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CANADA
MEDICAL & SURGICAL JOURNAL.

ORIGINAL COMMUNICATIONS.

Puerperal Convulsions.—Patient delivered of Twins.—Recovery. By T. G. RODDICK, M.D., House Surgeon, Montreal General Hospital.

(Read before the Medico-Chirurgical Society.)

The following case I have thought it well to bring before your notice, not so much on account of any special peculiarity in itself, as from a hope which I entertain that it may be the means of ventilating the experience of those present on so important a subject of obstetrical practice.

About 9 o'clock on the morning of New Year's Day last, the subject of this paper, an English-woman, thirty-two years of age, two years married, and eight month's pregnant, was seized while at her breakfast-table with a faint turn. Her husband immediately carried her to the bed, but she had scarcely been put there when she was seized with a severe convulsion, characterized by all the well-known symptoms of epilepsy. She had no sooner recovered from one fit than another came on, and these continued in quick succession for some hours. At length a medical gentleman, living in St. Joseph street, was summoned, who considered the case as simply one of epilepsy, and not recognizing the gravid uterus as an exciting cause, ordered the ordinary bromide of potash epileptic mixture. He visited the case frequently during the next twenty-four hours, and witnessed the convulsions. At the end of that time application was made for the admission of the patient

into the Lying-in-Hospitals of the city, failing which she was brought to the Montreal General, about 5 o'clock on the evening of the 2nd of January.

The husband stated that she had about a *hundred* fits since nine o'clock of the morning previous, which does not require the ordinary *granum salis*, as the doctor himself thought the statement no exaggeration. The husband further informed me in regard to the history of the case, that his wife had often told him that when a girl of twelve she was attacked with what was called in her neighborhood in England, the "minute fits," a term new to me, and consequently I cannot say whether it was true epilepsy or some hysterical attack. The fact of her recovering so rapidly, as she had them only for a short time, is opposed to the former supposition. She has always enjoyed good health, but since coming to this country about a year since, owing to their reduced circumstances, she has fretted a great deal, and at times could not obtain the strong and wholesome food she had been accustomed to. As a consequence she had latterly become very thin and pale, but excepting during the first three months of her pregnancy, when she suffered from very great irritability of the stomach, she has never found her child-bearing more than an inconvenience; her husband never heard her complain, or make the slightest reference to it. The morning she took ill she appeared to be as well as usual, and had not been excited or disturbed mentally in any way.

On admission to the Hospital her condition was much as follows:—Countenance drawn and livid; pupils slightly dilated; pulse 140, thready and somewhat intermitting; extremities cold; no marked heat of head: was deeply insensible; swallowed with difficulty. Dr. Chipman, who received her, immediately ordered a tablespoonful of brandy every half hour, and on coming in myself I supplemented this with a grain of opium, and 40 grains of the bromide of potassium, in powders, every four hours. On examining per vaginam I found the os uteri dilated to the size of a quarter

dollar, and dilatable in character. As she had had no convulsion for three or four hours, and was so thoroughly exhausted, I thought it judicious not to interfere at present.

At ten o'clock she had rallied considerably, so that now, although her pulse was still frequent, it had a much better volume, and was regular in rhythm. By this time she had taken about 4 ounces of brandy and two grains of opium. The os had dilated very slightly since the last examination, but I could now make out what I took to be a head presentation. The examination brought on a slight pain, the first yet noticed, and I took advantage of the opportunity to dilate the os by introducing a pair of ordinary long-bladed lithotomy forceps, and opening them slowly, a knuckle of the membrane with contained fluid coming down at the same time and assisting in the process of dilatation. This expedient, which was continued a couple of minutes, proved of immense advantage.

At twelve o'clock Dr. Chipman and I saw her again together. She had no pain during the past two hours, and on examination I found no marked change in connection with the uterus. We catheterized her with the hope that the condition of the urine might throw some light on the case, but got only a very small quantity which, unfortunately, was spilt through an accident to the vessel that contained it. I left orders with the nurse to be called in three hours, or before if any change should occur. I might here mention that the patient had had no genuine convulsion since her admission, nothing more than an occasional twitching of the muscles of the face, or clonic spasms of some of the muscles of one or more extremities.

3rd January, 3 a.m.—The nurse informed me that the patient had been sleeping soundly for the past two hours, and that there was no appearance of any pain or convulsion. With such a report I thought I could remain where I was for a time.

4.30, a.m.—Was aroused hurriedly by the nurse declaring that after three pains which quickly followed each other,

the membrane had burst and the child was presenting. In less than three minutes a dead child, perfectly formed but not fully developed, was delivered. On grasping the abdomen to make pressure on the uterus, I was surprised to find it still as bulky almost as before, and on examination per vaginam elicited the fact that there was a second child, the breech of which I could readily make out as it presented. With another pain, and the assistance I myself gave, this was delivered, also dead. The death of the children must have taken place some considerable time before, as the epidermis was abraded in several places, and the underlying tissues presented a dark gangrenous appearance. They were both males, and as near as I could judge of the same size. After dividing the cords, and at the end of about twenty minutes I went up for the placentæ, one of which I found adherent to the posterior wall of the uterus. Altogether, I should say there was about a cup full of blood lost during the delivery—certainly not more than that quantity.

The patient now, for the first time, showed signs of returning consciousness, as evidenced by greater ease in swallowing, and an inclination to grumble when much disturbed, as in putting on the bandage, &c. Her pulse was now 120, but fuller in volume and steadier than ever before; face more natural in appearance; pupils still dilated but easily influenced by light; temperature of body, and especially of extremities, was natural. A large motion was passed from the bowels during the labour. I gave her a draught containing two drachms of the extract of ergot.

2 p.m.—During the morning and forenoon she has taken a pint of strong beef juice, and nearly a pint of champagne, and the change for the better in her condition is really marvellous. She can now be roused, and answers in monosyllables when loudly spoken to. Her pulse still remains high, 116, but quite full and regular; temperature 99 3-5°; tongue very much swollen and marked by indentations from her teeth; it is also thickly coated with a white fur; complains of a pain, and when left alone falls into a

sound and tranquil sleep. Dr. Howard, who now saw her for the first time in making his visit, ordered the administration of a drachm of the compound powder of jalap, to clear out the intestinal tract. A specimen of her urine was obtained and examined this morning, and a *trace* only of albumen discovered.

10 p.m.—Is now quite conscious; pulse 104; temperature 100 1-5; complains bitterly of the soreness of her tongue when taking food or stimulants; the purgative has acted once; has taken a large quantity of nourishment during the afternoon and evening.

January 4th.—Has had a good night; bowels once moved; pulse 96; temperature 98 4-5; has no complaint to make excepting of her tongue, for which, by the way, she has been ordered a soothing mouth wash.

January 6th.—Patient still on the mend. As there was some fetor about the discharges, Dr. Howard prescribed the employment of an injection containing a drachm to the pint of Condy's fluid twice a day.

January 9th.—To-day the patient is not so well; complains of pain in the left hypochondrium; pulse 120; temperature 101 1-5; inclination to vomit; headache, &c. Dr. Howard ordered six leeches over the part, to be followed by hot fomentations, and the following mixture:—

Liq. Ammon. Acet., 3ij.; Morph. Mur. ¼ gr.; Acid Sulphuros. 3 ji. Tr. Aconit. M. iij. To be given every three hours.

January 10th.—Is much better to-day; pulse and temperature almost normal; slight tenderness only on deep pressure over any part of the abdomen: the same treatment to be continued.

The above mixture was taken for four days, after which five grain doses of the citrate of iron and quinine were substituted twice daily, and solid food allowed. The woman is still in hospital, but with the exception of slight stiffness in the limbs in walking she is perfectly well, and will return to her home in a day or two, or as soon as her

husband can make certain arrangements necessary for her comfort.

The case just related, I take it gentlemen, is interesting from many points of view. It undoubtedly belongs to that class of convulsions termed *asthenic*, and which is probably the less frequent form. The cause also of the convulsions in this patient is an interesting question. They are not likely to have been purely uræmic, from the fact of so little albumen being found in the urine, although the examination of that secretion was not made until some hours after the delivery. Besides there were never any symptoms really referable to the kidneys, nor was there at any time anasarca, the usual development of deranged renal secretion. My opinion is— I have thought that there were at least three of the recognised causes of this morbid condition combined to produce the convulsions, viz: 1st the impoverished state of the woman's blood from bad food, and general unhealthy surroundings. 2nd. The presence of the dead twins. 3rd. The pressure of this more than ordinarily heavy gravid uterus on the renal veins and nerves, causing the accumulation in the blood of poisonous elements. Any one of these causes would of itself be sufficient to produce the effect; but it is very questionable whether they ever occur singly, the entire nervous system and organic functions generally, being so bound up as it were in the well-doing of the uterus during its child-bearing state.

As to the treatment employed I cannot but think that the opium did marked service, both as a sedative and stimulant. The bromide may have also assisted in bringing about at least some of the first-named effect. The uterine injections of the Condy's solution might also be mentioned as constituting an important part of the treatment, correcting as they did so effectually the fetor of the internal discharge. Probably there is no preparation of this kind employed which will so soon and so effectually accomplish the end in view as that used on this occasion.

Vaccination—a few remarks on its efficacy. By George A. Baynes, M.D.

I thought that at this present time, as small-pox is prevalent, a few remarks on the efficacy of vaccination, &c., would not be out of place.

Every one is familiar with the circumstances which led to the discovery of vaccination, which has immortalized Jenner, who, in the pursuit of his investigations, maintained the following points :

1st. That the essential difference between cow-pox and small-pox is the comparative virulence of the two affections, the cow pox being the milder.

2nd. That the person vaccinated with matter from the cow, resists inoculation by variolous matter.

