical examination of the contents of a bottle of CINCHO-QUININE, and by direction I made a qualitative examination for *quinine, quinidine,* and *cinchonine,* and hereby certify that I found these alkaloids in CINCHO-QUININE."

C. GILBERT WHEELER, Professor of Chemistry.

"I have made a careful analysis of the contents of a bottle of your CINCHO-QUININE, and find it to contain *quinine, quinidine, cinchonine,* and *cinchonidine*."

S. P. SHARPLES, State Assayer of Mass.

In no other form are combined the important alkaloidal principles of Bark, so as to be accessible to medical gentlemen.

In it is found Quinidia, which is believed to be a better anti-periodic than Quinia; and the alkaloids acting in association, unquestionably produce favorable remedial influences which can be obtained from no one alone.

In addition to its superior efficacy as a tonic and anti-periodic, it has the following advantages which greatly increase its value to physicians :—

1st. It exerts the full therapeutic influence of Sulphate of Quinine, in the same doses, without oppressing the stomach, creating nausea, or producing cerebral distress, as the Sulphate of Quinine frequently does, and it produces much less constitutional disturbance.

2d. It has the great advantage of being nearly tasteless. The bitter is very slight, and not unpleasant to the most sensitive, delicate woman or child.

3d. It is *less costly*, the price will fluctuate with the rise and fall of barks, but will always be much less than the Sulphate of Quinine.

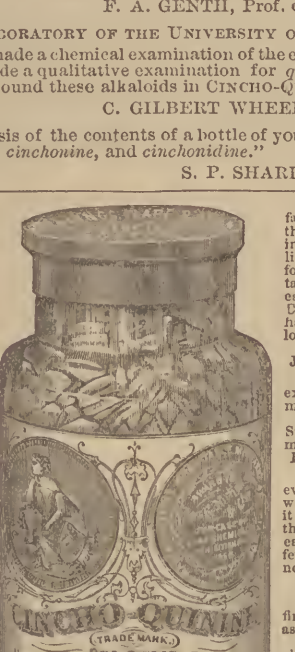
4th. It meets indications not met by that Salt.

Middleburg, Pa.,
April 13, 1875.

Gentlemen: I cannot refrain from giving you my testimony regarding CINCHO-QUININE.

In a practice of twenty years, eight of which were in connection with a drug store, I have used Quinine in such cases as are generally recommended by the Profession. In the last four or five years I have used *very* frequently your CINCHO-QUININE in place of Quinine, and have *never* been disappointed in my expectations.

JNO. Y. SHINDEL, M.D.



Gents: It may be of some satisfaction to you to know that I have used the alkaloid for two years, or nearly, in my practice, and I have found it reliable, and *all* I think that you claim for it. For children and those of irritable stomachs, as well as those too easily *quininized* by the Sulphate, the Cincho acts like a charm, and we can hardly see how we did without it so long. I hope the supply will continue.

Yours, with due regard,
J. R. TAYLOR, M.D., Kosse, Texas.

I have used your CINCHO-QUININE exclusively for four years in this malarial region.

It is as active an anti-periodic as the Sulphate, and more agreeable to administer. It gives great satisfaction.

D. H. CHASE, M.D., Louisville, Ky.

I have used the CINCHO-QUININE ever since its introduction, and am so well satisfied with its results that I use it in all cases in which I formerly used the Sulphate; and in intermittents it can be given during the paroxysm of fever with perfect safety, and thus lose no time.

W. E. SCHENCK, M.D., Pekin, Ill.

I am using CINCHO-QUININE, and find it to act as reliably and efficiently as the Sulphate.

In the case of children, I employ it almost exclusively, and deem its action upon them more beneficial than that of the time-honored Sulphate.

W. C. SCHULTZE, M.D.,
Marengo, Iowa.

CINCHO-QUININE in my practice has given the best of results, being in my estimation far superior to Sulphate of Quinine, and has many advantages over the Sulphate. G. INGALLS, M.D.,
Northampton, Mass.

Your CINCHO-QUININE I have used with marked success. I prefer it in every way to the Sulphate.

D. MACKAY, M.D., Dallas, Texas.

We will send a sample package for *trial*, containing fifty grains of CINCHO-QUININE, on receipt of twenty-five cents, or one ounce upon the receipt of one dollar and sixty cents, post paid. Special prices given for orders amounting to one hundred ounces and upwards.

WE MANUFACTURE CHEMICALLY PURE SALTS OF

Arsenic, Ammonium, Antimony, Barium, Bromine, Bismuth, Cerium, Calcium, Copper, Gold, Iodine, Iron, Lead, Manganese, Mercury, Nickel, Phosphorus, Potassium, Silver, Sodium, Tin, Zinc, etc.

☞ *Price List and Descriptive Catalogue furnished upon application.*

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THIRTY-SIXTH ANNUAL SESSION, 1876-77.

FACULTY OF MEDICINE.

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