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D. Fraser's Case.

CASE OF ANEURISM BY ANASTOMOSIS OF THE SCALP, WITH OBSERVATIONS.

By WILLIAM FRASER, M.D. Montreal.

(For the British American Journal of Medical Science.)

The aneurismal condition of the extreme blood vessels, named by the older surgical writers *nævus maternus*, is, by the moderns, still so called in its superficial forms; in its deeper seated, *aneurism* by *anastomosis*, *tumeur érectile*, *tumeur variqueuse*, *placentalary tumour*, and in all its forms *telangiectasis*. Previous to the time of John Bell, the deeper forms, or such as lie beneath the skin without involving it, were neither designated by name, nor was their nature understood; they were, probably, confounded with a variety of other diseases, or described as anomalous. Mr. Bell first pointed out their distinctive properties, and denominated them *aneurisms from anastomosis*: this appellation I, on the present occasion, retain, not because I think it the most proper, but because by it the disease is best understood.

The following case of this disease is chiefly interesting in relation to the question of treatment, a question fraught with interest in an affection calculated so abruptly to bring life into imminent peril, and which cannot be justly estimated from the result of one case; therefore, after detailing my own case, I will notice those of a similar malady already published by others, so far as I know them, and from these a fair inference as to the most appropriate treatment may be deduced.

On the 19th of last June—Peter McEwan, aged 20, from Canada West consulted me on account of a tumour about the size of half a large orange, situated over the posterior and superior angle of the right parietal bone.

About twelve years' previously he fell on his back, that part of the head occupied by the tumour struck a log, which produced a bruise of the scalp; this spot became very hard, then commenced throbbing, and has been gradually enlarging; during the year preceding the above date, it had increased more than during any former one, and so troublesome had the whizzing pulsation he then experienced become, that it occasionally prevented him from sleeping; in other respects he enjoyed good health.

To the eye, pulsation in the tumour was very apparent; the scalp covering it was thinner than natural, but

not discoloured; to the ear, aided with the stethoscope, the aneurismal bruit was distinctly perceptible; to the feel it was soft, communicated a peculiar thrill to the finger, and could be nearly emptied by pressure, when the bone beneath felt deeply and irregularly indented; on removing the pressure it re-filled almost immediately. The occipital and temporal arteries on the same side were greatly enlarged, (some idea of them and the tumour may be formed from the plate,) and imparted a vibrating sensation to the finger placed over them. The bone beneath them also was channelled out, evidently by the continued stream of blood passing through the enlarged and excited vessels, having caused its absorption.

Before adopting any plan of treatment, the patient was seen by Drs. Holmes, Crawford, G. W. Campbell, and McDonnell; all agreed as to the nature of the disease, and concurred in the propriety of trying to effect the consolidation of the tumour by means of setons. Accordingly, on the same day (June 19) three small setons were passed through it.

On the 21st, passed a fourth, and two through the occipital artery, between the tumour and mastoid process.

On the 24th, passed a needle beneath the occipital artery, just where it emerges from behind the mastoid process, and twisted around it a hare-lip suture, sufficiently tight to keep its anterior and posterior surfaces in close contact, with the view of thereby producing their adhesion and its obliteration. The temporal, close to the edge of the zigoma, was treated in the same way. This had the immediate effect of arresting the strong pulsation and vibration, in both tumour and arteries, and even the bruit was but faintly perceived with the stethoscope.

28th.—Feeble pulsations again perceptible in the right temporal, and occipital. The stethoscopic bruit more distinct in the tumour; considerable irritation from setons—removed three of them; one was followed by a gush of arterial blood, which was arrested by continued pressure. No more irritation where needles have been applied than desirable. Painted tumour with iodine.

29th—Removed two more setons; hæmorrhage again

followed, which was stopped after a good deal of trouble, by continued pressure with the sponge.

30th.—The varicose appearance of the arteries had almost entirely disappeared; their course was not now perceptible. The bruit was still heard in the tumour, most distinctly so on its left side, where an enlarged branch of the left occipital entered it, and seemed its chief supply. When this branch and the temporal of the same side were sufficiently pressed upon to stop the current of blood through them, the stethoscopic bruit was no longer heard. This induced me to treat them in the same way as the right, with needles and hare-lip sutures, which completely removed the bruit for the time.

At same time I removed the sutures and needles applied to the arteries of the right side on the 24th. A jet of arterial blood followed the withdrawal of the occipital needle, which was easily stopped by pressure.

The tumour, which was now very flaccid, was emptied of blood, strapped down with adhesive plaster, and a compress containing sheet lead, and a bandage applied.

July 2.—Removed bandage, &c. Found left occipital still pervious, probably from the needle having passed through, instead of beneath, the vessel. Passed another needle beneath the artery higher up, where it was more superficial.

8th.—Removed sutures and needles applied on left side on the 30th ult., and that applied to the right occipital on the 2d instant; could feel no circulation in any of the arteries deligated.

The tumour was now much reduced in size, the whizzing noise, which had been so annoying to the patient, was gone; but though without activity, it was still higher and softer than the neighbouring scalp. In order to reduce it still farther, I kept setons in it till the 24th August, and from that date to the 27th September, when the patient left for home, I had it constantly compressed by adhesive plaster, sheet lead, and a bandage. On his leaving I could perceive no bruit in the remains of the tumour, and it was daily decreasing in size, and increasing in firmness. I had, therefore, every reason to expect a radical cure, and had this not been the case, its remains might, at this time, have been excised without much risk of incontrollable hæmorrhage. But to this proceeding, even if it had been deemed necessary, there was, at least, one substantial objection; I mean the state of the bone. To have cut down upon and exposed a bone in the state in which I conceive it was in this case, would be a step which, I presume, no prudent surgeon would willingly have undertaken. Besides this, some of the gentlemen who saw the case were of opinion that the disease had originated in the bone itself: to this point I will again revert.

I may observe, that during the period of the above treatment, the patient's general good health was very little affected; he was not confined to the house for a single day. On the 4th of November last he wrote me that he felt neither pain nor pulsation in the remains of the swelling, which was then about as low as the rest of the scalp, and pretty firm, though not so firm as the rest of the head.

The following published cases of a similar disease, six in number, will illustrate the various plans of treatment adopted for its cure. The first is recorded by Pelletan, in the second volume of his *Clinique Chirurgicale*.

CASE I.—"Catherine Micat, aged 18; entered the Hotel Dieu in September, 1805, on account of a tumour which occupied the whole of the temporal region, and appeared to be composed of arteries enormously dilated. The ear was red, large and agitated throughout by pulsations synchronous with those of the heart. At the top of the helix was a cicatrix which gave way at the slightest touch, and the crevice resulting from its rupture, furnished a brisk and obstinate hæmorrhage; and this was renewed at every attempt to change the dressings. Pressure applied over the temporal artery arrested the movement and pulsation in the anterior part of the tumour. Permanent compression over this vessel was therefore commenced as a means of cure, but it was found to be too painful to be continued. M. Pelletan next undertook to secure the temporal and occipital arteries: but in the operation the temporal artery was transfixed, and only partially taken up; and in passing the needle under the occipital artery, blood gushed out from both extremities of the puncture; but after dividing the integuments over it this was secured, and pulsation ceased in the tumour. Compression was again employed, but it produced a slough, in consequence of which it became necessary to dress the part oftener than usual; at each dressing the hæmorrhage recurred, and the pulsation though less strong than usual, was renewed. In the course of treatment constitutional symptoms ensued, corysela appeared on the face, an abscess formed in the centre of the tumour, and another over the sternum; the occipital artery bled frequently; and finally at the end of two weeks from the operation, the patient died."—*American Journal of Medical Science*, May, 1839.

CASE II.—This case occurred in the practice of Mr. Wardrop, and is thus described in the *Lancet*.

"—, æt. 29, of a full and powerful habit of body. On the left side of his head, covering a portion of the frontal, parietal, and temporal bones, is a very large pulsating tumour, whose surface is extremely soft and very irregular, forming many lobules of various sizes and position, and resembling in appearance, those large varicose tumours which are occasionally found in the course of the saphena vein of the thigh. The pulsation is distinct throughout every part of the tumour, which can easily be emptied of its contents by pressure. The trunk of the temporal artery, and its anterior and posterior branches, are uncommonly enlarged, and pulsate with remarkable vigour. The two latter terminate suddenly in the swelling, which occupies the usual position of the middle temporal artery. The posterior aurial artery and the occipital, as well as a branch from the temporal vessels of the opposite side, are wonderfully enlarged, and they communicate abruptly with the disease. All these arteries have attained such a size that their situation is evident to the eye. On emptying the tumour of its contents, the cranium below is found to have undergone a remarkable process of absorption, particularly at those points where the tumour has attained the greatest bulk. It must at many places, have become exceedingly thin. The integuments covering the most prominent portion of the swelling, have become very much attenuated, and it is evident that ulceration of them must soon be the consequence of the distention. Over the trunk of the temporal artery is a long cicatrix, the result of an operation which was performed for the ligation of that vessel. The patient complains of frequent most distressing pains in his head, in other respects, he enjoys excellent health. The complaint commenced twelve years ago, after

the receipt of a blow, and has increased gradually. Two months since, a Mr. Babington applied a ligature to the temporal artery, but they did not in any way check its progress."—No. 211, p. 762.

Mr. Wardrop tied the common carotid immediately, upon which the tumour ceased to pulsate, but did not contract.

Secondary hæmorrhage occurred on the fourth day after the operation, and required the most active exertions of Mr. Wardrop and his assistants to prevent its proving fatal. The patient escaped this danger, but the tumour suffered no amendment; and he died from some other cause, in the course of two months.

CASE III.—Is related by Dr. McLauchlan, in the second number of the *Glasgow Medical Journal*.

"W. Maclure, æt. 31, a discharged soldier. Soft, puffy, pulsating, and somewhat elastic swellings, of a varicose appearance, were found to occupy the course of the temporal, posterior auris, and occipital arteries, and their principal branches, each branch terminating by a tortuous extremity. These swellings could be made to disappear partly on pressure, but on its removal they speedily regained their former volume. They pulsated throughout their whole extent, and the pulsations were synchronous with those of the heart. By pressing on the common carotid, the pulsations ceased all along the swellings; and by interrupting the flow of blood through the temporal or posterior auris, the throbb was interrupted in corresponding parts of the tumour. They were not painful on being handled, but he complained much of the torture he had experienced for the last two months from the throbbing, which often deprived him of rest for nights together, and, as he said, made his existence miserable to him. The integuments covering the swellings were of their natural colour; only at those points which were most prominent, they had a slightly bluish red tinge. About ten years previously he had the temporal artery opened for an attack of ophthalmia. A small aneurismal tumour formed at the point of incision for the cure of which the artery was cut across lower down; but this not succeeding, the vessel was again exposed and the ligature applied. The little tumour disappeared only for the time; on its return it was but small, gave him no uneasiness, and although he served as a soldier for five years afterwards, he never complained of it to his surgeon."

Dr. McLauchlan tied the temporal artery, upon which the anterior and central portions of the tumour ceased to pulsate, and felt flaccid and doughy. But being apprehensive, from the extreme thinness and expansion of the coats of this vessel, that the obliterating process would not be effectually and safely performed, he, on the day following, tied the common carotid. The patient was soon afterwards seized with inflammation of the chest, which, notwithstanding the most free depletion and other active measures, proved fatal, on the fourth day after the operation.

CASE IV.—Was published by Mr. Syme, in the *Edinburgh Medical and Surgical Journal*, No. xcvi. in connexion with the preceding cases.

"About the middle of July, 1828, I was consulted by Mrs. T., aged 50, on account of a tumour about the size of a large goose berry, which was situated behind the right ear, over the mastoid process. I at first sight conceived this to be a common encysted tumour, which it exactly resembled, but upon compressing, discovered that the disease was of a very different nature. It readily yielded to the fingers and in its place there could be felt a considerable depression. So soon as the pressure was removed, it immediately filled again, and if the finger was gently applied while this took place, a jet of blood could be felt issuing from the

bottom of the tumour, and the patient heard such a whizzing noise, that she could hardly be persuaded the bystanders also did not perceive it. Below the tumour I felt the posterior auricular artery greatly enlarged, and throbbing with violence; when this vessel was compressed the tumour became flaccid. The patient complained of pain and noise in the swelling, the latter being often so distracting as to deprive her of sleep.

The swelling was first noticed after an accouchement about ten years ago. It had increased very gradually until of late, when its progress was more rapid. Several years ago she asked the opinion of several physicians and surgeons, who recommended pressure, which was accordingly tried, but without any advantage."

Mr. Syme tied the posterior auris a little below where it entered the tumour, which became flaccid and the dilated vessels disappeared.

On the eighth day after the operation, happening to press on the tumour, blood trickled away from the side of the ligature which ceased on applying pressure, it recurred twice in the twenty-four hours on the following day, and was arrested by the same means.

"For some weeks after the operation, the tumour remained small and flaccid, but when the patient resumed her ordinary diet and exercise, it began to resume its former condition. It was moderately tense; and though no throbbing in it could be felt with the finger, Mrs. T. complained of the noise and pain which had distressed her previously in a degree comparatively slight, but sufficient to disturb her repose. No appearance of the varicose dilatation of the artery could be perceived.

Finding that the uneasy symptoms continued to increase, and being anxious to take advantage of the command which had been obtained for the present over the disease by obstructing the principal supply of blood, I determined to take an effectual step for the patient's relief.

On the 29th of October, assisted by Professor Ballin-gall, I cut directly through the long direction of the tumour, which then showed itself to be composed of large irregular cells, invested by a firm capsule. While Dr. B. compressed above and below the tumour, I dissected it out, and then attempted to tie the vessels, but finding this very difficult, I adopted the suggestion of Dr. B., and included them in ligatures by means of a small curved needle. The ligature being drawn, the hæmorrhage ceased. I then filled the wound with dry caddis, and applied a firm bandage about the head. The patient did not experience the smallest inconvenience from the operation, excepting the pain immediately attending it. The ligature separated in about a fortnight, and the wound is now completely healed."

CASE V.—Is recorded by Dr. Gibson, of Philadelphia in his *Institutes and Practice of Surgery*, vol. II. p. 397.

"Elizabeth Laush, a married woman, twenty five years of age, residing in the neighbourhood of Reading, came to Philadelphia in the month of April 1823, anxious to obtain relief for a very large pulsating tumour, which nearly covered the right side of her head, and sometimes bled so profusely from numerous ulcerated spots on its surface, as frequently to endanger her life. This

tumour had existed from infancy, but its increase was so gradual, and the pain attending it so inconsiderable, as to give her little uneasiness. After her marriage and especially during her second pregnancy,—in which she was four months at the time I saw her, the growth of the swelling was so rapid, its pulsation so alarming, and the hemorrhages from it so frequent and debilitating, that she was prepared to submit to any operation I might propose for her relief.

"My first object was to cut off temporarily the chief supply of blood to the tumour. With this view I made several incisions, each about an inch long, through the scalp, and at some distance from the margin of the tumour, and tied the chief branches of the temporal and occipital arteries, many of which were enlarged the size of the common carotid. Having in this way encircled the diseased mass, I had the satisfaction to observe the pulsation diminish, and the tumour partially to shrink, the hemorrhage, also, from the surface had ceased. A slight erysipelas of the scalp followed the operation. This occasioned a week's delay; in the meantime the blood was evidently finding its way through the anastomosing vessels to the tumour. An incision was made about two inches long by a single stroke of the knife, through the integuments to the bone, commencing near the back part of the ear, and mid way between the edge of the tumour and the line at which the arteries were taken up in the first operation. An incredible quantity of blood issued in a moment from every part of the wound; in a few moments, however every vessel was secured. By this time the patient was so extremely faint, as to render it impossible to proceed farther, indeed, many of the spectators supposed her to be dying. Without delay, therefore, she was conveyed to bed, and the wound dressed by interposing lint between its edges to prevent their reunion. In ten or twelve days the patient had so far recovered her strength as to enable her to submit to a farther incision of the scalp commencing at the place where the last operation had terminated. This operation was also continued so long as the patient could bear it, or as was deemed prudent. Lint was then placed in the wound, and the patient put to bed, and carefully nourished for a fortnight, at which time the third and last operation was performed—by dividing the remaining portions of the integuments, and removing the tumour from the bone. This was accomplished with comparative facility, the tumour being by the preceding operations nearly drained of its blood, and almost insulated. Care was taken in separating the diseased mass not to remove the pericranium; the bones, therefore, notwithstanding a great portion of the parietal and occipital was exposed did not exfoliate, but were covered in a few days by florid and healthy granulations, the edges of the wound gradually approximated, and were so far closed in four or five weeks, as to enable the patient to return to the country, where in a little longer time her health was perfectly re-established, and at the end of the usual period, she was delivered of a promising son."