3rd. That the preservative influence of vaccination against small pox is perpetual in the same individual.

Every one coincides with Jenner on his first two points, but some doubt is entertained as to the truth of the third; it has caused much disputation, and there is still some difference of opinion as to the necessity of re-vaccination. Those who are of opinion that Jenner was in error, base their opinion on the fact that persons who have been vaccinated have contracted small pox, and conclude that the vaccine matter loses its efficacy, and therefore re-vaccination is absolutely necessary. However this may be, one fact is beyond dispute, that small-pox is very mild and extremely rare after vaccination.

It seems to me that the necessity for re-vaccination depends on whether the vaccination was "Genuine or Spurious?"

If it is spurious of course it cannot be called vaccinia, it affords no protection, and therefore nothing is proved.

If the vaccination were genuine, it proves that small pox has occurred after vaccination. But to give due weight to this last result it should be looked at in its proportionate light, and then deductions made. Thus what proportion

do attacks of small pox coming on after genuine vaccination bear to those after no vaccination. Surely a minimum and of course a rare exception to the regular rule. And further it is possible for a person to have a second attack of small pox, although these are rare exceptions also. So that if small pox itself is incapable of protecting from a second attack, how absurd to try and prove that vaccination will secure what inoculation, or rather small-pox itself, cannot, viz: "Perpetual Protection." But even if Jenner were right in his third hypothesis, public opinion is in favor of re-vaccination. So the question is whether medical men are justified in pandering to popular prejudice? The answer is simple. Public opinion like Fashion, never mind how absurd it may be, must be attended to, and besides, re-vaccination is not hurtful, and may be necessary where the first may have been spurious, and it also allays fears which otherwise might prove injurious.

MODE OF PERFORMING THE OPERATION:—It is a matter of importance, and requires some care, the young vaccinator would do well to remember the following hints:

In vaccinating female children do so high up on the arm just about the insertion of the deltoid muscle, as you may in after life, if you neglect this, be made to blush when the young girl who has grown to woman's estate, shows you the indelible scar, which is unprotected by the sleeve in evening dress.

If the lymph is fresh it is useless and painful to children to be scarified in more than one place; besides the protection of one genuine vesicle is equal to three or four, and the constitutional disturbance is not so great.

Be very careful that the lancet you use is very clean, and keep the same one for vaccination only, for it is possible to transmit virus from one person to another by the pus, &c. See that the lymph used has no blood or other secretion from the person supplying it.

The best manner to keep vaccine is in hermetically-sealed capillary tubes, which if it be wished may be kept

for years, even in warm climates, where the ordinary scab or lymph, preserved between glass plates, or on ivory points, readily decomposes. Select the lymph before the purulent stage comes on, about the eighth day is the best.

SIGNS OF GENUINE VACCINATION.—This is the point, on which, to my mind, the necessity of re-vaccination depends, and the progress of the maturation of the vesicle should be watched attentively. After the operation nothing is noticeable for two or three days, but at the end of the third, or the beginning of the fourth day, a small red spot appears, followed a few hours after by a circumscribed redness ; on the fifth day the vesicle becomes distended with serum : on the sixth day the vesicle becomes of a circular or oval form, with a whitish umbilicated appearance ; on the seventh day the vesicle becomes more full, and the inflammation extends to the subcutaneous cellular tissue ; on the eighth, and sometimes not until the ninth, the vesicle is at its height of perfection and is surrounded by a scarlet redness ; and then the surrounding glands become affected, and sometimes the febrile symptoms are very severe ; and on the tenth day the redness begins to fade, the inflammatory symptoms subside, the serous exudation becomes purulent, dessication commences, and the scab assumes a mahogany colour, which falls off about the eighteenth or twentieth day after vaccination. Then is formed the cicatrix, which never disappears if genuine. In spurious vaccination, there is no incubation, &c., the third or fourth day a purulent secretion appears, a scab forms and exfoliates on the fifth or sixth day, and may become reproduced again ; and even if it happens that the scab remains on for two or three weeks, and is not followed by the peculiar cicatrix, you may put it down as a spurious case. The next point to consider is :

AT WHAT AGE AN INFANT SHOULD BE VACCINATED.—Medical men are very positive, every one following some peculiar notions of his own, some say at ten months, others at eight, others at six, and so on. But to my mind the question of age should not be considered at all ; for instance, if

an epidemic should break out, or even a sporadic case appear in the neighborhood, there can be no doubt as to what is our duty, even if the infant is but a couple of weeks old. As a general rule, if the health of the child will admit of the operation it is our duty to do so within six weeks at least. As to the best season, try and avoid the two extremes if possible, of heat and cold, vaccinate in spring or fall if the opportunity will allow it.

IS IT PROPER TO VACCINATE DURING THE EXISTENCE OF CUTANEOUS DISEASE. — On this point there is much discrepancy of opinion, some maintain that the vaccine vesicle will modify, and even remove any cutaneous affection that may exist, while others state that an eruptive disorder, no matter of what kind, will prevent the absorption of the vaccine virus, and therefore nullify its protective influence against small pox. I have not seen any facts, however, to sustain this latter view. If we allow ourselves to be led by circumstances it would be better not to wait for the subsidence of the eruptive disease. If small pox is prevalent, vaccinate at once; but if there is no danger to be apprehended, a little delay would be advisable.

ON THE TRANSMISSION OF SEPTIC POISON BY VACCINATION. This is the principal objection, that those who are adverse to vaccination, urge against its adoption. But if you examine the evidence of the "Special Commission," appointed for its investigation, I don't think it possible to bring in a verdict of guilty, but on the contrary there will be found an honorable acquittal. For full particulars of reports, *vide Lancet*, page 143 and 52, vol. II., 1871. It may be well here to quote a few remarks from an able paper on "The Vaccination Question," by Dr. Anstie, which will be found in the third volume of "The Practitioner." He says:—"It is ridiculous to charge septic infec-
"tion, and consequent erysipelas or pyaemia to vaccination
"itself, because it is really the result of culpable negligence
"on the part of the vaccinator, for either he must have

"taken lymph from a child actually suffering from acute "septic disease, or else the lymph used has undergone, by "being kept too long, or kept improperly, more or less "of that putrefactive change which affects all animal "matters placed in such circumstances; or lastly, he has "taken the lymph from a vesicle which had already become "a *pustule*." In regard to Vaccino-Syphilis, not only does he quote from the report of Mr. Simon to the effect that 539 medical men in answer to inquiries denied with scarcely an exception that syphilis can be conveyed as a true result of vaccination, but further the direct experiments of Cullerier and others, on the effect of intentional admixture of syphilitic matter and vaccine, and of the vaccination of large numbers of persons with vaccine matter intentionally taken from persons suffering from constitutional syphilis, added positive evidence of the most powerful kind, against the possibility of transmitting syphilis by an ordinary vaccination from a true Jennerian vesicle. Tanner says: "Evidence such and so weighty as this ought to convince the most incredulous; but there is yet one other fact of crushing weight, viz: that even the poison of small pox, one of the most subtle known to physicians, does not affect the lymph of a true Jennerian vesicle, where a person is suffering from small pox, contracted just before vaccination, and too late therefore to profit by its protective influence."

HOSPITAL REPORTS.

Amputations by Esmarch's Bloodless Method.

Case 1st.—J. B. V., a French Canadian lad, of 10 years, was admitted under Dr. Fenwick on the 16th October, 1873, having sustained a compound comminuted fracture with extensive laceration of the soft parts in and about the left ankle-joint; one wheel of an empty railway car had passed

over the limb and produced the injuries described. As it was thought utterly out of the question to save the foot, a consultation of the Staff was called, and the operation of amputation proceeded with.

As this was the first opportunity afforded here for the employment of the "bloodless plan," since it has been so highly recommended by MacCormac and others, considerable interest was excited when Dr. Fenwick announced his intention of trying it.

The patient being chloroformed, an ordinary cotton bandage was applied as tightly as possible from the extreme points of the toes upwards to the lower third of the thigh, including, of course, all the lacerated parts. A yard or so of strong rubber tubing of about the size of a pipe-stem was then wound firmly several times round the thigh exactly at the point where the bandage ceased, catching, in fact, its extreme upper edge; the tubing was then securely knotted, and the bandage removed.

Amputation was performed below the knee by the double (antero-posterior) flap operation. The bones were sawn and the part removed without a sponge being soiled, so complete had been the process of strangulation. The tibials and three minor arteries were readily secured by ligatures and a smaller branch twisted, after which the band was removed. It was now interesting to see how the tissues, from being blanched to the last degree, suddenly blushed up, and a trifling general oozing ensued. A couple of small twigs only required twisting, and all arterial hemorrhage was at an end. The flaps were brought together, and the stumps dressed in the ordinary way.

He was not a strong boy, and consequently, the healing process was slow; however he was discharged from hospital at the end of the sixth week with only a small but healthy granulating surface unhealed. The stump is now all cicatrized.

Case 2nd.—A few days after the above operation, Dr. Ross removed a toe and its corresponding metatarsal bone,

employing also the bloodless method. The patient was a man over sixty years of age, of very dissipated habits. He had been troubled for many years with a corn, situated over the metatarso-phalangeal articulation, and which at last had extended so deep as to produce caries of a considerable portion of bone both above and below the joint. The bandage and elastic ligature were in this case carried only a short distance above the ankle joint. Not a drop of blood was lost during the operation, and certainly not more than a couple of drachms after the bandage had been removed. Only one arterial ligature was required.

With the exception of a slight attack of erysipelas which interfered for a few days, the healing process went on uninterruptedly, and the recovery was early and complete.

Cases 3rd and *4th.*—These were both accidents to the left hand, caused by being caught between the rollers of machinery. One of the sufferers was a man of thirty years, the other a lad of fourteen—both strong and in the enjoyment of excellent health. The amount of injury was not equal in both cases. The man's hand, being thick and strong, was drawn in to the metacarpo phalangeal joints only, while the boy's was more or less bruised far up the back and palm of the hand. In the former, integument enough was found to cover the metacarpal bones after the removal of all the fingers ; but in the latter it was necessary to remove the entire hand, excepting the thumb, the metacarpal bone of which also had to be excised in order to get sufficiently healthy integument to cover the exposed parts.

The bloodless method was employed in both cases, the ligature being applied about the middle of the arm.

The patients are still in hospital, but progressing most favorably. In the case of the man, a large mass of the integument sloughed, but the exposed surface is now almost covered by cicatricial tissue. The boy's hand is doing well: he has considerable motion in the thumb. Within two weeks the wound will have entirely healed.

Books Received for Review.

The Medical and Surgical History of the War of the Rebellion. Part 1. Vol. 1. *Medical History prepared under the direction of* JOSEPH K. BARNES, *Surgeon-General, United States Army.* By J. J. WOODWARD, Assistant Surgeon, United States Army, with appendix pp. 1091. Imp. Quarto. Washington: Government Printing office, 1870.

War, at all times a calamity, is occasionally inaugurated when least expected, and when nations are least prepared for the emergency. Such appears to have been the case with the American nation, when, in 1861, the South Carolinians opened fire on Fort Sumpter. America had enjoyed a peace of nearly fifty years,—if we except the border difficulties, which were not participated in by the nation at large, nor did they in any way interfere with peaceful mercantile pursuits.

At the time that Sumpter was fired into, the Southerner did not calculate the consequences with his usual astuteness, nor did the Northerner look forward to four long years of bloody strife with his hostile brother of the South. War though it be hatched in hell, is very frequently followed by a blessing from on high. Certainly, in the case of America it has purged that great country, with all its boasted freedom, of the foul stain of slavery; so that although it must be admitted that the American war of rebellion was, while it lasted, an undoubted curse, yet it has been followed by the highest blessing that heaven can bestow on any nation—"Equal rights to all."

At the out break of the war so changed were the circumstances that in due time it was found that the returns for sick and wounded then in use by the United States army were quite inadequate and very defective. William A. Hammond, M.D., the Surgeon General of that period, issued

blank forms containing important changes and modifications, calculated to secure more detailed and exact reports of the sick and wounded, and in June 1862 it was announced by circular from the Surgeon General's office, that it was the intention to prepare for publication a Medical and Surgical History of the war. In 1863 the present able officer, Joseph K. Barnes, M.D., acting as Surgeon General, issued a circular to Medical Directors of armies in the field, whereby they were officially instructed to forward to the Surgeon General at Washington, duplicates of their several reports to their Commanding Generals, of the killed and wounded after every engagement. The Surgeon General requested that special officers should be detailed to collate and prepare all attainable statistics and data in connection with the past and future operations of the armies of the United States which may be rendered available in the accurate compilation of the Medical and Surgical History of the war.

Every facility was afforded for the collection and preservation of important information. Medical officers serving with their regiments in the field were fully supplied with a compact and portable register for sick and wounded. The Hospitals were likewise supplied with distinct registers, one for the sick and one for wounded soldiers, also distinct blank forms for all surgical operations. The Surgeons were instructed to enter in detail and as minutely as possible, the particulars of all Surgical operations with the results; these were to be preserved and a duplicate copy forwarded to the Surgeon General's office at Washington. In February 1864, we notice that separate reports were called for, of sick and wounded prisoners of war, and also of white and coloured troops; this was done with a view of obtaining with tolerable accuracy the sickness and mortality rates of each class.

In June 1864 Medical officers in charge of Hospitals were directed to collect and preserve with diligence and care, all pathological surgical specimens, which might be met with

in the course of their hospital practice. Such for instance as fractures, compound, simple, and of the cranium ; excised portions of bone ; diseased bones and joints ; exfoliations, especially those occurring in stumps; integumental wounds from round and conical balls, showing the points of entrance and exit ; wounds of vessels, nerves, viscera ; obliterated vessels, and where possible, photographs of extraordinary injuries ; plaster casts of stumps or of limbs upon which excisions had been performed, and novel surgical appliances or new plans of dressing. It was explained that all these specimens were required for the Army Medical and Surgical Museum, and to facilitate the work officers contributing specimens were requested to remove roughly all unnecessary parts, each specimen was then to be wrapped in a cloth to which was to be attached a block of wood, on which was to be inscribed with a pencil, the name of the patient, the No. of specimen and the name of the medical officer contributing it. These then were to be immersed in a keg of dilute alcohol, and when a sufficient number had been collected, the keg was to be sent to the Surgeon-General's office in Washington. In every instance where specimens were sent, the history of the case with a corresponding number to that on the block of wood was required to be forwarded.

We have given a slight sketch of the manner in which this work was inaugurated, and carried out, and it speaks well for all concerned. It could not have been accomplished with anything like success without the hearty co-operation and ability of the Medical Staff belonging to the regular and volunteer service. We must not omit to mention that the Secretary of War, the Hon. E. M. Stanton, took the deepest interest in the work, and mainly through his influence an application was made to congress, and an appropriation of money granted, whereby 5000 copies of the first part of the Medical and Surgical History of the War was authorized to be printed at the Government printing office.

Vol. I, of part one, consists of a series of statistical tables, presenting a summary of facts contained in the monthly reports received by the Surgeon General referring to the sickness, deaths and discharges from the service. These tables have been again subdivided into two groups, in the first are considered all facts referring to white troops, and in the second, what concerned coloured troops. as some importance is attached to this subdivision, as shewing the influence of disease on the different races. With regard to classification it is based on that which has been in use in England both for military and civil purposes, and was introduced by Dr William Farr of London. This classification differs, however, from that of Dr. Farr, inasmuch as the fourth class or what is termed 'Developmental diseases," is omitted in consequence of its referring chiefly to children, women, and aged persons. a class of people not likely to be met with in the camp of an army in the field. Again parasitic diseases are assigned to a special class There are some minor differences in the local diseases, and in class V are included wounds, accidents and injuries. It was also recommended that in the preparation of the blank forms, the most generally adopted English designations of disease should be used, and that the use of all Latin terms should be abolished. There is reference made to the method of the establishment of hospitals and of their governance, from this we learn that in due time general hospitals were looked upon and acknowledged to be independent military posts. The surgeon in charge was the commanding officer, subject only to the Medical Director, and to the Commanding General of the Department. This bears a marked contrast to the system pursued in the British army where all surgeons are acknowledged as bearing relative rank, but junior to all combatant officers of their rank.

The Appendix to this part is full of interest; it consists of reports of eye-witnesses of the various engagements from the first disaster at Bull Run, to the close of the war. These are, in many instances graphic descriptions, and the

interest is kept up by well executed maps of the locality, upon which are marked the position of the contending forces. Altogether we regard this volume as of great value, not only to the student of the diseases of camp life; but to all who are desirous of tracing the history of this most eventful period in the annals of the United States of America. The work is worthy of a great nation, and as a national work, it must be admitted that great credit is due not only to those who, at an early period of the struggle conceived the idea, but also to those who in the hurry and excitement of the strife, with all the extra fatigue and labor put upon them, after the actual encounter was over, when hundreds of wounded men had to be attended to, surgical operations to be performed, and ambulance arrangements or hospital necessities to be looked after, yet could find time to record what they saw, and keep a tolerably accurate record of the day's doings. We shall have to leave the consideration of the surgical volume to a future issue of the JOURNAL.

Lectures on Diseases and Injuries of the Ear, delivered at St-George's Hospital. By W. B. DALBY, F.R.C.S.; M B., Cantab; Aural Surgeon to the Hospital. With twenty-one illustrations. 8vo. pp 228. Philadelphia, Lindsay & Blakiston, 1873.

This small work is intended, as stated by the author, to occupy a place midway between such compendious works as those of Mr. Toynbee and Mr. Hinton, which are rightly estimated as the best standard English works upon this subject. These lectures appeared in the "Lancet" in 1872, but during the past year had been revised and added to, before appearing in the present form. There is no doubt, that new books which, without being voluminous, shall give us all the recent pathological teachings and most approved plans of treatment, are from time to time an absolute necessity. More especially it might seem, is this the case, with

reference to such a branch as that of Aural Surgery, which is to such a large extent confided to specialists, and consequently so seldom closely studied by general practitioners Yet however willing most physicians in this country would be to hand over cases of ear diseases to able confreres who make a specialty of these particular affections, still from the lack of such persons every practitioner is obliged to undertake the cure of these cases as well of every other. Mr. Dalby's work is all the more attractive from its being compiled in the form of Lectures which makes it assume much more of the Clinical and less of the Didactic character. These lectures are short, practical, and at the same time comprehensive, and their value is greatly enhanced by containing the actual accounts of numbers of illustrative cases which occurred within the author's extensive field for observation at St. George's Hospital. There are ten lectures on diseases of the ear proper, and one additional lecture of considerable interest on the subject of deaf-mutism, and the best methods of education for these unfortunates. In describing the various appearances presented by the membrana tympani, as seen by the aural speculum, the author would seem to be particularly felicitous, possessing the faculty of making such comparisons and employing such words as tend to impress upon the reader the exact character of the morbid appearance intended to be delineated. All varieties of deafness arising from various organic and functional disorders, of course, are treated of *seriatim*, and the best method of treatment for each variety fully discussed. Besides these, there is also a special lecture of much interest even to the general reader on the subject of the terminations of Tympanic Disease—such as cerebral abscess, meningitis, thrombosis, pyæmia; and there can hardly be any doubt but that the liability of that oft-neglected ailment—chronic purulent catarrh—to terminate in some of these almost necessarily fatal lesions is a matter too frequently lost sight of by the general practitioner—more especially in the case of children. We highly recommend Mr. Dalby's Lectures to our readers.