CASE VI.—Is published by Dr. Easdale, in the Indian Medical Journal.

"Madub, an untried prisoner aged 30, of slender make, but healthy looking, admitted into Hospital 25th March, 1844. A soft, elastic pulsating, irregular swelling occupies the head from the left temple to the right ear; at the crown of the head it shoots up into a conical tumour which pulsates violently, and the skin is thin, red and very tender to the touch. All the arteries of the scalp, on the left side are greatly enlarged and beating strongly. The temporal is as large as a goose quill, and whizzes under the finger, the occipital and auricular arteries are equally active. The varicose veins form a cluster of grape-like tumours, and discharge themselves chiefly by the auricular vein, which is of a great size; when this is stopped the whole scalp whizzes under the hand. The arteries on the right side are also very active, especially the occipital, and it is to be feared that the disease has extended to them, but it may be local excitement only. It commenced six months ago, by the patient's account, but probably sooner. Its progress has been so rapid, however, and the present state is so alarming, the integuments being on the point of bursting, that an operation is absolutely necessary to save his life."

On the 31st March, Dr. Easdale tied the common carotid artery.

On the 18th April, (on which day the case is repor-

ted), the ligature was gone, the swelling was daily decreasing, the integuments were quite lax, and the supply of blood from the right side sufficiently interrupted—the excitement of the arteries was going off, and a radical cure was expected.

The first point in M'Evans case on which I will remark is the state of his cranium beneath the tumour. Were the irregularities felt in it produced by the tumour, or was the bone the original seat of the disease? It appears to me that the state of the bone was an effect of the disease, for the following reasons:—1. Because it was deeply channelled beneath the course of the enlarged arteries, as well as beneath the tumour, and that, consequently, it is but fair to infer that like causes produced like effects. 2. Because other tumours, with far less excitement, produce the absorption of bone. 3. Because it is doubtful whether this disease ever originates from bone.

The question as to the tissues from which true *aneurism* by *anastomosis* originates is one of importance, and has been so carefully and so well considered by Dr. Watson, of New York, in his observations on the disease, that in lieu of any remarks of my own I here quote his. "Breschet" and others, admit that the disease under consideration, may manifest itself in almost every tissue of the body. "It is developed," says Dupuytren, "in all parts of the body, but most frequently in the lips; doubtless, in consequence of their spongy and vascular structure. It has been met with on the arm, fore arm, thigh, scalp, ear, cheek, and organs of generation; in the tissue of the skin, in the muscles, the periosteum, the bones, the kidneys, the liver, &c."† One case is recorded by Cruveilhier, and another by Pelletan, in which this disease is said to have originated in the brain.‡

Without questioning these authorities, I must, never-

* "Memoires de la Academie Royale de Medecine, tome III. p. 128. In his essay published in this work Breschet refers to the Répertoire d'Anatomic, tome I., for 1826, in which he records a case of this disease originating in the bone. This case I have not the means of referring to, but I am informed by my friend John Hamilton, Esq., of Dublin, that after studying Breschet's case attentively, and the cases which he quotes from Dupuytren and others, as aneurisms by anastomosis in the bone, he is convinced they were of a malignant character, "obviously fungus hematodes"—and his opinion is confirmed by a similar avowal, made to him in relation to the same cases, by Hodgson of Birmingham. The impression existing in France, even up to the present time, in relation to these two very distinct forms of disease, is sufficient to account for Breschet's misapplication of the term "aneurism by anastomosis"—and the same may also apply to some of the cases of erectile tumours of Dupuytren. Dr. Bushe, I conceive, has committed a similar error in a case which he relates as telangiectasis originating in the medullary cavity of the tibia. The case has to me more the character of the malignant fungus.—See the New York Medical and Surgical Bulletin, vol. I., p. 55.

† Leçons Orales de Clinique Chirurgicale, tome IV., p. 51.

‡ Mentioned by Bushe. Loco citat, p. 65, from Cruveilhier, anatomie Pathologique, tome II. p. 133, 83. Pelletan Clinique Chirurg., tome II., p. 76.

theless, observe, that in most of the cases on record, bearing intrinsic evidence of belonging to the disease under consideration, the morbid growth has had its origin either in the common integuments, the mucous membrane, or in the cellular tissue. Doubtless it may originate in other textures, as was with the case quoted from Breschet, where it commenced in the thyroid gland; but many of the cases in which it is said to have occurred in the bones, in the viscera, among the muscles, &c., are, to say the least, equivocal, and no doubt some of them were of a carcinomatous nature."—Watson on Telangiectasis, *American Journal of Medical Science*, No. 47.

The treatment of the class of aneurisms by anastomosis, to which the preceding cases belong, may be conducted on three different principles. 1. Removal of the morbid structure. 2. Diminution of the arterial supply. 3. Effecting change of structure.

Each of these plans may be executed in a variety of ways, and they may be variously combined. For instance, in cases IV. and V., the second and first were conjoined, and in my case the second and third. To attempt the first plan in such tumours as the preceding, without its being preceded by the second, might be attended with the most serious consequences—the gush of blood might prove instantly fatal. Hence the safest and best method of cutting off the arterial supply is a question of some interest. The minor operations by which this has been attempted are four in number; 1. Pressure over the arteries. 2. Taking them up. 3. Making incisions through the scalp around the tumour, and taking up the arteries. 4. With needles and sutures as done successfully in M'Ewans case. As examples of these different practices are recorded in the preceding cases, I will leave the reader to draw his own inference as to their comparative merits. When the obliteration of the feeding arteries is accomplished, by whatever means, I feel assured, that in many instances at least, further proceedings will be uncalled for.

It may be thought by some, that taking up the carotid artery would be the most effectual means of cutting off the arterial supply. But from the statistical fact that the average mortality, after ligature of this vessel, for aneurism is 1-6th,* from the unsatisfactory result in Wardrop's case, and from the obliteration of the right occipital and temporal, in my own case, not proving sufficient to arrest the circulation in the tumour, I conceive it may be fairly deduced, that tying the carotid artery for this disease, is an operation hazardous in its consequences and uncertain in its effects. Nor is the latter inference to be wondered at, when we consider the free anastomosis which exists between the vessels of both sides of the face. Dr. Easdaile's case can hardly

be said to be an exception to this rule, for it is reported on the thirteenth day after the operation, when the cure was not complete, and after which the arteries of the opposite side were likely to enlarge. There are cases where the trial of tying the carotid must be made, or the patient must be left to die, as, for instance, when the tumour is seated extensively in the fauces, velum, and roof of the mouth, but these do not come within the range of the present paper.

With regard to the third plan of treatment, I doubt not from recorded facts, that in the superficial forms of this disease it may answer well, but from what I observed in M'Ewans case, I am convinced that, in such cases as his, any attempt at this mode of treatment, without first diminishing the arterial supply, will not only prove a loss of time, but be liable to worse consequences than failure. After the arterial supply has been cut off, should the tumour still remain soft, setons may complete the cure.

Within the last few months *electro-galvanic action* has been successfully employed to effect the consolidation of aneurism, by Dr. Pétrequin, chief Surgeon to the Hotel Dieu at Lyons. Three cases have been treated by him with electricity, but two of his patients have been lost sight of, before the influence of the treatment could be duly appreciated. The following are the interesting particulars of the third case.

"CASE.—Traumatic Aneurism of the temporal Artery. D., aged 19, a locksmith, was brought to the hospital senseless, on the 4th of August, 1845, immediately after a violent fall on the head. The lower maxilla was fractured at the symphysis and the left orbit was the seat of considerable ecchymosis. The symptoms of cerebral commotion had given way in a great measure when variola declared itself. The eruptive fever accomplished its periods in the usual manner, and it was only on September the 9th, five weeks after the accident, that Mr. Pétrequin could direct this attention towards a tumour occupying the left temporal region, and which he had noticed long before. The swelling was of the size of an almond, soft, and almost indolent on pressure; it was seated on the course of the temporal artery, and presented pulsations isochronous with those of the arteries. These pulsations ceased when pressure was exerted on the temporal artery below the tumour, and re-appeared on the pressure being removed. These signs left no doubt of the nature of the case, and aneurism of the temporal artery probably due to the injury experienced by the vessel during the accident, was diagnosed. On the 10th of September galvano puncture was performed by the introduction of two sharp steel pins crossing each other at right angles in the tumour; the heads of the pins were then placed in communication with the wires of a voltaic pile, and a shock and a sharp pain were experienced by the patient, the pain increasing with the intensity of the electrical action. The operation lasted ten minutes and fifteen plates were employed. The pulsations gradually diminished in the tumour during the operation and as we close had entirely disappeared. No accident followed the experiment, but a solid indurated swelling took the place of the tumour, the temporal artery ceasing to beat above the aneurism, whilst its pulsations remained distinct below. On the 20th of September, absorption had achieved the cure, and neither tumefaction nor pulsations could be detected in the spot where the malady had existed. M. Pétrequin gives the following precepts, which he deems will ensure the complete coagulation of the blood contained in aneurismal tumours:—1. Compression of the artery between the aneurism and the heart during the application of the galvanic agency.—2. The pins introduced into the tumour should be numerous, cross each other

* Medical Times, vol. XIII., p. 147.

at right angles and their surface should be protected by a coat of varnish, in order to prevent unprofitable loss of the electric fluid—3. After the operation, ice should be applied to the tumour. This is the first case on record of aneurism cured or even treated by this method, which has been of late employed in the treatment of a large number of diseases." "The coagulating influence of electricity on blood leads us to hope that it will be found as advantageous in external aneurism, and that Dr. Petrequin's case will not long remain a solitary instance of success."*

For the practical application of this remedial agent in the treatment of aneurism, Dr. Petrequin is entitled to the gratitude of the profession, at the same time it is but right to bear in mind that the idea did not originate with him, for years ago, "it has been suggested that galvanism might be applied to the important purpose of coagulating the blood within an aneurismal tumour, and thus removing the disease without resorting to the ligature."† Should it prove as effectual in other hands as it appears to have been in the above case, it will form a new era in the treatment of the ordinary forms of aneurism, and I have no doubt can be made available in that of aneurism by anastomosis.

Great St. James Street, February, 1846.

EXPERIMENTS ON A FEW OF THE MINERAL WATERS OF CANADA.

By A. HALL, M.D., Lecturer on Chemistry, McGill College.

MINERAL SPRING AT BERTHIER.

A valuable mineral spring—valuable from its antacid properties dependant on the carbonates which it holds in solution—is met with in the neighbourhood of Berthier, a village situated at the mouth of the river of that name, and about 45 miles from this city, on the northern shore of the St. Lawrence. This spring has been known for many years back, and of such importance was it deemed, that in their deeds of concession the seignors have always held it in reserve. The spring is in reality situated on the river Bayonne, about four miles from Berthier, and at the distance of about 40 feet from its bank. The character of the country is here hilly, but the spring itself is seated on a level district. The soil is very clayey—the scenery beautiful.

In June, 1843, I received some of this water for examination, which had been sent to me for that purpose. The following is the result of the experiments instituted upon it:—

I. Qualitative Analysis.

1. Its specific gravity was determined to be 1.006569,
2. Upon turmeric paper no change was produced; litmus was faintly reddened, its blue being restored by the application of a gentle heat, thus indicating the presence of a gaseous acid.
3. Barytic water caused a copious white precipitate,

completely soluble in nitric acid; affording evidence of the presence of carbonic acid in quantity.

4. Lime water when added, was attended with a similar result.

A quantity of the water was now boiled, to ensure a deposition of those earthy salts which were held in solution by the carbonic acid, which after filtration afforded, with re-agents, the following results.

5. Nitrate of silver threw down a copious white precipitate soluble in ammonia.

6. The addition of chloride of barium was attended with no appreciable effect, thus indicating the absence of sulphuric acid.

7. Oxalate of ammonia threw down a white precipitate, which was oxalate of lime.

8. The addition of phosphate of soda, followed by carbonate of ammonia, with ebullition, was not found to be productive of any effect, thus negating the presence of magnesia.

9. Evaporation to dryness induced an appearance of minute crystallization. These crystals, when examined by the microscope, were cubes, and were doubtless chloride of sodium.

The precipitate of earthy salts obtained by simply boiling the water was next examined. This precipitate was found to be wholly soluble in hydrochloric acid with effervescence. To the clear solution

10. Oxalate of ammonia was added, when a white precipitate ensued, denoting the presence of lime.

11. The liquid having been freed from lime by oxalate of ammonia, was tested by phosphate of soda, and carbonate of ammonia, and boiled. A copious white flocculent precipitate ensued, indicative of the presence of magnesia.

From these qualitative experiments, we are permitted to infer the presence of the following ingredients:—

Experiment 2, 3, 4. Carbonic acid.

" 5. Chlorine.

" 7. Lime.

" 9. Sodium.

" 10. Carbonate lime.

" 11. Carbonate magnesia.

II. Quantitative Analysis.

1. Two fluid ounces were evaporated to dryness, with the precautions detailed in the analogous experiment on the Varennes water. The solid residuum weighed 8.9 grs.

Sixteen fluid ounces were evaporated to four ounces. The earthy salts which precipitated were collected, and finally dissolved in hydrochloric acid.

2. To this solution oxalate of ammonia was added, and the oxalate of lime which fell, being collected and carefully dried, was found to weigh 3.82 grs. This was

* Medical Times, vol. xiii. p. 147 and 148.

† Apjohn Cyclopædia of Pract. Med., Art. Galvanism.

heated to redness in a platinum crucible, and the carbonate of lime, into which it was converted, was found to weigh 2.30 grs., yielding a proportion of 0.28 of carbonate of lime for every two ounces of the water.

3. After the precipitation of all the lime, carbonate of ammonia was added to the filtered liquor, afterwards phosphate of soda, and the whole submitted to gentle ebullition. The ammonio-phosphate of magnesia obtained weighed 11.52 grs., containing 1.695 magnesia, equivalent to 0.21 grs. for each two ounces of the water, giving us a proportion of 0.43 grs. of carbonate of magnesia.

4. To half a fluid ounce of the concentrated water, nitrate of silver was added. The precipitate weighed, after fusion, 19.65 grs., equivalent to 4.85 grs. of chlorine for two ounces of the water.

5. One ounce as above was precipitated by oxalate of ammonia. The oxalate of lime, collected on a weighed filter, weighed nearly 0.5 grs., equivalent to 0.17 lime for the concentrated water experimented on, or 0.08 grs. for every two ounces of the natural water, affording 0.05 grs. of calcium.

6. One half-ounce concentrated as above, after having been first treated by oxalate of ammonia to precipitate all the lime, was then gently evaporated to dryness. The cubic crystals which were thus obtained, weighed 8.04 grs., equivalent to 3.19 grs. sodium, for two ounces of water.

7. Two ounces of the water in its natural state were precipitated by barytic water. The precipitate consisted of carbonates of baryta, lime, and magnesia, and weighed in the aggregate 4.91 grs. Deducting from this the weight of the carbonates of lime and magnesia, which have been previously ascertained, will leave us 4.20 grs. as the weight of the carbonate of baryta, the earth being supposed to be in combination with the free carbonic acid of the water, the weight of which is thus ascertained to be 0.97 grs., equal to 0.22 cubic inches, at the accustomed atmospheric pressure and temperature.

A trace of iodine was noticed in the water, but being exceedingly minute, its quantitative analysis was not undertaken.

The quantities of the different constituents in two fluid ounces of the water, are thus ascertained to be as follows :—

Carbonate of Lime,	0.28 grains.
Carbonate Magnesia,	0.43 "
Chlorine,	4.85 "
Calcium,	0.05 "
Sodium,	3.19 "
	8.80 grains.

These were probably combined together in the following manner :—

Carbonate of Lime,	0.28 grains.
Carbonate of Magnesia,	0.43 "
Chloride Sodium,	8.04 "
Chloride Calcium,	0.13 "

	8.88 grains.
Carbonic Acid Gas free,	0.22 cubic inches.

The imperial gallon will accordingly contain these constituents in the following proportions :—

Carbonate of Lime,	17.92 grains.
Carbonate of Magnesia,	21.76 "
Chloride Calcium,	8.32 "
Chloride Sodium,	514.56 "
Iodide Sodium, a trace,	

	562.56 grains.
Carbonic Acid,	14.08 cubic inches,

which is the means of conferring solubility on the carbonates which exist in the water, the presence of which renders this mineral spring antacid to a high degree, and adapts it to cases in which such an indication, combined with a gentle purgative effect, may be demanded.