Periscopic Department.

MEDICINE AND SURGERY.

A Lecture on the Proper Method of Treating Tapeworm. Delivered at the Middlesex Hospital, Wednesday, December 10th, 1873. By T. Spencer Cobbold, M.D., F.R.S, F.L.S, *Lecturer on Parasitic Diseases at the Hospital.*

Gentlemen,—The treatment of that common form of helminthiasis technically called "tapeworm" unfortunately constitutes one of those departments of the healing art, about which people generally suppose that little or nothing need be said. Excellent practitioners will tell you that the administration of turpentine and castor oil, or the giving of half a drachm of the ethereal extract of male fern, suffices to dislodge the parasite; and, should the worm unhappily return—which is usually the case under such a rough-and-ready mode of treatment—all that you have to do is to repeat the remedy until the entozoon is finally destroyed. This kind of advice has the merit of being delightfully simple; but I have no hesitation in saying that in the majority of cases, the practical results following its adoption are eminently unsatisfactory. I am not stating that the particular drugs in question are inefficient; on the contrary, viewed as tæniacides, I believe them to be superior to kousso, areca-nut, and other more or less well-known vermifuges. What I contend for is that, although in a small proportion of cases thus treated you may have the good fortune to be successful, yet, in by far the greater number of instances, the parasite will return, because neither the head nor even the neck of the worm will have been dislodged.

If I read the moral of professional conduct correctly, it

should be our endeavour to effect cures as speedily as possible, thereby preventing the recurrence of the disease. The ordinary mode of prescribing is, to say the least, slovenly, and it fully accounts for the very incomplete results that are obtained If it be urged that I ought to produce evidence of the truth of what has just been stated, I can only point to my own experiences in this connection, and assure you that nine out of every ten cases in which my opinion has been solicited have been cast off or rejected ones, so to speak. I mean that they have been cases where the patients have long previously undergone treatment, experiencing only partial relief.

As observed in one of my former lectures delivered at this hospital, some persons think it fair and honest to record all cases as successful where the body of the parasite is eliminated from the bearer. Thus one practitioner, desirous of extolling the merits of turpentine, had the politeness to inform me that this drug, with its appropriate aperient combination, "never failed to bring away the worm where it had been known to have been present." This statement was based on experiences obtained by the treatment of thirty or forty dispensary cases. The inadequacy, however, of conclusions drawn from such a source must, I think, be obvious, for in no single instance does it appear that the head of the parasite was obtained, or even that it was so much as sought for by the medical attendant. On grounds, therefore, of this order, I maintain that it is unfair to speak of such cases as cures, and it is, further, an entire mistake to characterise the results thus obtained as successful.

Undoubtedly, now and then, cures have been effected without finding, or without any endeavour on the part of the practitioner to find, the head of the parasite ; but I hold that no medical man is entitled to pronounce his patient as absolutely cured, unless he has dislodged and produced the head from the matters discharged, after and in consequence of the advice and remedies offered and administered. It

may be, indeed, that the head, though expelled escapes observation, however diligently sought for; and it is quite certain that much practical experience is often necessary to enable the searcher to find the small isolated and detached head in the midst of dark-coloured fæcal matters. Repeatedly I have obtained it after hours of search.

Again, in proof of the statement which I have advanced, respecting the comparative infrequency of cure by the ordinary methods, I may mention that not a few of the numerous cast-off cases to which I have adverted have been those of patients who had undergone more or less severe drugging at intervals extending over a period of several years; moreover, as bearing on the question of diagnosis, it is also my duty to observe that patients have come to me for advice about their tapeworm disorders under far graver circumstances. I mean, that they have been subjected to the trying discipline of taking nauseous and drastic vermifuges for the expulsion of tapeworm and other parasites which, to my certain knowledge, never had any existence, excepting either in their own imaginations or in those of their medical advisers. This is a painful statement to have to make, but it is nevertheless strictly true. One of the most remarkable cases of this description is already recorded in my published *Lectures on Practical Helminthology*, case xxiv, p 44. Others of a similar kind are given in the volume referred to, where it will be seen that the majority of such purely imaginary cases of tapeworm occur either in overworked men or in hysterical women. Certainly they are amongst the most painful cases that we have to deal with; but, taken in connection with the phenomena of true parasitism, they have served to convince me that special knowledge on this subject is not without its practical value.

To return to the particular point previously urged, I have further to remark that, with more care in the exhibition of the ordinary remedies backed by a more thorough appreciation of the general economy and modes of development

of the human tapeworms, a much larger professional success will be obtained. Lengthened experience justifies me in making this statement. I can say, indeed, that, during the year now closing, it has been my good fortune to obtain unusual success in the treatment of tapeworm. Some of these helminthiases were regarded by the patients not merely as obstinate, but incurable cases. However, to cut the matter short, let me say that, in all instances, without exception, where I have this year had an opportunity of actually examining the fæces and other matters passed by stool, as a consequence of remedies prescribed by myself, I have succeeded in procuring the head of the worm. In every instance, therefore, I have been enabled to assure my private patients that they were permanently and absolutely cured. This success, unique, perhaps, of its kind, of course only holds good in the case of those persons who have properly placed themselves under my personal care. In the more numerous instances where my opinion has merely been sought, I cannot tell what result may have followed the advice given.

Here it is only just that I should likewise remark that, in all the cases above referred to, I have had to deal with the very prevalent beef-tapeworm. Had it been otherwise, a similar degree of success could not possibly have followed. It seems to me that the pork-tapeworm (*Tænia solium*) becomes rarer and rarer, whilst that derived from beef (*T. mediocanellata*) is extremely common. I am, indeed informed by a practitioner of great experience that, of late years, the tapeworm disorder has very sensibly increased in Somersetshire, and it would not surprise me to learn that such was the case in other counties. Be that as it may, I can now only find time further to observe that, in the diagnosis and treatment of tapeworm, there are many other practical points which I should have been glad to have brought under your notice. For these, however, it must suffice me to refer you to the work already quoted.

By way of bringing the subject to an appropriate

conclusion, I will mention one interesting case which came under my care last July. It was that of a gentleman who had carried the cestode entozoon about with him for a period of sixteen years. Previously to my seeing him, he had been repeatedly dosed with male fern, as much as one drachm and a half of the extract being taken by him at a single dose. The body of the tapeworm had several times come away; nevertheless, the patient was not cured. Like some other patients I have seen this year, he not unnaturally despaired of my ever finding the head. It appeared to him absurd that I should obtain better results than others; and the more so, since I proposed to employ the same drug that others had used. However, an admirable preparation of the extract, prepared by Corbyn & Co., had the desired effect. Recommending my patient to observe certain preliminary rules, I succeeded with much smaller doses of the drug than he had been accustomed to take. To be brief, the head of the worm was at once obtained; and thus, host and guest, after sixteen years of intimacy, were for ever separated, to the astonishment of the former and to the final discomfiture of the latter. During the residence of this truly obstinate parasite, I reckon that my patient must have been the means of distributing something like five hundred millions of tapeworm germs; and yet, possibly, scarce a score of these germs have since arrived at sexual maturity. Be that as it may, I judge that in the course of a few more years the parasite itself would have died a natural death. It was an ill-nourished specimen, and evidently feeble. How long a tapeworm, if left to itself, may be capable of living I do not know; but I lately saw a patient who assured me that he had played the part of tape-worm-bearer for a period of no less than twenty years.—*British Medical Journal.*

Current views on treating Stricture. By BERKELEY HILL, M.B., F.R.C.S, *Surgeon to University College Hospital.*

In the BRITISH MEDICAL JOURNAL for December 20th, 1873, views are held up to obloquy by Mr. Savory which he terms "current," but which I venture, nevertheless, to believe to be "old fashioned," if not obsolete. Mr. Savory attacks the employment of instruments for treating urethral obstruction of all kinds, which he alleges to be still customary.

Mr. Savory's conduct calls to mind that of Don Quixote when charging the sacks of flour in the mill, with this difference—the gallant knight-errant found his imaginary foes already erect before him, while Mr. Savory has had to raise up from the dead the objects of his wrath. For it is to be hoped that the treatment of all urethral obstructions, spasmodic, congestive, and organic alike, by instruments as routine practice has been discarded by properly trained surgeons. To impress his readers with the terrible evil of bougie treatment, Mr. Savory informs us that a distinguished surgeon once said, "Had bougies never been invented, it would on the whole, have been a great gain to humanity." Why not go further, and quote the anecdote of the two eminent physicians, both now dead, who were crossing the canal-bridge at Camden Town, on their way to a consultation at Hampstead, when one asked the other whether it would not be, on the whole, a benefit to humanity if all doctors were then and there thrown into the canal? His companion was, indeed, for the moment, of opinion that the sacrifice of the Faculty by drowning would really be advantageous to mankind. But arguments valid against an abuse of a remedy lose much of their force when that abuse has been subdued by more exact knowledge to a legitimate use.

At the end of his paper, Mr. Savory alleges that the sum of his argument is, after all, not to suggest that instruments are never to be employed, but to affirm that

they have been and still are grossly abused, and that in a word, instruments of any kind should never be employed in any way except as a last resource. With much of this everyone must agree ; but the statement, that instruments should never be employed except as a last resource, needs some qualification. In many cases, it is impossible to ascertain what is the matter without using instruments and any treatment under such circumstances might be "routine," but certainly would be useless. Were the comparatively modest position at the end of the paper the only one taken up by the writer, it would not call for special remark ; but there is more. There is confusion, under the term "stricture," of conditions that are now currently held to be not strictures at all, and are expressly distinguished from organic obstructions by all leading authorities in this department of surgery.