CAPE DE LA MAGDELAINE CHALYBEATES.

At Cape de la Magdelaine, near Three Rivers, and not far removed from the St. Maurice Iron Works, are to be met with a couple of the most valuable chalybeate springs in this Province. They were recognised, and their therapeutic virtues acknowledged, very shortly after the settlement of this country during the time of the French, and have been honoured with more than a mere passing notice by Charlevoix in his History of Canada. Thus long known, and highly prized, I believe that at least two analyses of them have been undertaken, neither of which I have had the good fortune to obtain. In 1841 I received a quantity of these waters for examination from the late Dr. Kimber, who was proprietor of the property in which they were situated. Being ignorant of the existence of more than one spring, my experiments were conducted on the waters promiscuously, although the bottles were marked distinctly, but, (being unadvised on the subject) unintelligibly; for they were all packed together in one case, nor did I discover the error, until in the quantitative examination, finding it impossible to reconcile results which were continually varying, I mentioned the circumstance to Dr. Kimber, who informed me of the cause, but too late, as the stock of water was exhausted; nor have I since had it in my power to resume them. The following rough notes of their qualitative analysis, will serve, however, to indicate their constitution, and may serve as a guide for future experiments :—

Specific gravity, 1,00548.

1. Blue litmus paper unaffected.
2. Turmeric and red litmus altered in their colours.
3. Tincture of galls changes to a purple, gradually deepening in tint.
4. Ferrocyanide of potassium strikes a fine pale blue precipitate.

5. Sulphocyanide of potassium induces no effect, thus indicating the iron to be in a state of protoxide.

6. Ferridcyanide of potassium, after the addition of sulphuric acid, changes the solution to a deep emerald green.

7. Oxalate of ammonia—white precipitate.

8. Barytic water—white precipitate.

9. Nitrate silver—copious white precipitate soluble in ammonia.

10. After the addition of hydrochloric acid, and the precipitation of all the lime by oxalate of ammonia, the addition of carbonate of ammonia, followed by phosphate of soda or ammonia, produces an instant deposit.

Twelve ounces of the water were now boiled, and reduced by evaporation to two ounces. This was subjected to the following tests:—

Experiments 1, 2, 3, 4, 5, 6, 8, and 10, were repeated without any effect being produced.

Experiment 7, was attended with a precipitate.

Experiment 9, likewise.

Experiment 10. To another portion starch and chlorine water were added, but no alteration in colour took place after 12 hours' rest.

During the boiling a precipitate gradually formed at the bottom of the flask. This was collected, and after having been boiled in hydrochloric acid, to which a few drops of nitric acid had been added, properly diluted with water, was filtered. It was now tested in the following manner. The nitric acid was added to peroxydise the iron—

11. Sulphocyanide of potassium—a blood red.

12. Ferridcyanide of potassium—a fine blue.

13. Ferridcyanide of potassium—a deep blue.

14. Oxalate of ammonia—a copious white precipitate.

15. After filtration from the last experiment, treatment by carbonate of ammonia and phosphate of soda yielded a copious precipitate.

16. This precipitate being digested in caustic potash ley, and saturated with hydrochloric acid, the addition of carbonate of ammonia induced a slight turbidness.

From these experiments, the presence of the following ingredients is demonstrated—

Carbonic acid.

Chlorine.

Lime.

Magnesia.

Alumina.

Sodium.

Iron in a state of protoxide.

There can be no doubt that the iron is held in solution by the carbonic acid which exists in the water in quantity. I may also notice that vegetable extractive matter was also obtained, as well as a trace of silica.

Although, as I have already remarked, from the unintentional error committed in using the two kinds of water for the experiments promiscuously, no very satisfactory evidence can be deduced as to the exact composition of either, yet the result tended to demonstrate that their saline impregnation was not strong. The solid constituency of the gallon amounted only to 184.6 grs., the chief proportion of which was chloride of sodium, while the amount of protoxide of iron in the same quantity did not exceed 5 grains. These springs, however, are valuable chalybeates, and a good analysis of them is a desideratum.

Montreal, January 6, 1846.

ANATOMY AND PHYSIOLOGY.

STRUCTURE OF THE HUMAN PLACENTA.

In giving an abstract of the following observations on the structure of the placenta by Mr. Goodsir, it will render the subject more intelligible to divide it into three heads, as adopted in the original memoir:—

1st. Each placental tuft consists of a trunk, of primary branches, and of secondary branches or villi. Each villus is made up of the following parts. An *external* fine transparent membrane. This membrane is common to the whole tuft, passing from one villus to another, and closely covering the free surface of each. A layer of flattened nucleated cells beneath this membrane, (*external cells of the villus*;) here and there these cells are grouped together into heaps, in the centre of which is a germinal spot, which is engaged in the constant formation of new cells. It seems probable that the internal aspect of this layer of cells is lined by a fine membrane, as in the case of the intestinal epithelium. Beneath these structures, and immediately surrounding the blood-vessels within the villus, is another still finer and more transparent, but firm and strong membrane (*internal membrane of the villus*). This is readily separable from the layer of cells described: the space between them is probably occupied by a peculiar fluid. Within this membrane are the blood-vessels of the villus; consisting of one or sometimes two vessels, which form a simple or contorted loop occupying the cavity of the villus; they are derived from the umbilical arteries and veins; they differ from capillaries in their large size, and from arteries and veins in preserving the same mean diameter throughout: one such vessel occasionally passes from one to two or more villi, forming a loop in each, before it becomes continuous with a vein. Between these vessels and the internal membrane are some other cells, nucleated and highly transparent, called the *internal cells of the villus*.

2d. The substance of each tuft of the chorion is made up of nucleated cells of various sizes, containing a granular fluid. The surface of the tuft is covered by a fine membrane, which consists of flattened cells united by their edges. The free extremity of each villus of the tuft is bulbous, and consists of transparent cells arranged round a central germinal spot. These groups of cells are the active agents by which the villi grow. As gestation advances, and the allantois becomes applied to the internal surface of the chorion, blood-vessels become developed within the villi, which then communicate with the umbilical vessels. Thus, then, the villi of the chorion from the internal (or fetal) portion of the placental villi, previously described, —the loops of vessels, internal cells, and internal membrane of which have their origin in the villi of the chorion.

3d. When impregnation has taken place, the mucous

membrane of the uterus becomes greatly developed; the epithelial or cellular secretion of its follicles becomes augmented, and the vascular network occupying the outer follicular spaces becomes increased in size and extent. By this means a new layer or membrane is produced, the *membrana decidua*, which consists of two portions, the thickened vascular mucous membrane and the non-vascular cellular substance secreted by the follicles. The former constitutes at a later period the *decidua vera*, the latter the *decidua reflexa*. As the (impregnated) ovum reaches the uterus, the developed mucous membrane or decidua begins to secrete, the os uteri becomes plugged up with a portion of the secretion, and the cavity of the uterus is filled with fluid—around the ovum this secretion consists of spherical nucleated cells, which possess the power of undergoing further development after being detached from the germinal spots or membrane of the secreting organ. These cells around the chorion of the ovum come to constitute the *decidua reflexa*. Thus the tufts of the chorion are imbedded in a mass of nucleated cells, which cells are constantly being secreted from the follicles of the uterus, and which in all probability contain within them, as they become fully developed, the nutritive materials, which the absorbing cells of the villi of the chorion are constantly taking up for the nourishment of the ovum. This cellular secretion seems thus to be to the ovum of the mammal what the albuminous fluid is to the ova of oviparous animals. As the ovum increases in size, the amount of nutriment absorbed by the cells alone, is not sufficient for its wants; the allantois becomes applied to the inner surface of the chorion, and blood-vessels become developed within the tufts and villi. The vessels of the *decidua vera* at the same time enlarge and assume the appearance of sinuses encroaching on the space formerly occupied by the cellular substance of the *decidua reflexa*, in the midst of which the villi of the chorion, are imbedded. Thus the lining membrane of the vascular system of the mother becomes the *external membrane* surrounding the villi of the placenta. It lines the whole placental cavity, passing from tuft to tuft, and villus to villus, forming in this way threads and bands of venous membrane, which are tubular and filled with cells. These cells are continuous in the one direction with *external cells* of the placental villi, and in the other with the gelatinous cellular substance constituting the *parietal portion* of the placental decidua, which is in connection with the wall of the uterus. The *central portion* of the placental decidua consists of the external cells and external membrane of the placental villi.

It appears from the above:—

1st. That the placental tufts and villi are made up on the one hand by the tufts and villi of the chorion, comprising umbilical vessels, internal membrane, and internal cells; and on the other hand by the lining membrane of the maternal vascular system, with a layer of cells beneath it, comprising the *external membrane* and *external cells*—the first portion is peculiar to the fœtus, the latter to the mother.

2d. These external cells are the remains of the *decidua reflexa*; they are still continuous with the cellular substance of the parietal placenta, by means of the cells filling the tubular threads of venous membrane.

3d. The function of the external cells is to secrete from the maternal blood (from which they are separated only by the external membrane) the materials of nutrition destined for the fœtus; this function is analogous to the digestive one performed by the intestinal mucous membrane in extra-uterine life.

4th. The function of the internal cells or those belonging to the fœtus is to absorb through the internal membrane the materials secreted from the maternal blood by the external cells. This matter is then taken up by the umbilical vessels and carried away for the nourishment of the fœtus. These internal cells perform a function analogous to that ef-

fecting in extra-uterine life by the absorbing chyle-cells of the intestinal villi.

5th. Hence the placenta discharges not only the functions of a lung, but also of an intestinal canal to the fœtus.—(*Anatomical and Pathological Researches*, by John and H. D. S. Goodsir).—*Ranking's Abstract*.

ACADEMY OF SCIENCES.

EXPERIMENTS ON THE ABSORPTION AND REPRODUCTION OF THE HEADS OF BONES. By M. FLOURENS.

M. Flourens read a note entitled as above. The fact which he attempts to explain, is the increase of distance between the extremities of bones during the longitudinal growth of their shafts.

If we admit the ordinary theory of the growth of bones by *extension*, nothing is easier than the explanation of the fact in question. The two extremities of the bones become separated, because the body, the intermediate portion of the bone, is extended; but the extension theory is a groundless hypothesis. Bones do not grow because they are extended. They increase in thickness by *superimposed layers*, they increase in length by *juxta-posed layers*.

How is it, then, that during the elongation of bones by juxta-posed layers the heads of bones are absorbed and reformed, and always become more distant from each so long as the elongation of the bone goes on. That the fact is so is ascertained; M. Flourens has already proved the absorption, the reformation, the successive reproduction of the heads of bones, by experiments with madder; he also ascertained the mode of growth of bones during their elongation by inserting small nails in the bone, the bone grew in length, but the interval between the nails remained unchanged, hence the increase in length occurred beyond the nails. M. Flourens adopted the same method in studying the *displacement*, the *separation*, or better, the *changes* that occurs in the heads of bones during their successive absorptions and reproductions, and he now laid before the Academy, preparations of the bones experimented on.

The tibia of a young rabbit was first exhibited, in which three nails had been inserted,—one below three millimetres from the inferior epiphysis; a second above four millimetres from the superior epiphysis; the third at the level of the spine of the tibia. The experiment lasted twenty-two days. The bone, which, when the experiment commenced, was six centimetres long, had increased three millimetres when the experiment terminated. The entire increase of length had taken place beyond the nails. The nail which had been placed on a level with the spine of the tibia was now three millimetres distant from it, and as this nail had not changed its relative position to the two other nails, it was the spine of the tibia which had changed its place and been elongated from it.

In a second experiment which lasted forty-six days, the nail which had been placed on a level with the spine of the tibia was at the termination of the experiment thirteen millimetres distant from it.

Finally, in a third experiment, continued for seventy days, the nail was seventeen millimetres from the spine of the tibia.

The spine—that is to say, the head of the tibia, becomes displaced more and more distant, the longer the experiment is continued, or to speak more accurately, it is incessantly undergoing change. It is not one and the same head which is displaced, but several different heads which are formed in succession to be absorbed and then reproduced. There is then a complete mutation of bone during the entire period of its increase in length. The organ which produces the bone is the periosteum, and by it also it is absorbed.

The periosteum, which is nothing but the *external medullary membrane*, just as the medullary membrane is

simply the *internal periosteum*, enjoys, like the latter, the power of absorbing and depositing bone.

SURGERY.

ON THE OPERATION OF HARE-LIP, BY MONS. PAUL DUBOIS.

(Continued from p. 267.)

It has been asserted that this operation, when practised on very young children, leaves after it as evident marks as when had recourse to at a more advanced age. I do not wish to exaggerate the importance of the facts I have brought forward, and of which you have all been witnesses, but this assertion appears to me opposed to truth, and had the Academy been able to watch the modifications undergone by the cicatrix in the two youngest of the three patients I brought before it, and to observe the very rapid obliteration of the traces left by the operation, I am confident it would be of my opinion in regard to this matter. Lastly, I will examine the opinion advanced by Dupuytren in his lectures, that by operating for hare-lip, the mortality, naturally so great in the early period of life, is increased. I do not wish to misrepresent the importance and gravity of the operation in question, but I would only remark to the Academy that in none of the cases I have brought before it was the health sensibly interfered with; a trifling increase of temperature and a slight acceleration of the pulse was all that could be observed. Many operations analogous to mine have been performed, especially by M. Bonfils (de Nancy,) and in them the harmlessness of the operation was as evident as in my own; I admit that the objection of Dupuytren should not be overlooked, and on this subject I will remark that there is one thing which should not be forgotten, viz., that probably the mortality of infants affected with hare-lip is greater than that of others not so affected; in fact we know that this deformity is often accompanied by other evident defects, and it is not impossible that it is often combined with defects with which we are not acquainted, although sufficient to compromise eventually the infant's life. Certainly the injurious consequences of these last would not be increased by the operation, and in divining their existence it should be done with considerable reserve. Still, taking Dupuytren's objection in its proper sense, we may, I think, make this legitimate concession to it, that where a child is very delicate, or born before the full term, we should delay operating for a few days, and always refuse to operate at periods when erysipelas, &c., follows operations on adults.

If to the considerations which I have dwelt upon already, I add that the operation for hare-lip is exceedingly easy of performance, that the after treatment is also very simple, that union of the edges of the wound is ordinarily rapid and sure, that to all appearance the traces left by the operation are inversely as the interval elapsed since the birth of the child, that instruction is rendered more easy, and that separation of the bones, if any have existed, is more rapidly effaced, I believe that I have assigned quite enough of motives to justify operating for hare-lip in infants a few days after birth. And yet I cannot help adding another consideration, which does not seem to have made sufficient impression on professional men who have occupied themselves with this important subject. Gentlemen, to a family from its intelligence or fortune occupying a certain rank in society, the birth of a child with so evident and disgusting a deformity as hare-lip is viewed as a severe misfortune. It is a never-failing source of annoyance and grief to the mother, increased every moment by the sight of the evil, and by the painful contrast of, perhaps, another child free from such an affliction. If the speedy performance of an operation can change this painful state of mind and of the affections into one more happy, I believe that it is a real benefit superadded to the personal advantage accruing to the child.

It will, doubtless, excite surprise that in so short a period of time I should have had occasion to operate on three infants for hare-lip. It is indeed a singular coincidence, of which I can mention one more recent and still more remarkable. From the 11th to the 19th of this month (May,) we have observed at the Hospital of the Clinique, where the number of accouchements is from 90 to 100 per month, one case of hare-lip, three of club-foot, one of complete absence of the hand, and one of supernumerary fingers.

M. Husson.—Did not M. Dubois say that he would explain the greater frequency of hare-lip affecting the left side?

M. Dubois.—No. I have not pretended to explain this phenomenon. I only mentioned to the Academy the fact suggested by my cases, and which doubtless has before now attracted the attention of my colleague, M. Roux, and of other surgeons.

M. Roux.—I have had occasion to see a very large number of cases of hare-lip, and I have met them at least ten times out of twelve at the left side. This is not peculiar to hare-lip, however, all deformities are more frequent at the left than at the right side, which perhaps may result from the relative feebleness of that side.

The question raised by M. Dubois applies not merely to simple hare-lip, but also to double hare-lip. I was formerly opposed to operating immediately after birth, but my opinion within the last fifteen or twenty years has very much changed. Being often compelled by circumstances to operate early, which I did with very great apprehension, I at length saw that the results in such cases were fully as favourable as at a more advanced age. Mr. Roux then gave the particulars of ten cases operated on by him during the previous year, in order to shew that accidents are as frequent after the operation performed late as when had recourse to early. He was in favour of operating immediately where there was double hare-lip, rendering suction difficult or impossible; but, fully admitting the moral influence on the mother of the sight of the deformity, he did not think there was any good ground for haste when the hare-lip was simple.

M. Dubois was glad of an opportunity of supplying an omission which he had made from his apprehensions of being tedious. He had entirely abandoned the operations for double hare-lip in very young children. In infants such as he spoke of, facility of execution and despatch appeared to be the essentials to success, hence he had even abandoned the method of Malgaigne, which, in other circumstances, must be an improvement. But, continued M. Dubois, I wish to make another remark; I know of no sure and efficacious means of stopping hæmorrhage but by bringing the whole of the edges of the wound into complete contact, and by making no wound but the paring of the edges of the lip. I never detach the lip from the gum in order to bring the edges into contact. In every case that I have met with the natural extensibility of the parts allowed coaptation to be effected without it. The bleeding surface resulting from the separation of the lip from the gum being but imperfectly applied against the gum, may, from the extreme vascularity of the gums, become a source of real danger, and in very young children will only make itself known when beyond remedy.—*Dublin Journal of Medical Science.*

ON ABSCESS OF THE TIBIA.

By Sir B. C. BRODIE, Bart.

I shall not make any introductory observations to the course of lectures which I am about to deliver, further than these—That on this, as on former occasions, I do not pretend to give any systematic course, but to select various subjects in which, I suppose, you will feel interested, and such especially as you will find to be of importance in surgical practice. If I do not enter into the consideration of abstract questions in physiology and pathology, it is not because I regard these subjects as unimportant, but because I think it still more important that in the few lectures which I shall deliver I should contribute as much as I can towards making you useful to the public and to yourselves as good practical surgeons.

The subject that I shall take for the present lecture, is one of considerable interest, namely, the formation of abscess in the interior of the tibia.

I need not tell you that bones are organized like soft parts; that they have the same apparatus of arteries, veins, nerves, and cellular tissue, and that they have superadded to these the unorganized phosphate of lime. Having the same tissues as the soft parts, they are liable to very much the same diseases, but then the characters of these diseases, their symptoms, progress, and treatment, are much modified by the presence of the unyielding earthy material which I have mentioned. Inflammation may take place in bones, as it does elsewhere; it may go on to suppuration, and abscess may form in their interior, as it does in the interior of other organs

But there are these points of difference—an abscess formed in a bone cannot very readily come to the surface, so that it may remain pent up for an indefinite period; the soft parts will stretch, bones will not, and the consequence is, that an abscess situated in the latter is attended with much greater pain than that which occurs in the former. The patient's sufferings are consequently more severe, and they are protracted for a very much longer period.

I am not aware that I can explain to you better what I know of the subject, than by relating some of the cases on which my knowledge of it is founded.

In the year 1824, I was consulted by a young man, 24 years of age, under the following circumstances:—

There was a considerable enlargement of the lower end of the tibia, but the ankle-joint admitted of every motion, and was apparently sound. The skin was thin, tense, and closely adherent to the periosteum. There was constant pain in the part, generally of a moderate character, but every now and then it became excruciating, keeping the patient awake at night, and confining him to the house for many successive days. It made his life miserable, and his nervous system irritable: one effect of which was that it spoiled his temper, and thus produced another set of symptoms in addition to those which were the direct consequences of the local malady. The disease had been going on for 12 years. He had consulted a number of surgeons respecting it, and had used a vast variety of remedies, but had never derived benefit from anything that was done. Instead of getting better, he every year became so much worse. I tried some remedies without any advantage, and at last recommended that he should lose the limb. Mr. Travers saw him with me, and agreed in this opinion. Amputation was performed, and the amputated tibia is now on the table. You will see how much the lower end of it is enlarged, and that the surface of it presents marks of great vascularity. The bone in the preparation is divided longitudinally, and just above the articulating surface there is a cavity as large as a small chestnut. This cavity was filled with dark coloured pus. The inner surface of it is smooth. The bone immediately surrounding it is harder than natural. The examination of the limb explained all the symptoms: there was an abscess of the tibia, stretching the bone in which it was formed, or rather, if I may use the expression, trying to stretch it, and thus causing the violent pain which the patient suffered. On observing these appearances, I could not help saying, that if we had known the real state of the disease, the limb might have been saved. A trephine would have made an opening in the tibia, and have let out the matter. It would have been merely applying the treatment here that we adopt in the case of abscess elsewhere. You open a painful abscess of the arm with a lancet, you cannot open an abscess of the bone with a lancet, but you may do so with a trephine.

About two years after the occurrence of this case, I was consulted by another patient, 23 years of age, who had an enlargement of the upper end of the tibia, extending to some distance below the knee. He suffered a great deal of pain, the part was very tender, and there were all the symptoms of chronic periostitis. I made an incision over the part, dividing everything down to the bone, and found the periosteum very much thickened. There was a new deposit of bone under the periosteum, softer than the bone of original formation. This operation, as in other cases of chronic periostitis, relieved the tension and the pain, and the patient was supposed to be cured. However, about a year afterwards, in August 1827, there was a recurrence of the pain; the enlargement of the tibia, which had in some degree subsided, returned, and it continued to increase. In the enlarged tibia there was one spot a little below the knee, where there was exceeding tenderness on pressure. I need not describe the symptoms more particularly; it is sufficient to say, that they bore a very close resemblance to those in the last case; the only difference being that, as the disease had been

of shorter duration, the pain was less severe, and that the tibia was affected in the upper instead of the lower extremity. I concluded that there must be an abscess in the centre of the bone, and applied the trephine to the tender spot. I used the common trephine made for injuries of the head, which, having a projecting rim or shoulder, would penetrate only to a certain depth. However, it enabled me to remove a piece of bone of sufficient thickness to expose the cancellous structure. Then with a chisel I removed some more of the bone. Presently there was a flow of pus in such quantity as completely to fill the opening made by the trephine and the chisel. It seemed as if the bone had been, to a certain extent, kept on the stretch by the abscess, and that, as soon as an opening was made into it, it contracted and forced up the matter. The patient was well from that time; the wound healing very favourably, and he has never had any return of the disease.

Some time after this I was consulted by a gentleman who had an enlargement of the lower end of the tibia. He suffered constant pain, but every two or three weeks there was an exacerbation of it, and it was then very excruciating, almost intolerable. These attacks sometimes lasted two or three hours; sometimes one or two days. This patient when he came under my care was 34 years of age; he traced the disease back for eighteen years, and stated that it began in the following manner:—On going to bed one evening, he felt a sudden pain in or just above the ankle-joint; the next day there was a swelling in this situation, he was laid up with inflammation, and two abscesses burst in succession, but afterwards healed. He continued well for some considerable time, and then he was again seized with pain in the ankle. This pain was not constant, but occurred at intervals. Some times there were several months during which he was quite well. (These points are worthy of notice with respect to the diagnosis, as I shall show you presently.) After some years, however, the pain was never absent, and he got into the state in which he was when he sought my advice. On examining the ankle I found the tibia considerably enlarged. The motion of the joint was perfect, but there was one tender spot on the inside of the bone, that seemed to indicate the seat of an abscess. I applied a trephine here, and penetrated into a cavity large enough to receive the end of the finger. There gushed out a quantity of matter, perhaps a drachm, or more. The inner surface of the cavity was exceedingly tender, so that he could not bear the introduction of the finger, or even of a probe. On the following day there was a good deal of inflammation in the neighbourhood of the part in which the operation was performed; in the course of a few days an abscess formed, which burst externally just below the ankle, and then the inflammation subsided. The opening made by the trephine became filled up with granulations, and the wound healed favourably. This took place many years ago. I have seen the patient every now and then since, and he has continued perfectly well.

I have had two cases of this kind under my care in this hospital. One was a boy, who had a considerable enlargement of the lower end of the tibia, attended with a great deal of pain. I trephined the bone, and let out nearly half an ounce of matter. The other was a man, whose case I will give you a little more in detail. His name was Mowbray, and he was admitted in October 1838, being then 24 years of age. He had an enlargement of the upper end of the tibia, extending to the distance of 2½ inches below the knee. The circumference of the leg at this part was about an inch more than that of the leg of the other side. The skin over the enlarged bone was tense, and there was a blush of dark redness on the inside. He said that six years ago there took place some enlargement of the head of the tibia, attended with a dull pain. Leeches were applied, and some other treatment was had recourse to; I know not what. The pain continued for about six months, it then subsided, and he became quite free from it, until about three months before he

came to the hospital, when it returned, and the bone began to enlarge. The pain at the time of his admission was so severe that he could not sleep at night. It affected his health; he had lost flesh, and could take little or no food. I concluded that there was probably an abscess in the tibia, but as the disease had only been of short duration, I thought it might be better to treat it as if it were merely chronic inflammation in the first instance, having recourse to some other remedies before I performed the operation: I prescribed, therefore, calomel and opium, sarsaparilla, and iodide of potassium, one after the other. At last, there being no amendment, I applied the trephine at that spot where the bone appeared more tender than elsewhere, and thus exposed an abscess, which contained two or three drachms of pus. The relief was immediate, and soon afterwards the patient left the hospital cured.

I will mention another case. In the year 1841, a young lady came to consult me on account of pain in the lower end of the tibia. It began in the spring of 1835, when she had an attack of what appeared to be inflammation in that bone. The pain was at first confined to the lower end of the tibia, but afterwards she had, in addition to it, other pains, apparently of a nervous character, extending up the limb to the hip. She was of an hysterical constitution, which might, perhaps, make the diagnosis of the disease a little more difficult, the hysterical pain being mixed up with the other. However, I found her having occasional attacks of most severe pain in the lower end of the tibia, the bone being enlarged and tender to the touch; and, after a most careful examination, I was satisfied that there must be an abscess in the bone. Accordingly, I recommended the application of the trephine. She could not then stay in town, and, either because her surgical attendant in the country did not accord with me in opinion, or because she would not submit to it, the operation was not performed. She dragged on a very uncomfortable existence for four years more. In the interval she was married, travelled abroad, had various opinions, tried different remedies both here and elsewhere, but nothing afforded her any relief. Last August she again came under my care; the tibia was then very much enlarged; at times she was quite free from pain, at other periods she had severe attacks of it, so that she could not sleep at night. I was still of opinion that there was a collection of matter, within the tibia. Mr. Travers and Mr. Key saw the patient with me, and it was agreed that I should perforate the bone with the trephine. Accordingly I performed the operation. The bone was excessively vascular, so that there was a good deal of bleeding; and, towards the end of the operation, a quantity of what appeared to be sero-purulent fluid gushed out from beside the trephine, mixing with the blood. At the bottom of the bone removed by the instrument, there was a cavity that would just receive the end of the finger, and from which the fluid had escaped. After this she had considerable pain for some time, but evidently of an hysterical character. She went into the country, and I have been just now informed that the wound has been for some time healed, and that she is free from all her former symptoms. The piece of bone that was taken away is upon the table; it is more hard and compact than it ought to be just above the ankle, where, in the natural state, there is a mere cancellous structure. You will perceive on its under surface, one corner of the cavity in which the sero-purulent fluid was lodged.

Since I first published some observations on the subject, in the year 1832, I have the satisfaction of knowing that similar cases have been treated successfully in the same manner by other surgeons. Mr. Liston has given me an account of two such cases, which occurred in his practice, and I have in my possession the written statement of a third one, in the hospital at Lincoln.

Now what are the circumstances that would lead you to

suspect the existence of abscess in the tibia? and supposing it to be probable that such an abscess exists, how are you to proceed to relieve it?

When the tibia is enlarged from a deposit of bone externally—when there is excessive pain, such as may be supposed to depend on extreme tension, the pain being aggravated at intervals, and these symptoms continue and become aggravated, not yielding to medicines or other treatment that may be had recourse to—then you may reasonably suspect the existence of abscess in the centre of the bone. You are not to suppose that there is no abscess because the pain is not constant; on the contrary, it very often comes on only at intervals, and in one of the cases which I have related there was, as I then mentioned, an actual intermission of seven or eight months. After the disease has existed a certain number of years, indeed, the pain never entirely subsides, but still it varies, and there are periods of abatement and of exacerbation. The combination of circumstances which I have described will fully justify you in making an opening into the bone with a trephine. But how will it be if you are mistaken? This will not often occur, but if it should, really the taking out a circle of bone can be of no consequence; no injury follows the operation—it is unattended with danger. The operation is a very simple one. You expose the surface of the bone, and make a circular opening with a trephine at that part where there seems to be some tenderness and some pain on pressure. One principal thing to be attended to is, that you have a proper trephine. You do not want so large a one as for the cranium, and it must be somewhat differently constructed. Those which lie on the table are made for the purpose. One is of very small diameter, but generally it is quite sufficient. The common trephines are made with a rim or shoulder, and if there be much enlargement of the bone, they will not penetrate deep enough to reach the abscess. It is true that you may break away the bone afterwards, by means of a chisel, but the operation may be more easily performed with a trephine having no shoulder; which will at once penetrate to the abscess, however deep it may be, and render the chisel unnecessary. The after-treatment is as simple as possible. There may be some pain for a day or two, and especially, as in the case I last mentioned, if the patient be an hysterical female, there may be hysterical pain afterwards; but all that is required is to maintain the general health, and lay on some simple dressing; the bone soon granulates, the space is filled up by a sort of fibrous substance, and the wound cicatrises.

But what would happen if you were not to perform the operation? The patient may continue in torture, as I have already told you, for eighteen years, losing all the best part of his life; or a worse event than that may take place. The preparation which I show you is one of the oldest in the Museum. I attended a patient who laboured under various diseases; there were tubercles in the lungs, and vomica; dead bone in the ribs, and some other local complaints which I forget. Besides all this, he had an enlargement of the lower end of the tibia, attended with excessive pain—pain, indeed, hardly to be borne, and which came on in paroxysms lasting for many hours, and then in some degree subsiding. By and bye an abscess appeared externally, in the neighbourhood of the enlarged tibia, and then the pain ceased. Under this complication of disease the patient sank, and died; and on examining the body I found an abscess in the centre of the tibia. One effect of the abscess had been to cause absorption of the cartilage of the ankle-joint. It might have made its way into the joint, but it took another course; and if you examine the preparation, you will perceive on one side of the tibia a round aperture, by which the matter escaped, and by which the external and internal abscesses communicated with each other. It is plain from this, that such an abscess cannot exist for many years without the joint being en-

dangered. In the year 1830, a young gentleman, about thirteen years of age, came under my care. He had just returned from Paris, where he had had an attack of inflammation of the bone and periosteum of the tibia, for which he had been under the care of the late Baron Dupuytren. The inflammation terminated in necrosis. I removed some portions of dead bone, others exfoliated without any operation, and for three or four years pieces of bone continued to come away, none of large size. Among the sinuses that were open, there was one a little below the knee-joint; I could not ascertain whether bone had come from it or not, but it closed, and the patient appeared quite well. In the year 1835 or 1836, however, I was consulted by him again, on account of some pain in the upper end of the tibia. Whenever he walked, the knee-joint swelled, becoming full of fluid. I applied a splint, kept him quiet, and he seemed quite to recover. I then left off the splint, and allowed him to walk about as usual. The result was, that in the course of two or three days the knee was again filled with synovia. On a blister being applied, the fluid was again absorbed, then reappeared again on exercise. Taking these circumstances into account, and remembering that there had been pain for some time in the upper end of the tibia, and formerly a sinus leading to the centre of the bone, I thought it very probable that the knee-joint was only occasionally affected in consequence of some disease in the neighbouring portion of the tibia. Mr. Keate and Mr. Liston saw the patient with me, and agreed in the opinion that it would be prudent to perforate the head of the tibia with a trephine. Finding, as well as I could, the most tender spot, I performed the operation, and out gushed three or four drachms of matter. There was no pain afterwards; the wound gradually contracted and healed, and now, when the patient walked, there was no swelling of the knee. The operation was performed in 1837, and I have seen the patient occasionally ever since, and know that he has had no return of the complaint. But is it possible to doubt that, if the state of things I have described had gone on, the knee-joint must have been destroyed? What would have happened if recourse had not been had to the operation? A case occurred in this hospital, not exactly similar, but sufficiently so to enable me to answer this question. A man of the name of Hendrow was admitted, in February, 1837, with the upper end of the tibia enlarged just below the knee-joint. There was an opening leading down to the centre of the bone, and a probe passed into it came in contact with a piece of bone that appeared to be dead and loose, so that it was plain that a piece of bone in the centre of the tibia had exfoliated and formed an abscess, which had afterwards made its way externally. But that which renders the case interesting as connected with the present inquiry is this, that whenever the patient took exercise there was an accumulation of fluid in the knee-joint, just as in the last case. The swelling disappeared on the joint being kept quiet; and the motion of the joint was perfect, or nearly so. It seemed plain that there was a piece of dead bone in the centre of the tibia, which was somehow or other doing mischief to the knee-joint. The course to be pursued was evident. I applied a trephine so as to enlarge the opening through which the probe had passed; it penetrated into a cavity in which there lay a piece of dead bone, about the size of a horse-bean, which was at once removed. Unfortunately, the poor fellow, whose health had been in a bad state previously, had an attack of erysipelas, and died. I took particular care to examine the knee-joint, and I have the notes of the dissection before me. The whole upper part of the tibia was increased in size from a deposit of scabrous bone on the surface. The cavity from which the dead bone had been extracted was of the size of a large cherry, had a smooth internal surface, the bone around it being somewhat harder than natural. From this a sinus extended up to

the knee-joint, and opened into it just at the anterior part of the spine of the tibia. There was no suppuration in the joint. The cartilage covering the head of the tibia in some places remained perfect, but only in narrow stripes; in other parts it had degenerated into a substance something like condensed membrane; in others the only vestige of it was a thin membranous substance—so thin that you could see the bone through it; and in others the bone of the tibia was completely exposed, but not carious. The bone of the tibia was harder and more compact than under ordinary circumstances. It was curious that the condyles of the femur had suffered also, though in a different manner. The bone, instead of being harder, was softer than natural; so that you might cut it with a knife. The cartilage adhered imperfectly to the bone; it could be peeled off, and in some places it had begun to ulcerate. The softening of the condyles of the tibia I have no doubt was the consequence, and not the cause, of the disease; for, you will observe, that all bones in a state of inaction lose a great part of their phosphate of lime. After compound fracture, when the patient has been long confined, the bone will actually become as soft as a scrofulous bone, so that you may cut them with a knife.