Mr. Savory says, "Any advanced student or young surgeon, if asked what he understands by the term stricture, would reply, a constriction of a portion of the canal due to thickening and deposit in its walls." And the student would be right ; it is Mr. Savory who makes the error of calling spasm and inflammatory swelling strictures. These misleading names, given at a time when the distinctions in nature and requirements of treatment were ill understood, are yet employed by some, it is true, but without thereby intending to imply that these temporary obstructions are similar in nature to organic obstruction ; and the surgeon who still looks upon spasmodic contraction, inflammatory swelling, and organic stricture as simple physical conditions to be treated only by physical means, had better take the advanced student, whose acquaintance with the subject is, nevertheless, second hand. for his teacher without delay. Certainly, more exact knowledge of the differences between these obstructions is current in standard treatises on urinary diseases, and the mischief that may be caused by using instruments in spasm and inflammatory swelling is carefully pointed out. So far from instrumentation being directed

as routine treatment, to the neglect of other means, even in organic stricture, such writers as Civiale and Thompson, to mention no more, warn their readers against hastily using bougies, which those masters strongly insist are evils even when most needed. And, whatever old-fashioned or obsolete books may direct, in no standard treatise of the present day is the use of instruments given as the sole or most important means of treating anything but organic obstructions.

Next, the reproach is made against instruments, that they do not afford a cure; that, though the passage may be widened to the normal extent for a time, it ultimately shrinks back to its dangerous constriction, and no permanent cure is effected. This is true, doubtless. There is no cure for stricture, if, by cure, we mean putting the urethra into such a condition that no further attention is necessary. A system of treatment that procures such a result has yet to be found. But, if by cure be meant restoration of the canal, so that it can be easily maintained at its full calibre throughout, the use of instruments does cure stricture, and it has yet to be proved that any other plan will do the same for organic obstructions. Apparently, one of Mr. Savory's objects in writing was to lead the profession to suppose that organic obstructions can be dissipated by his plan of treatment—that rest in bed for an indefinite time, with warmth and other adjuvants, can cause the absorption, either wholly or in part, of organic obstructions. Undoubtedly—and this is also current knowledge—the remedies on which Mr. Savory relies are efficient to remove the spasm and inflammatory swelling that often aggravate the inconvenience or suffering of an organic obstruction sufficiently to induce the possessor to seek surgical aid; but, when this is done, is any further progress made towards widening the canal? To ascertain this, the canal must be gauged by the hated bougie after spasm has subsided, and again when a week or a fortnight, or any time thought requisite, has been passed by the patient in his bed, and the mea-

surements compared. If Mr. Savory has done this, and finds the organic thickening gone, he has made a discovery of the highest value; but this is not told us in his paper. Otherwise, which patient will take leave of his surgeon with the most satisfied mind—he who has learnt to pass with ease along his urethra a bougie as large as the natural size of his canal, and has simply to do this, from time to time, to maintain the full potency thereof, or he who, having spent a fortnight in bed, finds he can pass his urine comfortably now his passage is somewhat widened by the subsidence of spasm or inflammatory swelling, but has still a tough and narrow part that will be tightly closed the next time spasm sets in, or a cold is caught? The one man knows that, if temporary irritation attack his urethra, there is still room for the passage of his urine while the attack lasts; the other knows he must be constantly on his guard against accident, and live by rule, that his narrowed urethra may suffice for his daily needs.

It is useful to lift up the voice against the rash employment of instruments in urinary diseases; there are always, too, inducements to employ the bougie or sound: but this may be done without depreciating the current teaching and knowledge of these diseases, and casting mischievous prejudice on a valuable remedy.—*British Medical Journal.*

Clinical Lecture on a Case of Ascites from Obstruction in the Portal Vein, delivered in University College Hospital, By Sir W. Jenner, Bart., M.D., K.C.B., F.R.S., *Physician in ordinary to the Queen and the Prince of Wales; Professor of Clinical Medicine in University College; Physician to University College Hospital.*

To-day, gentlemen, I propose to speak of the case of Robert A——, a man who was in the hospital recently, and whose abdomen burst. You may remember that it gave way at the umbilicus with a loud report and a quantity of fluid came out. He had ascites, and also a considerable

amount of gas in his peritoneum. You know quite well, when an abdomen is resonant on percussion, and you find the resonance—*i.e.*, the air within the abdomen—move as you move the patient, that, as a rule, the gas is not in the peritoneum, but in the intestines. In this case, however, the gas was in the peritoneal cavity itself. That is why there was a report when the abdominal wall gave way. The man had had an artificial opening made in his belly—as I shall tell you afterwards—for the purpose of letting out the fluid. It had healed but imperfectly, and, when the gas rapidly accumulated, the weak spot ruptured.

The real causes of the man's troubles were an impediment to the flow of blood through the portal vein, and an impediment to the escape of bile from the hepatic duct. To these two lesions all the others which I shall describe to you were secondary.

Whatever permanently impedes the flow of blood through the portal vein, must have, as its necessary results, one or more of the mechanical consequences of congestion of the part the blood from which is poured into the portal vein. The blood cannot easily escape from the portal vein; and, of course, all the tributaries of the portal vein are swollen. The consequence is, that when there is impediment to the passage of blood through the portal vein, there is enlargement of the organs, the blood from which passes into the portal vein—as the spleen and the pancreas. The same impediment to the onward flow of the blood may also cause rupture of vessels. The over-distended capillaries burst, and extravasations of blood and hæmorrhages occur. Common seats of hæmorrhage from this cause are the stomach and the rectum—bleeding piles, hæmatemesis. This man, whose trouble I told you was the impediment to the flow of blood through the portal vein, had repeated attacks of hæmatemesis. Then patients suffering from obstruction to the flow of blood through the portal vein have effusions of serosity from the congested vessels. There is effusion of serum into the cavity of the peritoneum—ascites. This

man had ascites. Again, they have "watery fluxes," as they are termed—watery flow from the congested mucous membrane. The mucous membrane of the bowels often suffers from this when it is mechanically congested. The patients have watery diarrhœa. Then thickening of all the congested textures takes place. The coats of the stomach become thickened; the peritoneum becomes thickened; the coats of the intestines become thickened. Again, inflammation, acute or chronic, is very apt to supervene in the congested part. It does not occur constantly, but frequently; so that when there is impediment to the flow of blood through the portal vein, it is common to have catarrhal inflammation of the stomach, catarrhal inflammation of the bowels, peritonitis. These are common consequences. Again, ulceration of the congested surface may take place, ulceration of the mucous membrane of the bowels, of the stomach, of the rectum, of all the congested parts. This man had ulceration of the bowels and of the adhesions that had formed in his peritoneum. Then induration of all the textures occurs. Adhesions form between parts that should be free, especially in the peritoneum. Adhesion takes place between the coils of intestine, between the omentum and the intestines, between the intestines, perhaps, and the parietal peritoneum (as we saw in a case the other day), between the liver and the diaphragm, the spleen and the diaphragm, the stomach and the adjacent parts.

As the rule, when there is a *sudden* impediment to the flow through the portal vein, a hæmorrhage occurs. When the impediment is more slowly developed serous effusions occur. When hæmatemesis takes place, it generally relieves greatly and at once the congested organs. You find a man's spleen big to-day; he has hæmatemesis, and to-morrow his spleen is greatly diminished in size; its over-distended vessels are emptied, its thickened tissues only remain. You know the close vascular relations between the spleen and the vasa brevia of the stomach.

When I said that some one or more of these results necessarily follow the occurrence of obstruction, I said what was not quite true. I said it intentionally, however; because I wish to fix it in your minds. It is not really *necessary;* but it occurs in the vast majority of cases; in such a large majority that I would fix it in your minds as *the* consequence. It is not the necessary consequence, because a collateral circulation sufficient to relieve the congested vessels may be established. You will remember that there are anastomoses between the inferior mesenteric veins and the hypogastric veins through the inferior hæmorrhoidal, and so the blood may come back by the hypogastric vein. Again, the twigs of the portal vein and the veins of the serous covering of the liver open into the diaphragmatic and œsophageal veins, and these little communications may become considerably dilated. Again, adhesions may form between the liver and the diaphragm; new vessels be developed in those adhesions, and these new vessels may be sufficient to considerably relieve the congested portal vein. They open into the diaphragmatic and œsophageal veins. Again, the remains of the umbilical vein which runs in the ligamentum teres sometimes remain patent. When the portal vein is stopped the remains of the umbilical vein becomes dilated, and this little channel grows into a big vein, communicates with the mammary veins, and so returns the blood on the surface, and you see the greatly dilated veins there carrying up the blood. You will remember, therefore, when you meet with a case in which you believe that there is disease of the liver causing mechanical impediment to the flow through the portal vein, but in which you do not get the ordinary consequences, what I have spoken of as the necessary consequences, those which you would get in the vast majority of cases—remember, I say, that you may be right in your diagnosis, although you have not the ascites, the diarrhœa, the hæmorrhoids, or the big spleen, because some of the veins of which I have spoken may be performing the extra duty of carrying off the blood

from the parts which would otherwise be greatly congested.

Whatever impedes the flow of bile through the hepatic duct or through the ductus communis choledochus must impede the escape of bile from the liver; and whatever prevents the escape of bile from the liver will have jaundice following it, and all the consequences of jaundice.