The three last cases show that it is not safe to leave an abscess in the lower end of the extremity of the tibia beyond a certain time; that the joint is always in danger, and that the perforation of the bone is the only remedy. Even if you were mistaken in your diagnosis no harm can arise from the operation. Nay, it is a question whether good may not arise under certain circumstances from taking away a piece of bone, where there is chronic inflammation in it, even though there be no abscess. The following very remarkable case will illustrate this last observation:—A young gentleman, who lived at Brixton, was brought to me by Mr. Crowdy, a practitioner of that place, with violent pain in the middle of one arm, the bone itself being enlarged in that part to which the pain was referred. Some remedies were tried, which I need not enumerate, without any benefit. The pain continued, and I began to suspect that there might be an abscess in the centre of the bone. Under this impression I proposed cutting down upon it, and making an opening with the trephine, so that I might remove the matter, if there were any there. The operation was performed; the trephine penetrated to the centre of the bone, but no matter escaped. I persevered, but still there was no matter, and at last the instrument penetrated completely from one side of the bone to the other. The bone was very hard and compact, and it was as much as the trephine would do to run it through. I thought that I had made a blunder, and that there being no abscess the operation would not be attended with any benefit. The next morning the patient had an attack of pain almost as severe as before the operation, but it did not last long, and he never had any pain afterwards. The wound healed, the relief was complete, and I heard of the patient not long ago as having continued quite well. I presume that this was a case of chronic inflammation of the humerus, and that taking out the piece of bone from the centre, probably partly by relieving the tension, and partly by a discharge of matter from the bone, unloading the vessels, accounted for the relief which the patient obtained from the operation. *London Medical Gazette.*

History of a case of ligature of the left subclavian artery between the scaleni muscles, attended with some peculiar circumstances. By J. C. WARREN, M. D., Professor of Anatomy and Surgery, in Boston, U.S.A., Honorary Fellow of the Royal Medical and Chirurgical Society, &c.

The author remarks that the history of an operation for the ligature of the subclavian artery would seem scarcely worthy the attention of the society. This operation has

been done many times in various parts of the world and the annals of this distinguished body contain no less than twelve cases. The case which he has the honour to lay before them possesses peculiarities, and will, he hopes, afford some practical inferences.

James A., aged about thirty, on the evening of December 23rd, 1843, while in a state of intoxication, slipped on ice, fell, and struck his left shoulder against the kerb-stone of the side-walk. Surgical aid was called, and violent efforts were made to reduce the dislocation, but in what manner the patient could not tell, excepting that he thought one person placed his foot with a boot on, in the axilla. He was sent to the hospital, and on the next day was seen by the author, who found the left arm and shoulder much swollen. Leeches and cold applications were employed, and on the following day the swelling was so much reduced as to enable him to decide that no dislocation existed. During the night of the third day following, (Dec. 28,) the patient was seized with a violent fit of coughing, in which he felt something give way in his shoulder. The next morning the shoulder and arm were very much discoloured and enlarged, the arm was painful, and the patient much prostrated. On the 30th it was discovered that the man had no pulse in his left wrist, or in any part of the arm, and he had also lost both feeling and motion in the extremity. The swelling increased until it became enormous, the arm turning back in the axilla. A vesicication was noticed on the back of the forearm. January 27th, 1844, an abscess was found to be forming in the axilla. In seven days it pointed, but did not open till February 4th, when it discharged a coagulum, and about a pint of dark-coloured blood. Three days subsequently, at six o'clock in the morning, a sudden gush took place from the wound, by which the bed was inundated, the mattresses soaked, and the blood poured upon the floor. Exhausted and almost lifeless, he sunk into a state of syncope, and the hæmorrhage ceased. As he was too low to undergo any operation, it was agreed that if he lived till the next day, the subclavian should, if possible, be tied. By the next morning, he had much revived. At ten o'clock he took eighty drops of the tincture of opium, and at eleven was carried into the operating theatre.

A great difficulty presented itself in the outset of the operation, the swelling of the shoulder, the tumour in the axilla, and the natural shortness of the neck almost obliterating the space between the shoulder and lower jaw. The author, after minutely detailing the steps of the operation, states that the aneurism needle was passed under the first dorsal nerve, which was mistaken for the artery. The wound was too deep, too narrow, and of consequence too dark, to permit the artery to be visible. The anterior scalenus was partially visible, and passing the forefinger of the hand to the edge of this, a good portion of the muscle was divided by the probe-pointed bistoury, introduced upon the finger. The subclavian artery then became quite sensible to the touch, and slightly distinguishable by the eye. A long aneurism needle was passed under the artery, and at this moment a slight whistling was heard, and the author was satisfied that some air had entered the thorax. The ligature was tied, and the wound closed.

The patient improved after the operation. On February 22d, the thirteenth day, the ligature was removed. On the 29th, a stream of blood was seen to issue from the unclosed part of the wound; the blood lost amounted to about a pint, did not issue per saltum, and was of a venous colour. The hæmorrhage was arrested by pressure. At the commencement of March he had an attack of pneumonia, confined to the lower lobe of the left lung, and also a second attack about the 1st of May. By the first of October, the swelling had disappeared from the arm, and the motion had returned in the shoulder-joint. The large excavation in the axilla was reduced to a fistulous tube. On

February 4th, three hundred and sixty-one days after the operation, the author was able for the first time, to detect a distinct pulsation in the radial artery, and subsequently one of an indistinct character in the ulnar and brachial. The patient, June 15th, had nearly recovered. There were still fistulous openings in the neck and axilla. Sensation and motion were slowly improving.

The author remarks, that the cause of the rupture of the subclavian artery in this case is involved in some obscurity. The probability seems to be, that great violence was employed in the attempt to reduce the bone, and that the arteries and nerves were contused by strong pressure of the operator's boot, combined with the forcible extension of the arm. The vessel did not rupture immediately, because its coats were contused, and not torn asunder, but a separation of the contused parts took place, in consequence of the violent efforts of coughing, on the fifth day after the accident. The author, after noticing the occurrence of secondary hæmorrhage twenty days after the operation, makes some extended observations on adhesion of the coats of the vessel within the ligature, on the formation of a plug of coagulum on the cardiac side of the ligature, and on the effusion of lymph external to the artery.

Various circumstances in this case led to the examination of other cases of the same operation. These are arranged in a tabular form, and notice is taken of one striking and important result—viz., that the operation of ligature of the subclavian is the least successful of any on the great arteries, the deaths being about two-fifths of the whole number of cases contained in the table.

Here follows a table of fifty cases, showing the name of the operator, the date of the operation, the side, seat of the ligature, the period afterwards at which the pulse returned, the period at which secondary hæmorrhage occurred, the date of the separation of the ligature, and the result of the case.

Mr. TAMPLIN alluded to the occurrence of the hæmorrhage on the second occasion, before the operation, and asked if means should not have been taken at that time to arrest it?

Mr. ARNOTT remarked, that it had been asked why nothing had been done to prevent the secondary, or rather the hæmorrhage, in the first instance, when it could not be called secondary. Before adverting to this, he could observe, that Dr. Warren was an able surgeon, as every one who saw him in England a few years ago must know, and that he was not likely to neglect any circumstance or point in an important case. But the truth was, cases of the kind were very difficult ones. Here is a dislocation; in reducing it the heel of a boot is forced into the axilla. In five days afterwards, something gives way under coughing, and a large effusion of blood takes place in the axilla and arm; matter forms and is discharged, and in a day or two, the coagulum being loosened, copious hæmorrhage takes place. The axillary artery is supposed to have given way; and had Dr. Warren known where it was injured, no doubt he would have followed the rule of practice in case of an injured artery—viz., have cut down upon it and tied it at the seat of injury. But he did not know, he was not certain, and then he did the next best thing, he tied the artery above the swelling. In the remarks appended to the case, Dr. Warren adverts to several points as if they were new; he seems to suppose, for instance, that the fact of an artery uniting under a ligature without any internal coagulum taking place in the artery is so. But this circumstance has been long known in England, and though usually such coagulum does form, yet you may occasionally have firm union near to a collateral branch, even without any internal coagulum being formed. The doctor speaks of adhesion taking place under the ligature; Mr. Arnett was not sure if he understood exactly what was meant; but certainly no adhesion takes place under the ligature. The

part included by the ligature is killed, it sloughs, and is separated by a process of ulcerative absorption. Then he dwells upon an effusion of lymph taking place around the artery, and supporting the internal coagulum, as if there was something novel in this, whereas this has been always, at least, long known and taught here. Whether there is an internal coagulum or not, you always have lymph effused around the ligature, from the outer coat of the artery, upon the outside of it, and this, in the first instance, unites the ends of the artery, which is cut through by the separation of the ligature. Mr. Arnott would not have made these remarks, but he did not think the society should be allowed to adjourn under the notion that there was anything new, or of importance, in the remarks of Dr. Warren, which only contained doctrines with regard to the union of arteries long known and taught in this country.

Mr. Quain observed, that there was a point or two of practical importance, connected with the valuable case detailed by Dr. Warren, to which he desired to direct attention. The first that he would notice had been alluded to by the last speaker, Mr. Arnott, who said that the "rule of practice," in case of bleeding from an artery, was to cut down to the vessel at the place where the blood issued from it, and tie the vessel above and below the wound, but that the case under consideration was an exceptional one. He (Mr. Quain) apprehended that the rule of practice mentioned by Mr. Arnott applied to wounds and recent cases. He was of opinion that this rule did not apply to cases in which there was inflammation with extensive swelling, suppuration, &c. To cut down through such parts, in order to tie a vessel, altered as it would under such circumstances be, could scarcely be admissible.

The next point he thought deserving of notice, was the place at which the ligature had been applied to the artery. The vessel was tied beneath the scalenus muscle, and it was sought for in this position, because the operator could not reach it on the first rib. He was of opinion, that when there was any difficulty about placing the ligature on the vessel where it rests on the rib, it should be made a general rule to seek it beneath the scalenus, or after it has passed beyond the muscle, and before it approaches the tubercle on the ribs. This part of the artery is higher, much higher in some cases, and on this account more accessible (the clavicle being elevated) than where it rests behind the tubercle on the rib.

In illustration of the advantage of the course here recommended, he cited two cases, which occurred in the practice of Dupuytren. In one of these, the first (he believed) in which that surgeon operated on the subclavian artery, he placed the ligature on the part of that vessel which is behind the scalenus. The result was in all respects favourable; and an account of the case was published by Dupuytren. The second operation was performed a short time after that just referred to, and the intention was to tie the subclavian on the rib. In this instance a large nerve, with half the artery, was included in the ligature. The aneurism needle had been passed through the vessel. The patient died of hæmorrhage in a few days. The history of this case was not, that he was aware of, published by Dupuytren; it was communicated to the *Edinburgh Journal* by Dr. Rutherford, who was present at the operation. He referred to another case, in which Sir A. Cooper failed to tie the same artery on the first rib; and from these facts he drew an inference in support of the plan of operation above noticed.

With respect to the case to which Dr. Warren made reference at the end of his paper, that in which he tied the common femoral artery in consequence of hæmorrhage after amputation of the thigh, and with a favourable result, he observed, that he could not regard that as the operation which afforded the fairest prospect of a

successful termination in such cases. He had, in one instance, seen that operation followed by secondary hæmorrhage, which was arrested only by tying the external iliac artery. The unfavourable result of operations on the common femoral artery was shown in a paper he had the honour of communicating to this society from a friend of his, Mr. Hadwen. Operations on the external iliac artery were much more frequently successful.

Mr. Fergusson agreed in the remarks made by Mr. Arnott with respect to secondary hæmorrhage; and considered that the author had placed more importance than was necessary on tying the artery at a distance from the principal branches. Such a proceeding was by no means novel, as it had been a commonly taught doctrine ever since the time of Jones. He (Mr. Fergusson) was inclined to place less importance than was usually done on the internal clot, for ample proof existed that a vessel might close after the application of a ligature near a large branch. Mr. Porter of Dublin, had tied, with success, the right carotid within an eighth of an inch of the innominate; and the internal iliac and other arteries which had been tied with success, showed that arteries might close by adhesive inflammation, though immediately contiguous to such a stream of blood as passed through the innominate. He had a great respect for Dr. Warren, and spoke with great deference of that gentleman, but he could not help thinking that more had been made of this case than was necessary: he could not indeed see any practical deductions which were not well known to all practical men in this country. Many interesting circumstances had undoubtedly occurred in the case, but there was nothing which was not ordinarily alluded to in lectures on surgery. He referred particularly; however, to two points in Dr. Warren's paper. One had reference to the conviction that the pleura was wounded. Now it did not appear to him (Mr. Fergusson) that the symptoms detailed made this a matter beyond doubt. Dr. Warren had spoken of this accident as though it were not uncommon, but he (Mr. Fergusson) thought it did not often occur. Indeed, the only case which then occurred to his memory, was the one which was under the care of Mr. Colles, but in this instance the subclavian was tied on the right side, between the trachea and scaleni muscles, whilst in Dr. Warren's case the vessel had been secured over the first rib; he thought the pleura was in little risk from the latter operation, even though the anterior scalenus might, as it did in this case, require division. The statistics appended to this paper would correct him (Mr. Fergusson) if he were wrong regarding the frequency of wounds of the pleura. The second point he wished to refer to was, the peculiar sound of the heart which was mentioned—a sound which he might safely say was quite unknown to practitioners in this country.—*Lancet*.

PRACTICE OF MEDICINE AND PATHOLOGY.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.—

NOVEMBER 11, 1845.

DR. CHAMBERS, President.

On the minute anatomy and pathology of Bright's disease of the kidney, and on the relation of the renal disease to those diseases of the liver, heart, and arteries, with which it is commonly associated. By GEORGE JOHNSON, M. D., of Kings College, London. (Communicated by R. B. Todd, F.R.S.)

The author began by stating that the true nature of Bright's disease was, he believed, to be found in diseased state of the secretory or epithelium cells which line the urinary tubules. He arrived at this conclusion in the first

week of July of the present year, at which period he demonstrated his preparations to Professors Todd and Partidge, and a paper containing the result of his researches was given into the hands of one of the secretaries of this society on the 7th of August.

The author then stated that he had ascertained that the secretory or epithelium cells of the kidney contained naturally a minute quantity of oil in the shape of globules, such as are familiar to microscopical observers. The presence of these globules is constant in the kidney, but its quantity varies considerably within the limits of health.

Bright's disease, the author considers, may be described as primarily and essentially an exaggeration of the fat which exists naturally in small quantities in the epithelium cells of the healthy gland—a fatty degeneration of the kidney analogous to the fatty degeneration of the liver, described by Mr. Bowman. This accumulation of fat in the secretory cells necessarily lead to the engorgement and dilatation of the tubules which they line, and one or more convoluted tubes, thus gorged with fat, and projecting either on the surface of the gland or on the surface of a section, constitutes one of the so-called "granulations of Bright." Some Malpighian bodies were observed to contain no fat, whilst others were gorged with fatty cells, but the author had never observed in these bodies an accumulation sufficient to produce destructive pressure on the Malpighian tuft of capillaries. The frequent connection of albuminous and bloody urine with Bright's disease, and the atrophy of the kidney, are attributed by the author to the mechanical operation of the above described fatty accumulation. Having alluded to the circulation of the gland, as described by Mr. Bowman, he entered into a minute detail of the reasons which led him to the conclusion that the presence of albumen and blood in the urine is, in this disease, a secondary phenomenon, dependent on the previous morbid changes.

In reference to the atrophy which the kidney so often undergoes in this disease, the author contrasted the well-known peculiarities of the vascular organization of this organ with the very dissimilar arrangements of the vessels and secretory cells of the liver, an organ which appears to suffer but little from a similar engorgement in its cells.

In speaking of the stages of this disease, the author observed that he had no reason for believing in the existence of any congestive stage as necessarily preceding the morbid accumulation which he describes. The various forms about which so much has been said and written, he believes to depend in great part, if not entirely, on the rapidity with which the disease advances. In cases of long duration, the kidney is generally found small, contracted, and granular; when the progress of the case has been rapid, the gland is large, smooth, and mottled.

The author then dwelt at some length on the frequent coincidence which he had observed of the disease in question with a similar fatty degeneration of the liver, arteries, and valves of the heart.

From the above data the author deduced the important practical conclusion, that these fatty degenerations, so often conjoined, are of constitutional origin, and that they must not be considered and treated as local disorders. He repudiated the notion of Bright's disease having any specific connection with scarlatina, neither did he believe in its alleged relation to acute inflammatory dropsy.

The causes of the disease are, according to the author, essentially debilitating; in large towns the disease is prevalent and fatal, in country districts it is comparatively rare. The disease has been artificially produced by Mr. Simon, of King's College, in the lower animals, by their continued exposure to depressing influences.

With respect to the microscopical characters of the urine in this disease, the author remarks—1st. That the cylindrical bodies described by Dr. F. Simon are fibrinous casts of the tubes, frequently entangling blood discs, oil globules, or

epithelial cells, with fatty contents. 2nd. That the presence of much fat in the urine is an alarming symptom. In an advanced stage of the disease, fat rarely abounds, but from experiments on the lower animals, as well as from observation on the human subject, it seems probable that in many cases of chronic ill-health during a period in which no especial attention is directed to the state of the urine, there may be eliminated with this secretion such an excess of fatty matter as would in reality mark the first stage of Bright's disease.

On the subject of treatment, the author stated that the obvious indications were—

1. The pursuance of a general tonic regimen in respect of diet, atmosphere, exercise, and medicine.
2. The careful avoidance of all exhausting remedies.
3. To avoid, as articles of food, fat and other highly carbonized materials, &c.
4. To relieve congestion of the gland by strict attention to the functions of the skin and bowels, and by such small bloodlettings as circumstances might demand.

Dr. Todd said that he rose at that early period of the debate for the purpose of bearing testimony to the accuracy of Dr. Johnson's statements. The admirable and lucid manner in which Dr. Johnson had expounded his views, would, he was sure, be generally acknowledged. He (Dr. Todd) had had the opportunity of watching the progress of the investigation, from its commencement in July to the completion of the paper which had just been read, and he would add, that he had rarely witnessed a more interesting inquiry. Independently of the intrinsic merit of this investigation, he felt that it was peculiarly important, as tending to turn the attention away from questions of mere vascular repletion, or the opposite condition, and to direct it to the real state of the elements of textures—as of the kidney, in the present case—as being those parts in which the seeds of disease are sown. According to the views now brought forward, we must count three stages in Bright's disease;—In the first stage there is a morbid state of the primary and secondary assimilating processes, giving rise to a diseased state of the blood. At this stage there are no very marked signs of disorder readily recognisable by the physician. The second stage is accompanied by a change in the attraction between the gland and certain constituents of blood, so that fat, which in health passes off by the kidney only in small quantity, is now attracted largely to its elementary parts, the epithelium cells, and accumulates in them to overloading. These gorged cells, collecting in the uriniferous tubes, press upon the capillary plexus of their walls, and throw back the blood on the Malpighian tufts, causing congestion or rupture of them. And this is the third stage in which the urine becomes albuminous, and other signs appear, which have been so well pointed out by the extraordinary clinical research of Dr. Bright and his followers. A strong feeling had grown up among practical men as to a close connection between this disease and scrofula. The author's statements respecting the artificial production of the disease in animals bore upon this subject; but further research was necessary before the exact nature of the connection could be determined.

Dr. Bright eulogized the paper, as showing great industry and perseverance. It was a paper of the greatest interest, and to himself more especially so. He could not vouch for the accuracy of all conclusions come to by the author, but they bore the appearance of the greatest probability—they appeared like truth. Should future observers confirm the correctness of Dr. Johnson's investigations, a most important vacuum in regard to the disease under discussion would be filled up, and a more rational line of treatment would doubtless be the result.

Dr. Copland regarded the paper as one of great interest, the chief point in it was new and striking, but there were particular statements in it which it was desirable to

notice. It was stated by the author that the disease had its origin in mal-assimilation of the food by the organs of digestion, resulting from a morbid state of the blood. Now this was by no means a novel doctrine, for in a treatise which he (Dr. Copland) had published three years since, he had expressly stated this to be his opinion. He should be glad to know, in respect to the presence of fat in epithelial cells of the kidney, whether Dr. Johnson had any other than microscopical evidence of the correctness of his statement—had any chemical examination been made? Granting that the disease did arise from the presence of fat in the epithelial cells, how could we account for the large quantity of albumen found in the urine, the absence of salts in that secretion, and their presence in the blood? The treatment advocated in the paper was that which was usually pursued.

Dr. SNOW said, that he felt a difficulty in admitting that the fat which Dr. Johnson had discovered in the minute tubuli of the kidney, could by its mechanical pressure, be the cause of the escape of albumen, and other constituents of the blood, into the urine; for in the latter stages of the disease, when the amount of the fat must be greatest, the quantity of albumen was diminished, and in many cases disappeared altogether. If there was any great amount of albumen, or blood, in the urine, in the advanced stage of Bright's disease, it was when, supervening on the chronic disorder there was an acute attack, resembling the acute disease of the kidney from exposure to cold, or that which follows scarlet fever, in which acute diseases, the author of the paper admitted that fat was not present. Whilst he (Dr. SNOW) admitted that the disease in question generally commenced gradually, and was the result of cachexia, he considered that it sometimes owed its origin to an acute attack. In a child that died of dropsy at the end of two or three months, after scarlet fever, he found the kidneys so much hypertrophied, that they weighed a pound, and were, to some extent, affected with granular degeneration. Now the dropsy commenced in this child about twenty-one days after the commencement of the fever, and just in the same manner as it comes on in other children, in whom we know, from their perfect recovery, that there was no previous disease of the kidney. Dr. CHRISTISON had mentioned one or two cases of this disease which seemed to owe their origin to scarlet fever; and Dr. BRIGHT had related some which seemed to date their origin from an acute attack. If the patient should abstain from fatty and farinaceous and saccharine food, as recommended in the paper, the only sustenance left for him would be nitrogenous food, as albumen and fibrine; but unfortunately, he was in constant danger of secondary diseases, as inflammations and coma, with convulsions, from the nitrogenous products of excretion, which the disabled kidneys could not duly separate from the blood.

Dr. BRIDG had some time since been made acquainted with the views advocated by Dr. Johnson, and had put to the test the plan of treatment recommended. He had placed three or four patients, in King's College Hospital, labouring under dropsy and albuminous urine, on a diet consisting of lean meat, bread and water, and abstaining from sugar, fat, and starch. He had also administered iodide of potassium and liquor potassæ. The result of the treatment, as far as it had gone, had been quite satisfactory; but of course, at present, it would be premature to draw any conclusion from it. It would be scarcely possible to over-estimate the value of the paper, which threw a flood of light on the pathology, and realised the sagacious suspicion of Dr. Prout with respect to the true nature of the disease. Considerable stress had been laid on the structural changes in this disease; but the question arose as to the origin of the fat formed in the epithelial cells. It had been considered, that in the fatty liver which prevailed in the advanced stages of phthisis, the fat was attributable to

deficient aeration of the blood; but this opinion was not tenable, for depositions of fat in vital organs were found, in all cases, attended with much fever and rapid wasting. He considered, that in these cases there was not a deposition of new fat, but that the fat stored in the system was taken into the circulation, and redeposited in the various organs found affected. The fatty livers in the well-known Strasburgh geese resulted from the causes he had alluded to. This view was further strengthened by the fact, that patients labouring under albuminuria were usually fat.

Dr. JOHNSON said, in reply to Dr. Copland's question regarding the evidence of the presence of fat in the kidney, that a microscopical observer was scarcely likely to confound fat globules with globules of albumen. He could, however, offer a chemical test of the accuracy of his statements, as he had with Dr. Miller, commenced an analysis of portions of fatty liver and fatty kidney by digestion in ether, by which it was shown that the former contained rather more than, and the latter about one-sixth portion of fat. The analysis was not yet complete, or he should have alluded to it in the paper. When complete, however, it was probable that fat would be found in even greater proportion. With respect to the observations of Dr. Copland regarding the treatment of the disease, he, Dr. JOHNSON, thought one important principle had never before been mentioned, that of the necessity of abstaining from fat as an article of diet.

Mr. TOYNBEE had during the last three or four years, injected and examined as many as eighty kidneys. He complimented the author of the paper on his investigation, but he regarded the inquiry as not yet complete. He agreed with Dr. JOHNSON that it was not probable a microscopical observer would mistake albumen for fat. In the investigations which he had made, he had paid particular attention to the condition of the arterial, venous, and tubular vessels of the organ, and for this purpose had made minute injections. In this particular respect, Dr. JOHNSON's paper was deficient. He had observed in the advanced, and, indeed, even in the early stages of the disease, that the blood vessels had become diseased; the plexuses of vessels in the Malpighian corpuscles were enlarged to three or four times their natural size, as were also the tubuli. Dr. JOHNSON had also neglected to investigate the condition of the true parenchyma of the kidney, and had paid too much attention to the lining membrane and the epithelial cells, for the parenchyma consisted of corpuscles or cells which in this disease became much enlarged.

Mr. SIMON spoke of the great difficulty, and, indeed, impossibility, of injecting the kidney in Bright's disease, in consequence of the impervious condition of the vessels. With respect to the treatment of the disease, he differed from Dr. Copland in considering that the treatment recommended in the paper was that which had been always pursued. Dr. Copland, in his dictionary, had enumerated other modes of treatment which had been employed, and among them, that of hydragogue cathartics, mercury, venesection, and other depressing remedies—means which were quite forbidden by Dr. JOHNSON, to whom the profession were at least indebted for pointing out an explanation of the rationale of treatment.

Dr. COPLAND, in explanation, said, that in his own practice he endeavoured to improve the function of the digestive and assimilative organs; he ordered cuppings, to a small extent, in the loins, in the early stage of the disease, and exhibited chalybeates, with the view of improving the system. He had found much advantage from the tincture of muriate of iron, combined with tincture of lytta, or some other stimulant. He was at a loss to explain, from Dr. JOHNSON's theory, the occurrence of very acute cases of the disease, which could scarcely be considered to arise from a rapid deposition of fat in the kidney.

Dr. BRIDG said, that Mr. Busk of the Dreadnought had, six or seven weeks since, exhibited to him some drawings of

morbid kidney, which tended to confirm the views of Dr. Johnson.

Dr. Todd remarked, that if Dr. Copland would weigh well the observations made, he would change the order of his treatment. Small bloodlettings in the early stage did harm, for it was only in the more advanced stages of the disease, when the accumulation of fat had taken place in the kidneys, and the organ became congested, that small bloodlettings did good.

Dr. C. J. B. WILLIAMS was not present when the paper was read, but he had gathered sufficient from the speakers to arrive at a knowledge of the main points of treatment advocated by Dr. Johnson, and that he deprecated any depletory measures, particularly in the earlier stages of the disease. Now he (Dr. Williams) knew no treatment so beneficial and successful as cautious bloodlettings in the early stages, particularly in the acute form of the disease. He had recorded twenty or thirty cases of albuminuria, altogether independent of scarlet fever, and coming on as an acute disease, in which in the early stages, he had employed cupping on the loins, hydragogue cathartics, conjoined with medicines calculated to improve the general health, with the greatest success. He had found no improvement in the condition of the urine, until these means had been applied. The enlarged and congested state of the kidney, together with tenderness over the organ, demanded this plan of treatment. Depletion, on the contrary, was contra-indicated in chronic cases; he agreed with Mr. Toynebee as to the importance of attention, in the first instance, to the condition of the parenchyma of the organ, as he (Dr. Williams) considered that the deposit of fat was a secondary effect, and not the *fons et origo* of the disease. There were certain conditions of the kidneys, somewhat resembling Bright's disease, in which there was diminution of the urine, with albumen, but the water of the urine was diminished in quantity as well as the natural constituents of the secretion; but here, instead of having a mottled kidney, you had simply enlargement and induration; the organ did not abound in fatty, but in granular matter; and the cells constituting the parenchyma were increased in number, and contained granules. Dr. Quain had also discovered these granules in the tubuli.

Dr. GOLDING BIRD, whilst according his fullest approbation to the ingenuity and industry displayed in the researches of Dr. Johnson, still felt compelled to withhold his acquiescence in the statement that the hypothesis now propounded was adequate to explain all the phenomena observed in the disease under consideration. The late hour of the evening prevented his alluding to more than one or two of the most important points, in which he felt inclined to regard Mr. Johnson's theory as insufficient. The great novelty of his views consisted in the parallelism he had drawn between fatty degeneration of the liver and the state of the kidney under discussion. Yet what was the fact? In fatty liver, the secretion of bile went on tolerably well; at all events, remarkably so when the state of the gland itself is borne in mind, there being no evidence of the retention of bile in the blood, jaundice being by no means a necessary concomitant even of a very fat liver. Yet how different are the facts observed in the granular kidney which Dr. Johnson assumed to be in the state of fatty degeneration; here the two elements of urine are not properly excreted; on the contrary, albumen and certain elements of the blood appear in the secretion, whilst the patient is poisoned by the retained elements of urine. Hence, if Dr. Johnson's views be accepted, we must admit that fat deposited in the cells of the liver and tubes of the kidney produces very different results on the secreting powers of the organ. Further, the fact of diuresis, often copious in the latter stages of morbus Brightii, appeared to him to be quite opposed to the belief that increasing pressure on the vascular plexuses, by deposited fat, was an active agent up to the last stages of the disease.

Dr. WATSON having passed a high eulogium on Dr. Johnson's paper, the society adjourned.—*Lancet*.

DISEASES ARISING FROM THE MANUFACTURE OF ZINC AND COPPER.

The March number of the *Journal de Médecine* contains a very interesting article by M. Blandet, on the diseases arising from being employed in the manufacture of articles of zinc and copper. Christison asserts, that in the few and rare cases supposed to be colic from copper, the disease is due, not to the copper but to the lead which is often united with the copper to prevent its oxydation, where, as the fact is that no lead whatever is used to alloy the copper employed in the arts; and even were the proportions of lead made use of which have been recommended in one receipt, we can scarcely suppose that the dust of an alloy containing only 1-200 of lead could suffice to produce lead colic. It is zinc and not lead which is employed in the proportion of from 33 to 50 per cent. to prevent oxydation. The popular notion, that the disease is due to the lead contained in the solder, is equally false; no lead whatever being employed for this purpose. Physicians in all countries being unwilling to admit the existence of a colic caused by copper, have been in the habit of setting down as colica pictonum every case of colic met with in a worker in metal, whether the fact of his making use of lead was or was not ascertained; and, consequently, on looking over the records, for the last two years, of the hospitals Saint Antoine la Charité, Hotel Dieu, and La Pitié, M. Blandet found no less than 18 cases of colic, which had there been met with in turners, founders, polishers, &c., of copper, many of whom ascribed the symptoms solely to the use of that metal. Mr. B. remarks, that the number would have been much greater, were it not that many physicians finding it impossible in any way to father the disease on the handling or inhalation of lead, set it down as enteritis, &c. M. Blandet seems to look on the introduction of particles of copper into the prima via, by their being diffused in the atmosphere, or communicated by the hands or benches of the workmen to their food, &c., as the most fruitful source of disease: and hence he recommends covering the mouth with a cloth to strain the air, strict attention to personal cleanliness, and the prohibition of eating in the workrooms, as the best preventive measures. The workmen universally rely on the use of milk as the most effective means of warding off an attack of colic.