We find that persons who are the subjects of the impediment to the circulation I have described not only suffer from the mechanical consequences of the impediment, such as the ascites and the hæmatemesis, which are common, and the ulceration of the bowels, which is rare, but they also suffer from defective general nutrition? This man was greatly emaciated. What is the cause of this general malnutrition? First, there is the damage mechanically inflicted on the mucous membrane of the stomach and bowels, and the consequent interference with the digestive process. There is diminished absorption from that cause. Then the mechanically over-distended radicles of the portal vein will be very unlikely to take up anything further. Again, there is the damage to the spleen and pancreas from their long-continued congestion, and the consequent interference with their functions. Again, there is damage to all the organs of the body from the damaged state of the blood consequent on these lesions and on the retained bile. These causes seem amply sufficient to account for the emaciation of the patient. Further, as I told you before, when the abdomen is greatly distended there is sufficient pressure upon the vena cava to interfere with the return of blood from the kidney; there is congestion of the kidney, and then, if the patient survives long enough, a form of Bright's disease and all its consequences.

Impediment to the passage of blood through the portal vein, and of bile through its ducts, is common enough—amongst the commonest diseases; because disease of the liver which has these results is common. But impediment to the flow of blood through the portal vein, and to the

escape of bile from the hepatic duct from some condition external to the liver, is rare. It does occur, however. For example, malignant growths or hydatid cysts may press upon the portal vein and the ductus communis choledochus outside of the liver. Dr. Stokes has detailed a case of aneurism of the hepatic artery, where it runs, together with the portal vein, in the border of the hepatico-duodenal fold, just above the opening of the foramen of Winslow, and which interfered with the flow of blood through the portal vein.

In the case I am about to narrate to you the impediment was the result of inflammation, induration, and contraction of the cellular tissue of the ligamentum hepatico-duodenale and the cellular tissue in the hilus of the liver—i. e., of the cellular tissue in which the portal vein, and the hepatic, cystic, and common bile-ducts lie. It was the trunk of the portal vein and the trunks of the bile-ducts which were injured and narrowed.

The patient was a man forty years of age, admitted into the hospital on the 9th of February, 1869. As the patient was confused in mind, and could only be made to answer questions with difficulty, the following history was obtained from his sister.

"At about the age of eighteen he enlisted as a soldier and went to India. He remained in India for twelve years, and returned to England about ten years since. While in India he was frequently in the hospital, as his sister had been told, on account of disease of the liver and spleen. He was a man of intemperate habits, indulging from time to time in 'drinking bouts.'" This is the common cause of cirrhosis of the liver. It is not the only cause, but it is *the* cause, the special cause, to which exceptions are infinitely rare. You will find it mentioned in books, that when making a diagnosis of a case of impediment to the flow through the portal vein, when considering whether it be from cirrhosis, which has that as its great symptom, or whether it be due to some impediment external to the liver,

if the patient be a drunkard it is probable that the case is one of cirrhosis. This man was a drunkard, and there was impediment to the flow of blood through the portal vein, but he was not suffering from cirrhosis.

"About six years before admission into the hospital, after one of these debauches of drinking, he vomited a large quantity of blood." So that at that time he had probably—pretty certainly, indeed—impediment to the flow of blood through his portal vein, mechanically induced congestion of his stomach, and as a consequence rupture of the capillaries and hæmatemesis. "The hæmatemesis was repeated on four separate occasions, the last being about twelve months before his admission." No doubt he was relieved by the hæmatemesis. The congestion of the radicles of his portal vein would be relieved by the escape of blood. The loss of blood was not enough to kill him, but merely enough to relieve considerably the congestion of his spleen and of all the radicles of the portal vein.

"After the last attack of hæmatemesis, twelve months ago, the swelling of the abdomen, which had been transient before, became permanent." The transient swellings of his abdomen were probably due to flatulence. The patient had congestion of his stomach and of his bowels, thickening of all the abdominal tissues, interference with digestion, and accumulation of flatus. After the last attack of hæmatemesis the mechanically over-distended vessels relieved themselves by letting out serosity into the cavity of the peritoneum, and permanent swelling, dropsy, ascites was produced. This increased so much that "six months before his admission he was tapped just below the umbilicus, and five and a half gallons of fluid removed." The opening into the abdomen was made a great deal too near the umbilicus. A little ulceration resulted on the inner side of the opening, and obliteration of the umbilical depression ensued. It was a spot where the abdominal walls were weak, and so, when the fluid reaccumulated, the abdominal wall was distended at this spot: a very thin layer of skin

covered the fluid beneath, and the skin itself ultimately gave way. He was tapped where he ought not to have been; he should have been tapped lower down, some inches below the umbilicus, a little nearer to the umbilicus than to the symphysis pubis.

"The fluid soon reaccumulated," as it was likely to do. There was a mechanical impediment to the flow of blood through the portal vein; the effusion of serum was the mechanical result; and removing the fluid did not remove the impediment. "Five weeks after the tapping he was nearly as large as he was before the operation; subsequently the distention diminished a little. Five weeks before he came under observation he had a 'fit of drinking' (as his sister called it), which lasted two days. Three days before admission he was seized, 'after tea,' with severe pain in the lower part of the right side of the abdomen. The pain was less after taking some pills; but, as he continued very ill, he was brought to the hospital."

The severe pain in the lower part of his abdomen was, no doubt, the result of perforation of his intestines, which we shall see he had. You will remember that perforation of the intestine is usually announced by sudden severe pain—not always, for now and then pain is absent. All persons of much experience have met with cases where, curiously enough, perforation occurs, I do not know why, without any pain at all. The patient is not aware of having suffered any lesion. The rule, however, is that there is intense sudden pain, with symptoms of collapse, followed by those of peritonitis. The pills given were probably some opiates to relieve the pain.

On the man's admission into the hospital we noted that he was very thin, that his general nutrition was seriously interfered with. His skin was a dirty, slightly greenish-yellow colour. The greenish tint is the tint of long-continued mechanical impediment to the escape of bile from the liver. Hence it is a common tint in cancer of the liver. A person has a gall-stone, and a sudden attack of jaundice;

the colour is a deep yellow, with no greenish tint in it. But if he has a chronic jaundice, long-continued, his skin has the greenish colour. The veins on the man's hands &c., were small; evidently there was no impediment to the return of blood from the systemic venous system. They were pinkish, from anæmia. The pinkish colour of the vein is evidence of a deficiency in the red corpuscles, probably the result in this man of the interference with the nutrition in general, and perhaps also of the interference with the function of the spleen in particular.

"His abdomen was considerably distended with fluid. The umbilicus also was much distended. No scar could be seen between the umbilicus and the pubes." The fact was that perforation had been made at the umbilicus. "During the night, at the lower part of the distended umbilicus, the skin gave way with a loud noise." It would not have been a report had there been no air there. "A large quantity, supposed to be about five pints, of stinking fluid escaped. A drainage-tube was introduced, and a weak solution of carbolic acid injected. The next day (Feb. 10th) fluid continued to escape from the opening. It was very offensive, and gas escaped with the fluid." We had a full explanation of this afterwards, for we found an opening in his bowel; but remember that all collections of fluid in the vicinity of the bowel are apt to become a little offensive. "The abdomen was very tender. Pulse 108, very weak. Urine dark-coloured, containing one-eighth albumen. The man gradually sank, and died on the 11th at 6 P.M."

There was nothing to be done for him; his mind was gone; his pulse excessively feeble; there was evidence of some injury to his bowel, of a long-continued impediment to the flow of blood through the portal vein, and of bile through the bile-ducts.

After death the cavity of the abdomen contained about two pints of an opaque fluid. The external opening of the umbilicus communicated with the cavity of the abdomen. The liver, stomach, omentum, and intestines were matted

together and covered with a thick layer of lymph, so hard and vascular that it must have been of long standing. There were no adhesions between the parietal peritoneum and the intestines and omentum, probably because the man had effusion of serum sufficient to separate the parietal peritoneum from the other parts before adhesions formed. The parietal peritoneum was greatly thickened and reddened, and was evidently the seat of long-continued inflammatory action. The peritoneal coat of the stomach was covered with lymph and thickened, and was the seat of numerous ulcers. The lymph had organised, had become part of the anterior wall of the stomach, and then the seat of ulceration. The posterior part of the bladder was adherent to the sigmoid flexure and the rectum, so that there was no cul-de-sac between the bladder and the rectum. The liver was inseparably united to the diaphragm; its lower edge was above the margin of the thorax.

On separating the adhesions between two of the coils of the small intestine, situated in the right iliac fossa (where the man had felt severe pain during life), an opening was exposed, about the size of a sixpence, out of which fæcal matter escaped. In the interior of the bowel, a large ulcer was found at the spot. The mucous membrane around was intensely red, and coated with dirty-yellowish lymph. The situation of the ulcer was in the ileum, about a yard and a half from the cæcum. The peritoneum over the ulcer was destroyed to an extent greater than that of the opening itself, so that the muscular fibres were laid bare as well from the peritoneal as from the mucous coat. As we looked at it *in situ* we thought that the opening might have been made from the peritoneum into the bowel. This is rare, but we thought it possible. On opening the bowel, however, it was clearly not so, for here the mucous membrane was considerably destroyed; it was destroyed over an area larger than the opening, and larger even than the destruction of the peritoneum. Thus there had been ulceration of the outer side and ulceration of the inner

side, but from the congestion of the mucous membrane around, we knew that the perforation had occurred, as it usually does, from within outwards. Several small ulcers were subsequently found in the intestine which had not perforated, but only destroyed the mucous membrane. Thus it was clear that the ulceration had begun in the bowel. It was the result of the mechanical congestion of the bowel. I told you that inflammation of the mucous membrane of the bowel resulted from the mechanical congestion, but that it was catarrhal inflammation. As a consequence of this, deeper-seated inflammation with ulceration may occur, and here we had it so deep that it had perforated the bowel. The mucous membrane around the ulcers was of a deep mahogany colour.