The symptoms in trifling cases, which for the most part do not prevent the patient from working, consist merely of colic pains, lasting one, two, or three hours, and often leaving after them great abdominal tenderness, so that the patient cannot bear to button his trousers. During the fit, relief is obtained from bending forwards. Pressure may or may not cause pain. In more severe attacks there is diarrhœa, the evacuations being generally greenish, (in some of the cases given in the paper of M. Blandet, copper was distinctly recognized by the usual tests.) In other instances, there is bilious vomiting, and occasionally passing of blood. The circulation is rarely affected; but sometimes a kind of excitement, analogous to intoxication, has been observed. Cough is a very frequent symptom; but the affections of the respiratory system, the author promises to make the subject of a distinct memoir. The following is a tabular view of the means of distinguishing colica pictonum from the colic produced by copper:—

COPPER COLIC.

1. Diarrhœa frequent.
2. Alvine evacuations, greenish.
3. Abdomen generally pained by pressure.
4. Vomiting frequently met with.
5. Sanguinolent evacuations.
6. Duration, forty-eight hours.
7. No affection of the nervous system.

8. Workmen become accustomed to the emanations of copper, which eventually cease to affect them.
9. Milk and sweetened albuminous fluids prevent and relieve copper colic.
10. Opium is indicated in the diarrhoea of copper colic.

COLICA PICTONUM

1. Constipation.
2. Seromucous stools.
3. Abdomen free from pain, and most frequently relieved by pressure.
4. Rare.
5. Never met with.
6. Duration several weeks.
7. Marked affections of nervous system.
8. A miserable death is the result if the patient persist in his occupation.
9. Sulphuric acid and some of its compounds appear to prevent and cure lead colic.
10. Purgatives are indicated in Saturnine colic.

The treatment recommended is very simple. Milk, or rather albumen, sweetened with sugar, is to be given to shield the stomach and intestines from the irritation of the particles of copper. In cases of constipation, a gentle purgative is to be given, or the bowels are to be freed by a laxative enema; but in all cases the application of opiate lotions to the abdomen, and in most, the administration of laudanized syrups will be attended with the best effects.

An abstract of the examination of a great number of operatives and manufacturers is given by M. Blandet to prove that the apprentices and fresh hands rarely escape an attack of some kind, originating in the poison of copper, and that very serious symptoms originating in this source are of ordinary occurrence in the workshops, although the sufferers rarely apply at the hospitals for aid.

Poison of Zinc.

M. Blandet having been led to inquire into the affections supposed to arise from the vapours of oxide of zinc diffused through the atmosphere was at first surprized to find, that although the brass-founders often experienced much annoyance from this cause, the smelters of zinc were perfectly free from any unpleasant effects of the kind. An intelligent workman, however, relieved him from his embarrassment by assuring him, that the low heat used by zinc smelters was not sufficient to vapourize the metal, whilst in brass-founding, the much greater heat required to cause the copper to enter into fusion vapourized a considerable portion of the zinc, which being inhaled by the workmen, gave rise to the symptoms. In ordinary circumstances the vapours of oxide of zinc are carried off rapidly by the draught; but when the wind is unfavourable, the draught bad, and the apertures admitting air, closed on account of the cold, the workmen, a few hours after being engaged in casting, complain of loss of appetite, oppression and pain in the stomach, vomiting or tendency to vomit, oppression of the chest with cough, pain in the forehead, ringing in the ears, general lassitude and sensation all over as if beaten, loss of appetite, shivering continuing for two or three hours and followed by cold sweats, or more frequently, the sweating is preceded by flushes of heat, and violent febrile reaction follows. In the morning all this train of symptoms has disappeared, but the health of the workman is gradually undermined, and asthma and other affections of the respiratory apparatus are a frequent consequence of the repeated exposure to these deleterious fumes. The remedy recommended by M. Blandet is, to give a purgative lavement, and to cause the patient to drink copiously of tea.

The preventive means are, to allow as few persons as possible to be present at the casting; to add the zinc to the copper at as late a period as possible; and above all to secure in the casting chambers a good draught and thorough ventilation.

The injurious effects of the fumes of oxide of zinc are attested by the evidence of numerous artizans and manufactu-

urers; and M. Blandet concludes his very important communication by urging the importance of prohibiting the establishment of zinc or copper foundries in cities or populous neighbourhoods since their deleterious fumes must make a powerful addition to the numerous train of evils almost inseparable from the crowding together of human habitations—*Journal de Médecine par M. Trousseau, March 1845,*

FUNCTIONAL DISEASE OF THE HEART IN PERSONS WHO HAVE LED DISSOLUTE AND INTEMPERATE LIVES.

Dr. Corrigan, in his lectures on the diseases of the heart, describes a form of functional disease of the heart arising in persons who have led dissolute and intemperate lives. "In such persons," he remarks, "the complaint commences with palpitations, which are excessively troublesome, and annoy the patient to such an extent as to induce a fear that organic disease of the heart may be present, and which may prove quickly fatal. The action of the heart is violently strong and tumultuous, and is often accompanied with pain shooting down the left arm as far as the elbow: these palpitations are much increased when he walks or takes exercise, if at all of a violent nature. In this state he is miserable, dreading nothing so much as instantaneous death at some period (of course) unforeseen by him; yet, with all these complaints, when you examine the heart you find it sounds natural. The tongue, in this disease, presents an appearance which you could not, *a priori*, conjecture;—on examination, its sides, tip and dorsum, present a red and glazed appearance, indicative, in some degree, of subacute gastric inflammation. In this disease the stomach acquires the power of secreting air, which often takes place to an enormous extent; and if we press upon it towards its great arch, we shall find it somewhat elastic, and if we apply the stethoscope in this situation, we shall find the stomach tympanitic, and the sounds of the heart in this region become preternaturally clear and distinct. The reason of this is obvious. The stomach, being enormously distended with its gaseous secretion, irritates the heart, and throws it into irregular action, while the sounds of the organ are transmitted with preternatural distinctness through a medium so well adapted for their conveyance as the air, which is secreted by the stomach in its present disordered state. I have seen this form of functional heart disease, as I have remarked already, in persons who have led dissolute, intemperate lives, addicted to excesses of every kind. I have seen more of it, however, in those persons who have returned from the civil wars in Spain than among any other class. I think that their mode of living while in Spain accounts satisfactorily for its very great prevalence among them. They were persons who, for the most part, were deprived, in a great measure, of a due supply of wholesome food; but who, in order to make up for this deficiency, addicted themselves to the intemperate use of stimulants of every class, such as green tea, tobacco, and, last not least, to the use of those which the country itself supplies with such lavish profusion—wine and brandy. Here we have all the causes necessary to produce gastric inflammation, and it is this which is the root of the disease.

We shall find the appearance of the tongue of material benefit to us in pointing out the treatment to be adopted, which is nothing more than the removal of the gastric inflammation which exists in a subacute form. In our treatment of this affection, our first step should be the application of counter-irritation over the epigastrium, and this continued, too, for a considerable time. For this purpose I generally prescribe the croton oil liniment, made with a drachm of the oil to an ounce of spirit of turpentine, or compound camphor liniment. This is to be rubbed in every morning and night until pustulation is produced. Along with this topical treatment, I am in the habit of prescribing oxide of bismuth, in conjunction with bicarbonate of soda, or better still, a combination of these two with the saccharine carbonate of iron in the following proportions:—

R.—Sodæ bicarbon, gr. x; Bismuth trisnitrat., Ferri c. saccharo, aa gr. viij., pro pulvere, ter. in die sumendo.

This must be persevered in for some time, until the tongue becomes improved in appearance, the stomach loses its power of gaseous secretion, and the patient no longer complains of palpitation or any other irregularity of the heart. It will be needless for me to mention that, in addition to these means of cure, you must prohibit your patient most strictly from the use of tea and all other

stimulants. Let his diet be one of a nutritious, non-stimulating character, containing animal food in quantity and quality suited to his enfeebled digestive powers.—*Med. Times*, Aug. 16.

EPILEPTIC PALPITATION.

In the same lecture, Dr. Corrigan makes the following remarks relative to a functional affection of the heart which is caused by diseases of the brain. "It seems strange," he observes, "that an affection of the brain could cause palpitation of the heart, but, though strange, it is nevertheless true. You will be consulted by a young man, or by one probably in the prime of life, who will tell you that he has been attacked by palpitations for some time past, which render him uneasy, anxious and uncomfortable, and that they come on him when he takes exercise or is at all agitated. These palpitations frighten him very much, but when you examine the heart you find its sound perfectly normal. On questioning him as to the first occurrence of this irregular action of the heart, he will tell you, perhaps, that some short time ago he was attacked with a fainting fit, which he says has recurred since, and that, after the first attack of syncope, the palpitations began to annoy him. This is what the older writers termed *epilepsia silens*—silent epilepsy. About the fainting fits themselves, the patient has not the least concern; he fears only for the palpitation, and to this he directs your attention exclusively. These fainting fits, if allowed to proceed unchecked, will terminate, perhaps, in a very short time, in well marked and regular epilepsy. However, they may run on for a period of two years before the disease perfectly shows itself. Your attention will be awakened here by finding these fainting fits coming on at a period of life when they should be naturally absent, from the vigour which the constitution enjoys. You will, therefore, proceed to inquire from what cause it is that they arise. The heart, as I have said before, is perfectly normal in its sound; no disease there; no symptoms of irritation along the vertebral column. Where, then, does the mischief spring from? The head, as I have remarked, is the cause of these alarming palpitations, and of those fits of syncope which have preceded the palpitations.

We have now to consider the means best adapted to relieve both the cause and its effects. The medicine which I have found to possess properties the most serviceable and advantageous in arresting this disease is the digitalis purpurea, or fox-glove. I have witnessed more benefit in cases of this kind from the use of the digitalis (bleeding from the arm having been in every instance premised), than from any other remedy or class of remedies which I have seen tried. To produce its beneficial effects here, you must not content yourself with administering it in the small doses of the pharmacologists. The form of the drug which I have found most beneficial is the powder; it must be given in doses of two or three grains at bedtime every night, and in some cases, in five grain doses, until it exerts its peculiar effects on the constitution. You will, therefore, consider this affection of the heart only as it really is, one of secondary importance; and, in the selection of your remedial measures, you will proceed at once to strike at the root of the evil where it really exists—in the brain; and not until every trace of mischief has vanished from thence can your patient be free from these palpitations, which are to him a source of such needless alarm. Without my having told you, your own common sense would at once have made you acquainted with the propriety of keeping your patient as free as possible from every source of mental irritation, as this has been known to prolong the disease to an extremely protracted period of time."—*Ibid.*

FUNCTIONAL DISEASES OF THE HEART IN SEDENTARY PERSONS.

BY DR. CORRIGAN.

We often meet, in persons of sedentary habits, an affection of the heart, consisting of violent palpitation, which, as in all these cases of functional derangement of the heart, give the patient a great deal of unnecessary alarm. There is no abnormal sound here, though the heart may be felt acting with great vigour. If we examine these cases minutely, we shall find, in every one of them, evidences of venous congestions; the pulse is full and quick, the eyes are suffused, the patient feels more or less drowsy; there are sometimes a turgescence and lividity of the face, the swelling of the legs, and, occasionally, an inclination to syncope. These signs, if neglected for any period of time, will terminate in

an attack of apoplexy, in all probability fatal. It is easy to conceive why, in these cases, the heart should become affected with palpitations, in consequence of the extraordinary quantity of blood thrown upon it by the sedentary habits of the patient—these palpitations being nothing more than the struggles of the overloaded ventricle to discharge completely the quantity of fluid contained within it.

The treatment here is obvious and simple. Take blood from your patient to the extent of eight or ten ounces, so as partially to unload the ventricle; after that give a purgative, so as to unload the alimentary canal; and, in my opinion, you will have done everything requisite for your patient—in fact, you can do no more.—*Ibid.*

CHLOROTIC PALPITATION.

Dr. Corrigan, in his lectures on diseases of the heart, now in the course of publication in the *Medical Times*, gives the following account of a peculiar functional disorder of the heart accompanying chlorosis. The following are its symptoms:—"Anæmia, characterized by the bloodless, tallowy appearance of the surface of the body; cough, oppressed breathing, dyspnoea, emaciation, loss of muscular strength, anasarcons feet, and effusion, perhaps, into the cellular tissue of the body. To these symptoms, alarming enough in themselves, are added palpitation of the heart, and bruit de soufflet. Here we have a train of symptoms alarming enough to induce us to suppose our patient labouring under organic disease of the heart. We find these palpitations increased on taking exercise, and sometimes accompanied by pain in the region of the heart. Have we any characteristic mark by which we can distinguish whether the above train of symptoms denotes organic disease of the heart or not? Yes. Although the other signs might readily deceive us as to its existence, yet by carefully examining the bruit, we can from it discover a means of arriving at the wished-for conclusion. The bruit, from the peculiarity of its sound, in these cases has been by the French writers termed *bruit de diable*. The sound closely resembles that produced by the school-boy toy (with which, I am sure, you are all familiar), made of a piece of iron, or stiff leather, nicked at the edge, and strung on a cord by a hole through its centre. This, on being twirled through the air pretty briskly, produces a peculiar sound. The bruit here differs from that of organic disease in the following particular:—In organic affection the beats of the pulse being 50, 60, 70, 80, or 90, in a minute, the number of times bruit is heard will tally exactly with this, except in cases of permanent patency of the aorta, when the sound of the returning portion of blood causes double bruit. In chlorotic palpitation, no matter what the number of pulsations may be, the bruit does not correspond with them. You cannot count the number of times in which you hear bruit de soufflet in this affection. There it goes on continuously, whirring away for one-half, one, two, three, or ten seconds; there is no intermission in it as in organic disease; it may hold on thus for half a minute or a minute, but during this time there is no cessation. In this distinction we possess a never-failing criterion between functional disorder and organic disease of the heart. In the chlorotic bruit de soufflet you can hear its sound also in the internal jugular vein, when the stethoscope is applied to the neck,—this sound proceeding here from exactly similar physical causes as those which I have detailed in the lecture explanatory of the causes which operate in producing bruit de soufflet. In the disease before us we have the physical cause acting in full force, which is absolutely essential in producing this sound—namely, an incomplete distension of the large vessels with blood, owing to the deficient supply of it in the system. But you must hear in mind, that in a person of perfectly sound heart, and enjoying excellent health, you may have bruit de soufflet present, from some cause or other, of only momentary duration.

“The treatment of this chlorotic palpitation may be divided under two heads:—1. To remove the constipated state of the bowels which always exists here, by means of purgative medicines, which are supposed to exert some specific stimulus on the uterus: of this class I think aloe the most preferable. 2. To improve the general state of health by the administration of a full diet of animal food, a moderate allowance of fermented liquors, by taking a sufficiency of exercise—walking, if possible, is to be preferred—and by the use of medicines which are supposed to possess the property of promoting materially the formation of red blood—chalybeates, for instance. By the use of these, and all other means which may suggest themselves to you as being useful in raising the debilitated system to a proper degree of vigour and to the highest possible tone, you will, in the majority of instances, quickly and effectually restore your patients to health.”—*Med. Times*, Aug. 9, 1845.

MIDWIFERY.

FOUR CHILDREN AT A BIRTH.—ACEPHALOUS MONSTER.

SURGICAL SOCIETY OF IRELAND.