The capsule of the liver was thickened, and the liver itself was too granular, but not contracted; the edge was thick and the tissue broke down easily under pressure. Evidently, although it was not a healthy liver, there was no such disease of the liver-substance as to seriously impede the flow of blood through it. It was not an ordinary cirrhosed liver. The gall-bladder was covered with old lymph, and its coats were thickened; it contained four gall-stones and scarcely any bile. The cystic duct was completely closed, and the hepatic duct and the branches of the portal vein and the common duct, all the parts in the hilus of the liver, were bound together by old adhesions and a large increase of the connective tissue. This was plainly the centre of the trouble. Here the lymph was the toughest and it was evidently the oldest. Here it was the most perfectly organised, but still greatly contracted, compressing the portal vein, compressing the cystic duct, compressing the ductus communis choledochus. All the branches of the portal vein had their coats greatly thickened and in one branch—that to the right lobe—was an old clot firmly adherent.

There were four gall-stones in the gall-bladder, but we had good reason to believe that they were not all the gall-

stones that had been there. I say, "not all," because their sides were flattened, and they were small gall-stones, and they did not seem to form the whole mass indicated by the peculiar flattening. We thought it probable, from the history of the man, from his having been several times in hospital with something wrong with his liver, that he had had gall-stones before, gall-stones passing down his cystic duct, or his ductus communis choledochus, which had led to inflammation, perhaps to ulceration, and to injury of the parts around. We know that such inflammation and ulceration do sometimes result from the passage of a gall-stone, and that now and then a gall-stone is thrown out by the ulceration into the parts around. We had no evidence here that ulceration had proceeded so far, but we had evidence of inflammation which had become chronic, and had ended in exudation of lymph, the man's habits and the climate he had lived in also perhaps assisting. Lymph thus exuded contracts, and an impediment is established to the flow of blood through the portal vein. Thus, I think that the origin of the patient's trouble, the origin of the inflammation in this particular situation, where it had such a damaging effect upon his health, was the passage of a gall-stone. The liver itself was really scarcely diseased. It contained a good deal of bile, from the damming back of bile into it, but the ducts were scarcely, if at all, dilated, and the cellular tissue between the lobules was a little increased. The obstruction to the flow of portal blood to the liver, had no doubt, diminished the formation of bile, and hence the absence of dilatation of the ducts in the liver. The weight of the liver was 3lb. 7 oz.

The spleen was large and tough, the capsule thickened and adherent; it weighed 1 lb. 10 oz. This was no doubt the result of the mechanically produced congestion. The mesentery was greatly thickened, coated with lymph such as covered the omentum; this lymph was due probably to the same cause which had led to the thickening of the intestines, to the enlargement of the spleen,—*i. e.*, the

mechanical congestion, and the inflammation secondary thereto. The kidneys were enlarged; the right weighed 6 oz., the left 7 oz. The cortical substance was broad and a little speckled with red. Probably the mechanical congestion of the kidneys, assisted by the habits of the man, had given rise to inflammation, and in his cachectic condition to that low form of inflammatory action which is followed by the exudation of a great quantity of protein granules which quickly experience fatty degeneration.

We must see, pretty clearly, considering how little history of the man we had, the course of his disease from its commencement to his death, and how the one disease, the one condition, followed mechanically upon the other; how the enlargement of his spleen, the vomiting of blood, the effusion into his peritoneum, the ulceration of his intestine, the perforation of his intestine, the distention of his belly, and the bursting of his umbilicus,—how all these were the mechanical results of the primary disease, the inflammation of the cellular tissue about the portal vein and the hepatic, cystic, and common bile ducts. The further result of this was changed nutrition, for he was very thin, and evidently his nutrition was interfered with by the damage to the abdominal tissues and organs, consequent on their mechanical congestion, and on the damming back of bile in the blood itself.—*Lancet.*

CANADA

Medical and Surgical Journal.

MONTREAL, FEBRUARY, 1874.

THE WEST HADDON TRAGEDY.

Recent exchanges give an account of a lamentable tragedy which occurred in England, we take the account from the *British Medical Journal* of the 17th ultimo. It appears that a Mrs. Gulliver, an elderly woman of 73 years, had been suffering for some time with symptoms referable to her heart, accompanied by attacks of fainting. Her physician who had seen her the day before her death ascertained the existence of disease of the heart by stethoscopic examination. He expressed a belief that she was in a very critical state, and advised her friends to be sent for. Her sister and a Mrs. Watts, and her niece Mrs. Waters, came to her house,—Mrs. Waters and Mrs. Watts sat up with her during the night. The following morning being Sunday, the doctor saw her and found her better. She ate a good breakfast, and asked Mrs. Waters to read to her, shortly afterwards the old lady complained of feeling faint. Mrs. Waters sprinkled some eau de cologne on her handkerchief, and about the bed, which revived her, and she asked for and drank some sherry and water. She complained of the room being close, and the windows were opened. At her request Mrs. Waters proceeded to read a chapter out of the Bible, and the old lady was repeating after her, when she suddenly stopped and apparently fainted. Mrs. Waters called for assistance; sent for the doctor; threw up the window sash to admit a full current of air. Some sherry was poured into her mouth, which she swallowed, but she did not

revive. The doctor arrived shortly after and pronounced her dead.

It appears that dame Rumour interfered in the case, giving rise to the suspicion of foul play, on the plea that Mrs. Waters had a reversionary interest in the property of deceased. A month elapsed, at length the body was ordered to be exhumed, and an inquest was held thereon. At the post mortem all the organs of the body were found healthy except the heart, which was in an advanced state of fatty degeneration, with very thin, soft walls. The contents of the stomach were examined chemically by Mr. J. D. Rodgers of London, and nothing but minute traces of morphia was found, such as would very likely be found in ordinary cough lozenges, of which deceased was in the habit of partaking.

Mr. Walker, the family physician, had in his evidence said, that after death he found a high temperature of the body. This induced the chemical expert to state that in consequence of such high temperature after death, he was of opinion that deceased had died from some volatile noxious substance, given to her immediately prior to death, but which he was unable to detect. Upon this testimony the jury found that Mrs. Gulliver died from poison, but by whom administered there was no evidence to show. A warrant was made out for the apprehension of Mrs. Waters, as she was one of the persons with deceased during her last illness. Mrs. Waters on hearing the result became very much excited, protested her innocence, and swallowed some poison, supposed to be strychnine, from which she died, and a second jury was summoned. Evidence was given at this second inquest which went to prove that Mrs. Waters was of a highly excitable temperament; that several of her relatives had been insane, and that on several occasions she had threatened to destroy herself, and yet a verdict of *felo de se* was rendered, which according to law, necessitated the burial of the body within three hours, without the benefit of clergy.

There are several points in this case which are instructive and which demand a passing remark:

In the first place Mr. Walker's assertion that he found a high temperature of the body after death in the case of Mrs. Gulliver, does not appear to be supported by actual thermometric observation, and therefore is inadmissible; it would not be received as evidence in any well constituted court of law. It was simply absurd of Mr. Rodgers on such testimony to start a theory which could not be in any way substantiated. In death from chloroform vapour the heart is the first to cease its beatings, respiration continues for some time after all pulsation has ceased; moreover the temperature of the body does not rise after death. Again the presence of chloroform in the blood has been proved in very minute quantity after three weeks' exposure, although the difficulty is admitted. If the death had been from Prussic acid vapour, the symptoms would have been sufficiently well-marked and the odour exhaled from the body unmistakable, so that the medical attendant who arrived at the moment of death could not have been deceived; besides which the action of chloroform, alcohol, ether and prussic acid, when taken, lower the temperature of the body after death.

The verdicts rendered by the coroner's jury in both cases would have disgraced a similarly constituted court amongst a people like the Ashantees. We in Canada, as a rule, are badly served in this respect, yet we believe that some difficulty would be experienced even in the back woods of our country to collect together twelve men so thoroughly deficient in mere common sense, as appears to have been the case with the jurors above alluded to. It proves the absurdity of continuing this court as a part of our judicial system. An enquiry in all suspicious cases of death is necessary, and could be better conducted by a magistrate, without giving him or his court the power to bring in a verdict of guilty of murder. After all the coroner's court is a mere court of enquiry, and the testimony adduced is usually

written down as it is given, and is submitted at the trial before the Court of Queen's Bench.

The most harrowing part of the whole tale is the fact that the body of the unfortunate Mrs. Waters was actually buried at night, her own husband reading over her remains the burial service. This calls to mind the dark and wretched doings of a past age, when the *felo de se* had to be buried at midnight in the centre of a cross road, and a stake driven through the body to prevent the spirit's return to bother the living. Such things have ceased to be even thought of in this nineteenth century, and we had almost supposed that the church had removed its ban, and in such a case as the present would have come to the rescue, and have done what was right, humane, and we must add Christian. For who dare judge that this unfortunate woman should be held accountable for an act of frenzied madness. To such as think otherwise might apply the words of Laertes addressed to the priest at the burial of his sister Ophelia:—

"Lay her i' the earth,
"And from her fair and unpolluted flesh
"May violets spring!—I tell thee churlish priest,
"A minist'ring angel shall my sister be,
"When thou liest howling."—HAM. Act. iv. Scene 1.

VACCINATION AND SMALL-POX.

We publish elsewhere some very pertinent remarks by Dr. Baynes on vaccination, and as the subject is one of moment to the entire country, we cannot do better than allude to and quote from the experience obtained during the recent epidemic of small-pox, by one of the London, (England) distinct hospitals for that disease. This will be found in the last annual report of the Local Government Board, therefore there can be no doubt of its validity. It is useless to endeavour to convince anti-vaccination fanatics, if they cannot be convinced by the testimony of the expe-

rience given, in the early part of this century, when statisticians had to deal with thousands of cases of small-pox, how can the present hundreds be of any avail.

TABLE OF THE DEATHS AND RECOVERIES PER 1000 CASES OF SMALL-POX.

Degree of Vaccination.	Cases under 15 years.			Cases above 15 years.		
	Total.	Recovery	Deaths.	Total.	Recoveries	Deaths.
Unvaccinated.....	208	131	77	122	76	46
One or more bad marks.....	45	42	3	104	89	15
One or more Indifferent marks	12	12	0	75	66	9
One good Vaccination mark..	61	61	0	101	93	8
Two " " "	29	29	0	104	99	5
Three " " "	35	35	0	39	39	0
Four " " "	17	17	0	32	32	0
Five " " "	2	2	0	1	1	0
Six " " "	2	2	0	11	11	0

It will be observed by this table that of the unvaccinated children the mortality was 37 per cent. The death rate of those over 15 years who were unprotected by vaccination was nearly one half. Of the children protected by vaccination, amounting in the agregate to 158 cases, there was not not a single death, and of adults those protected by three or more good vaccination marks, there was no death from small-pox.

TESTIMONIAL.

We are happy to record that on New Year's Eve some thirty gentlemen met at Wetherell's Hotel, Bury, P.Q., and presented Dr. James McNice of that place with a testimonial valued at $200, accompanied by the following address :—

To James McNice, Esq., M.D., C.M.

Sir,—We the undersigned residents of the Township of Bury and vicinity, beg to tender you our thanks for the services rendered by you professionally during the four years you have been amongst us, and as a slight token of our appreciation of your services, ask you to accept this testimonial which we present to you on this occasion.

Hoping you may be long spared to practice your profession amongst us, whose esteem you have won by your kindness and attention to rich and poor alike.

We wish you and Mrs. McNice prosperity and health, and a happy New Year.

We remain your sincere friends,

JOHN MARTIN, J.P.
WILLIAM FAREWELL, J.P.,
And many others.

To which Dr. McNice returned a suitable reply, but which we regret space will not permit us to publish. The company then sat down to a substantial supper, served in mine host's best style.

THE SIAMESE TWINS.

We take this account from the *Medical and Surgical Reporter*, Philadelphia:—The twins, whose death we recorded in our last, were 63 years of age. The circumstances of their decease were as follows:—

On the Thursday previous the brothers were at Chang's residence, and the evening of that day was the appointed time for a removal to Eng's dwelling. The day was cold, and Chang had been complaining for a couple of months past of being very ill. The road leading from the two houses was very rough and frozen. Early in the evening they started upon their journey in an open waggon or carryall, and in a short time arrived at Eng's. Chang became chilled by the exposure and complained of being very cold, while his partner was in apparent good health, and grumbled because he had to sit by the fire. They retired that night, and in answer to an enquiry from the sick man's wife on Friday, he stated that he was much better.

On Friday evening they retired to a small room by themselves and went to bed, but Chang was very restless. Some-

time between midnight and daybreak they got up and sat by the fire. Again Eng protested and said he wished to lie down, as he was sleepy. Chang stoutly refused, and replied that it hurt his breast to recline. After a while they retired to their bed, and Eng fell into a deep sleep. About four o'clock one of the sons came into the room, and going to the bedside discovered that his uncle was dead. Eng was awakened by the noise, and in the greatest alarm turned and looked upon the lifeless form beside him, and was seized with violent nervous paroxysms. No physicians were at hand, and it being three miles to the town of Mount Airy, some time necessarily elapsed before one could be summoned. A messenger was despatched to the village for Dr. Hollingsworth, and he sent his brother, also a physician, at once to the plantation, but before he arrived the vital spark had fled, and the Siamese twins were dead.

Dr. Hollingsworth made an examination of the bodies, and found the "gordian knot" or band which connected them to be an extension of the sternum, about four inches in length and two in breadth. The band was convex above and in front and concave underneath. The two bodies had but one navel, which was in the centre of the band, and it is supposed that there were two umbilical cords branching from this.

The connecting link was found to be the ensiform cartilage, and was as hard as bone, and did not yield in the least. It is also stated that for some time previous to their death no motion was observable in the band. The Doctor said he did not think they would have survived a separation, not from the fact of being afraid of separating the arteries, but from fear of producing peritonitis. No hemorrhage would have been produced, so far as could be seen, as there were no arterial connections of any account.

ABSTRACT FOR THE MONTH OF JANUARY, 1874.

Barometer reduced to 32° Fahr., and to sea level; estimated height about 100 feet.

STATION.....MONTREAL. | OBSERVER.....THOS. D. KING

DAY.	THERMOMETER. 9 a. m.	3 p. m.	9 p. m.	Mean	Max	Min	Range		BAROMETER 9 a. m.	3 p. m.	9 p. m.	Mean.	Rain and Sleet	Snow. Melted	Constant + 0.100 used in all Barometer Readings.
1	30.5	34 3	30.0	31 6	35.	25.2	10 1		30 152	152	.102	30 135			
2	18 5	27 0	.9 2	24 9	29 2	16.8	12 4		30.205	.16	.20	. 95			
3	36 9	39.5	40.5	38 9	40 5	29.2	11 3	Max.	30 139	.067	.9 957	031			
Sunday 4	44.5	45.5	47 2	45.4	47 2	38 2	9.0	27.2	29 925	.810	.717	29 817	Inapp		Maximum of the month 47 2
5	21.6	24	19 5	21 5	24 5	20 0	4 5		30 475	.5 6	.65	30 569			Greatest range of Bar. 0.939
6	14 8	18.3	21 3	17 5	22 2	10 4	11 8		30.5 7	.356	297	347		0.43	
7	2 0	33.0	34 0	32 7	33.5	21.0	12 5		29.8.5	.86	.834	29.875	1 95		
8	34 0	36.7	35.5	35 4	40 3	31.2	9 1	Mean of	29.384	382	.519	428	0 7		Lowest Bar. 29.382, and daily mean
9	32 2	37.2	32 3	33.9	34.8	30 0	8 5	10 days	29 704	.652	.5 2	.646			
10	33.3	35.0	33 0	33 8	35.5	29 2	7 3	31.56	29.437	.496	.535	489		0.15	
Sunday 11	34.0	29 5	24 0	28 5	34 5	29.5	4 7		29.157	.627	.797	.690		0.05	
12	19 9	15 5	12.7	13 0	17 0	9 2	7.8		30.169	.241	.365	30.255			
13	9 8	13 8	9 8	11 2	14 8	7 0	7 .		30.473	452	.374	433			
14	11.5	17.5	10 5	11.5	15 3	7 8	7.5		30 089	29 838	.805	29 88		0.12	
15	10 2	10.0	5.7	8 6	11 5	8 5	3.0		29 687	637	627	.650			Lowest range of Ther. 3.0
16	4.1	5.5	3 2	3.6	6 5	0.9	5 6		29.828	.837	30 175	.9 0			
17	-1 5	0.8	12 0	.7	12.5	-3 5	16 0		30 421	.445	.380	30.415			Partly rain and snow, and on
Sunday 18	19 2	31 5	24 8	25.2	32.9	10 8	22.	Mean of	30 58	.204	.214	2 8	0.46		both days.
19	33.2	37 0	26	31	37 9	22.8	15.1	10 days	29 899	.905	30.112	29.97			Highest daily mean of Bar.
20	5 0	11.3	6.0	7 4	13 2	2 8	9 4	14.89	30 571	.594	.653	30 6 6		0.73	Greatest range of Ther. 30.5
21	18.5	29.0	22 5	23 3	29.5	- .0	30.5		30 268	.1 5	13	.173			
22	31.5	36	.9 8	34.4	39 8	21 8	18.0		29 844	.737	.5 9	29 29		0.47	
23	38 4	41 0	38 5	39.3	2 0	37.7	4.3		29.517	527	30 026	.73			
24	17 5	21.3	13 0	17.3	24 5	14.0	1 .5		30 061	.095	.142	30 099			
Sunday 25	-4 5	4.2	-7 5	-2 9	3.5	-8.0	10 5	Min.	30 413	.419	.462	.499			
26	-15.3	-8 5	-9 3	-11.0	-8.	-18.8	10.5	18.8	30.633	.607	.87	.505			Minimum of the month -18 8
27	-3 1	-2 7	2 6	-2 5	2 8	-12.0	14 8		30 012	29.9 6	.885	29 9 4			
28	7.4	13 0	5.0	11.5	15.0	3.2	11 8		29.862	.780	9 5	7 2	0.70		Partly 27, and 28 snow
29	2 5	6 0	3 4	4.2	6 0	1.0	5.0	Mean of	30.182	.172	.069	30.141		0.33	
30	-11.0	-4 1	-11.8	-9 0	-4.1	-12 5	8 4	11 days.	30.581	598	583	.589			Highest Barometer 30.598
31	-10 0	-0.2	-4.0	-4.7	0.0	-17 0	17 0	8.92	30.405	.381	.447	.411		0.05	
MEANS.	.....	....	.....	18.46	22.70	11.89	.....		.....	.....	.....	30.043			

Mean temperature of the month, 18.46; mean of the maxima and minima temperatures, 17.3; greatest heat on the 4th, 47.2; greatest cold on the 26th, 18.8 below zero—giving a range of temperature of sixty-six degrees. Greatest range of the thermometer on the 21st, 30.5; lowest range on the 15th, 3.0.

Mean height of the barometer corrected for temperature 32°, and reduced to sea level (constant applied + 0.100) 30.043; highest reading of barometer on the 30th, 30.598; lowest reading on the 8th, 29.382—giving a range of 1.216 inches.

Rain and snow fell on fifteen days; amount of precipitation when the snow was reduced to its equivalent of water, 5.64 inches. Reckoning 9 inches of snow to be equivalent to 1 inch of rain-water, the depth of the snow fall may be estimated at 2 feet 7 inches.