Dr. Beatty said he was about to bring under the notice of the society a case which was possessed of considerable interest in many points of view. The specimen before them was a monster, which had been sent up for exhibition by Dr. Purefoy of Cloughjordan, the account given being as follows:—It was one of four children, born of the same mother at a single birth, three of whom were born alive and healthy. The first child was born at ten o'clock at night; in fourteen hours after a second appeared; in an hour after this, the monster came forth; and in an hour after that, the fourth, a living child was born. The only cause assigned for the occurrence was, that the mother had suffered considerable mental distress at about the seventh month of her pregnancy, from having seen the mutilated corpse of a cousin who was murdered in the neighbourhood; to this circumstance the neighbours were disposed to attribute the occurrence in question. The case was remarkable, (Dr. Beatty observed,) first, from the plurality of children; secondly, the birth of three alive, and in perfect condition; and thirdly, from the supposed cause of the occurrence which he had just mentioned. No examination had as yet been made of the preparation, as he was anxious to present it in as perfect a form as possible. It appeared to be, he said, one of those acephalous monsters, with, in addition, considerable deformity of all the limbs. Looking in the situation of the vertex, traces of the remains of a skull could be observed, and the specimen was found to differ from the ordinary acephalous monsters in their being no face. A slight projection occupied the natural situation of the nose, but no trace of any other feature existed. The upper limbs were particularly distorted, the arm being exceedingly short, and an absence apparently of the forearm, there being at the extremity of the arm a fin-like process representing a hand; the body, thorax, and pelvis appeared pretty natural, though very much misshapen; club feet were attached to both lower extremities; there was no trace of an anus; the dorsal region presented nothing unusual, there being no appearance of *spina bifida*. The monster was of the male sex. While thus examining the specimen, Dr. Beatty observed, the subject of monstrosity at large seemed to suggest itself for consideration, so that a few observations on that question might not be inapplicable just then. All present were no doubt aware, he said, that at the present moment the subject of monstrosities has given rise to a great deal of speculation in the minds of inquiring persons, leading to differences of opinion as to classes and kinds, some founding a classification arising

from a redundancy of parts, as in children born with supernumerary fingers and toes, an occurrence by no means common; others, again, founded a classification depending on deficiencies of parts, for instance, of the arms, or legs, or the absence of the hand, and so forth. Again, monsters were to be found with all the parts apparently present, but in a misshapen condition, the arms and legs being both perhaps pretty naturally formed, but short and deficient in size, &c. The cases presenting a deficiency of all the parts had been classified as conglomerate or mixed prodigies, their being apparent only a mass of flesh, and to this class of cases he would call their attention presently. A very common cause of monstrosity, he would remind them, was a deficiency of the upper part of the calvarium, called cat-headed, from the resemblance to that animal. This, he observed, would appear to be the case in the fœtus under examination, but presenting, in addition, an example of deficiency and of misshapen parts. A question with many has been the cause of the deficiency of the calvarium in these cases, and among a great many opinions offered, it appeared to him that the one now put forward by Rudolphi of Berlin, was nearest the truth. Rudolphi is of opinion that in the ordinary acephalous fœtus the deficiency of the brain is attributed to the fœtus in utero having got hydrocephalus, the fluid in which continues to increase till it bursts through the brain and its investing membranes, and finally through the integuments, the fœtus escaping with life, but born without the brain, and with complete absence of the upper part of the head. In the museum at Berlin are numerous specimens prepared by Rudolphi, exhibiting the disease in all its stages,—one with the head so enlarged by fluid as to be on the point of bursting; another, with a projection through the integuments of a vesicular character, the covering being a very delicate membrane through which the contained fluid is seen, and the brain, apparently, totally destroyed. From these and other proofs, Dr. Beatty considered that we are justified in accepting Rudolphi's explanation of the occurrence of acephalous fœtuses as the one most likely to be correct. Now, with respect to mental impressions, he would observe, that this is a vexed question, and has been for many years; however, numerous instances on record go to show that some connection exists between impressions made upon the mother and the fœtus in utero. He would not of course detain them by going into a detail of all the occurrences of this sort which might be adduced, but would just mention two striking cases which had come under his own immediate knowledge, selected from his father's case-book; one, was that of a lady, who, in the sixth month of her pregnancy, while walking on the South Circular-road, was accosted by a strong sturdy beggarman who solicited alms; she walked on, taking no notice of him, but he, finding his persecution unavailing, drew aside his coat and presented the short stump of an arm that had been removed half way between the shoulder and elbow. The lady, greatly shocked at the sight, got home as fast as she could, but went on well up to her full period; immediately on the birth of the child, however, she asked, with great anxiety, whether there was anything the matter with it. Dr. Beatty's father had heard nothing of the foregoing occurrence, and was of course surprised at the lady's asking the question, but on looking at the child there was found only one arm complete, the other being only a stump, as if after amputation. Such was the story, upon which it was for the society to set what value they pleased. The next case was one recorded several years after, in which the child was born with six fingers on each hand. The lady stated that when about five months pregnant, a person sitting in the same room with her was suddenly seized with epilepsy, and the patient's hands moved so rapidly that the fingers appeared to this lady as if multiplied to an immense number. She could never after banish the vision from her

mind, and her child was born with these supernumerary fingers. Here, then, was another remarkable instance to be added to the general mass of facts in relation to this subject. In the case to which he more immediately drew the attention of the society this evening, there existed, as he had before observed, a plurality of children. It was very rarely indeed, he said, that four children are produced at a single birth, so that the present case furnished an additional evidence of the prolific character of the females of this country, although it was stated by Devereux that in America the number of twin births far exceeds those of any other country in the world; while it is maintained by Dr. Collins of this city, that the occurrence of twin births is much more common than in any other country. A note in Ramsbotham's work, however, he thought, offered rather a satisfactory explanation of these two conflicting opinions. It is perfectly well known, he says, that America is to a great extent peopled by the Irish, there being of course a mixture from other nations, but the tendency was clearly to a majority of the population being constituted by the Irish. Dr. Beatty had brought with him, he said, drawings of two celebrated monsters formerly exhibited to the society; his object in presenting them now was not, he said, with a view of making much use of them on this occasion, but merely for the purpose of comparison. One of these cases had given rise to the late Dr. Houston's celebrated paper on the means by which the circulation is carried on in monsters generally, and which had been the occasion of a very spirited controversy between him and a gentleman in England. In that case there was no heart, thorax, head, or upper extremities. The other drawing represented a very remarkable specimen of monstrosity by fusion, which had been exhibited to the society by Dr. Speedy some time since, and was, Dr. Beatty observed, as curious an example of this class of monstrosities as ever he had seen, the only trace of anything like limbs being two fin-like processes, but there was in no other way the slightest resemblance to a human being.—*Dublin Medical Press.*

ON EXCISION OF THE OS UTERI.

By JAMES SYME, ESQ., F.R.S. &c.

[Excision of the os uteri was, on account of the marvellous cures said to have been frequently performed by it, in cases of cancer of the uterus, very slow in establishing itself as legitimate practice in this country. Cancer of the uterus is in reality of very rare occurrence, and removal of the diseased part presents even less chance of recovery than of any other part in which this disease may exist. Cauliflower excrescence, as Dr. Clark named it, is, however, very much more common than was formerly supposed, and it has been ascertained that the removal of this by the knife or scissors, is an operation perfectly safe and effectual. Dr. Clarke, when he wrote, had little to offer as regards treatment.]

A great step in advance has been made through the establishment of the important fact,—for which we are chiefly indebted to the surgeons of France, that excision of the os uteri, executed either by knives or scissors, is an operation perfectly safe and effectual when employed for the removal of growths not possessing a malignant disposition. The discrimination of such cases has consequently acquired no small increase of value, though comparatively little attention has been devoted to it in this country.

In performing the operation, it is always desirable and in general easily practicable, to draw the tumour fairly into view, so that the excision may be effected without taking away either more or less than what is requisite, and without injuring the neighbouring parts. The most convenient instrument for this purpose is that which Dupuytren employed—the hooked forceps of Muzeux, who invented it for facilitating the removal of enlarged tonsils—or "*vulsellum*," as it has been improperly named by some writers, the old "*vulsella*," being parent of the instruments which act upon the principle of dissecting forceps. By means of the double hooked extremities of this instrument deeply inserted into the morbid growth towards its base, where the textures is of firmest consistence, the tumour may usually be induced by steady traction of moderate force, to descend and present itself to view,

when a bistoury or curved scissors may be used without any difficulty or danger. The assistance of a speculum should be taken to insert the forceps, and if it seems necessary in order to obtain complete command over the excrescence, additional instruments of the same kind are to be fixed into different parts of its substance. If the tumour cannot be made to protrude without resorting to an unsafe degree of violence, it may at all events be brought down in this way, so as to be within the reach of the fingers, which will then form a safe guide for the scissors, as in the case just related. The hemorrhage is seldom more than very trivial, and when at all considerable, may be suppressed by filling the vagina with lint. In a case which happened fourteen years ago, and was, I believe, the first of the kind subjected to operation in Edinburgh, I visited the patient about an hour after cutting off the excrescence, and to my no small alarm, found the blood dropping from her bed upon the floor. As there had been frequent and profuse hemorrhage from the disease, I considered it necessary to use the most efficient means for preventing any further flow, and therefore pulled the bleeding surface into view, transfixed its base with a needle, conveying a double ligature, and tied both the threads firmly. Recovery was accomplished without any untoward symptom.

In removing polypus of the uterus, evulsion, excision, and ligature have been employed, and each of these modes of operation may be rendered the most eligible by peculiar circumstances of particular cases. But in general, the combination of tying and cutting, certainly seems to be the best plan of proceeding. It has the recommendation of facility, efficiency, and safety. It accurately determines the limit of destruction, prevents the possibility of hemorrhage, and relieves the patient from the fetor, and other unpleasant consequences, which attend the slow separation effected by ligature. Finally, it has the testimony of experience in its favour.—*Monthly Journal of Medical Science, July, 1845, p. 488.*

ON RETROVERSION OF THE UTERUS.

By EDWARD RIGBY, ESQ., M.D., &c.

In all cases of retroversion, especially where the reduction presents more than ordinary difficulty, I find the plan proposed by Professor Naegele, viz., of introducing the whole hand into the vagina, far superior to pressing up the fundus by two fingers of the left hand passed into the rectum, while we endeavour to pull down the os uteri by the index finger of the right hand. By introducing the hand with the palm upwards into the vagina, as the patient lies upon her back, we can get the points of the four fingers beneath the tumour, and press it upwards and somewhat forwards with great effect, while the hand itself, putting the posterior wall of the vagina forcibly upon the stretch, pulls down the os uteri at the same moment. This will be easily understood if we bear in mind the condition of the vagina when the uterus is retroverted; the anterior wall is violently dragged upwards by the os uteri, behind the symphysis pubis, while its posterior wall is found loose and doubled into a species of *cul de sac*. It is into this that the hand passes in the attempt to reach and press up the fundus; it is thereby rendered very tense, and, from its attachment to the uterus at the cervix, it acts in the same way as a cord does round a pulley? the same effort which tends to push up the fundus, tends also to pull down the os and cervix uteri.

The value of this mode of reducing a retroverted uterus struck me forcibly in a case which occurred in the unimpregnated state some years ago; she had been under treatment some time on account of inflamed cervix uteri, with severe lancinating pains, and much general derangement of health; the uterus was evidently much engorged, and both heavier and larger than natural; the abdomen was large and flabby, and there was considerable hemorrhoidal congestion. On carrying a heavy weight up stairs she suddenly felt as if violently strained, and this was immediately followed by the ordinary symptoms of retroversion. The bladder was even more distended than in the last case, the abdomen was much enlarged, and she looked like a woman in the latter months of pregnancy. My friend, Mr. T. A. Richards of Camberwell, who was one of the house surgeons to the General Lying-in Hospital at the time, assisted me to draw off the urine, the quantity of which was truly enormous.

During her involuntary efforts to strain, which the severe bearing down pain every now and then excited, the fundus was forced quite down to the perineum. The hand was introduced

into the vagina, and after a slow but steady effort, the fundus was raised above the brim, and the uterus righted. I have seen this patient repeatedly since, and she has had no more return of the displacement.—*Medical Times*, Oct., 4, 1844, p 27.

TREATMENT OF PRURITUS VULVÆ.

Having been a great many times consulted for relief of pruritus vulvæ, and most frequently in pregnant women, I have rarely had occasion to order anything more than the following formula, viz.—

R. Sodæ borat. ℥ss.; morphiæ sulphat. gr. vj.; aq. rosar destillat. ℥viiij. M.F. sec. art.

I directed the person to apply it thrice a day to the affected parts by means of a bit of sponge, or a piece of linen, taking the precaution first to wash the surfaces with tepid water and soap, and to dry them before applying the lotion. I can confidently recommend the prescription as suitable in most of the cases of this most annoying malady.—*Dr. Meigs—Medical Gazette*, Sep. 12, 1845, p. 851.

CHEMISTRY, MATERIA MEDICA, AND PHARMACY.

THERAPEUTIC PROPERTIES OF VERATRINE AND STRYCHNINE.

Dr. F. A. Gebhard, of Moscow, has published an interesting paper on Veratrine studied comparatively with Strychnine, in *Dr. Szerlecki's Zeitschrift für Therapie und Pharmakodynamik*. An abstract of its contents is presented in the following summary:—

The experiments of Magendie and Andral prove the incredible rapidity with which strychnine is absorbed; those of Verviere and Segalas show that it may be actually detected in the blood, which is changed by its admixture with it; and post-mortem examinations disclose marked bloody infiltrations, turgidness of the veins, apoplexy, congestion, and even appearances of inflammation. Its primary effects, in small doses, are irritating and exciting; it appearing, at the same time, by its bitter principle, to improve the digestion, and unquestionably, in certain kinds of chronic diarrhœa, to be very useful. Yet the continued employment of strychnine in small doses, or even its administration in larger ones from the commencement, appears to cause, in some unknown manner, such a change in the blood as to result unexpectedly and suddenly in a powerful reaction on the nervous system, manifested by convulsions, tetanus, exhaustion, paralysis and death. In paralysis of the motor nerves, it has often been of great advantage, without having any effect upon any organ of secretion or of excretion; but in neuralgia, in which M. G. formerly employed it internally and externally, it gives no relief; while in many other diseases, as cramps and convulsions, it has been employed without success. Under these circumstances, and in view of the dangerous effects it often produces, M. G. thinks that some other remedy should be sought for even in those cases in which it has proved advantageous. The remedy which he proposes to substitute is veratrine. Of this he speaks, in substance, as follows:—In small doses, administered internally, veratrine occasions peculiar pricking, stinging sensations, like those of electricity, in the extremities, shoulders, &c., followed by composing effects upon the portions of nerves affected with neuralgia, and somewhat after, with nausea, salivation, vomiting, flow of urine and diarrhœa. It ought also to favour the menstrual evacuation. Rubbed in externally, peculiar sensations of the skin are also excited by it, which reach, by means of the reflex action, upon other nerves under the influence of the spinal cord. M. G. does not believe that veratrine acts first through the blood, but, it appears to him, by the immediate specific irritations from the part to which it is applied,

at one time by reflex action through the spinal marrow, at another by irradiation and the laws of contiguity, without reference to the relation of tissue and function, and to the known connection between nerves and blood-vessels, to cause an uniform excitement and distribution of the nervous powers, and thus to remove the symptoms of pain and paralysis—as we see after rubbing it in upon the back or over the region of the heart, the strongest nervous palpitations, pain, convulsive cough, and nervous pains of all kinds allayed; and in the same manner, absorption (in cases of dropsy) favoured, and in many cases the urine evidently increased.

The indications for its employment are pain, cramp effusion and paralysis, the result either of effusion or of exhaustion. The chief contra-indications are, increased activity of the circulation, fever, inflammations in general. Against its internal administration are, *gastricismus* and organic disease of the intestinal canal. A great degree of torpor and of weakness does not prevent its employment, as it animates, especially when rubbed in, the sunken and irregular nervous action by the excitement it produces, without directly affecting the blood, in consequence of which strychnine is so dangerous. Care must be taken, however, not to employ it externally in marked inflammatory turgescence of the skin, and especially in certain erysipelatous, herpetic dispositions, &c., which so often manifest themselves in many dyscrasias.

Dr. G. employs veratrine internally in doses of the sixteenth of a grain twice a day, increasing it gradually, according to the susceptibility, the early or late occurrence of nausea or diarrhœa, to four pills and over. Externally, he prescribes 5-20 grains of it to be rubbed up with an ounce of lard. As, however, it is very expensive, and we can never reckon upon its acting very rapidly, he orders generally half to one grain of veratrine to ten to fifteen grains of lard, which may be used in two or three applications, and repeated if necessary. He always uses it with lard in children, and in women with delicate skins, or after recent inflammatory rheumatism, in which we are never sure, if it will, the part is in condition to bear it, even though fever and inflammation appear to be removed. Riecke recommends the veratrine to be dissolved in alcohol, and then mixed with the lard—a practice which M. G. approves of. In chronic cases, on the other hand, and when there is a torpid condition of the skin, M. G. employs a spirituous embrocation, which, indeed, he found effectual in much weaker doses of from 2-10 grains to the ounce. The rubbing in should be continued, according to the condition, ten to fifteen minutes, and until a pricking and burning sensation is experienced.

M. Gebhard has made advantageous use of this remedy in rheumatism, both acute and chronic—in the former, when after the subsiding of the fever, there remain gastric derangements and local pains which will not yield to the usual treatment, and in the latter, after long perseverance and when there is no alteration of structure. Since 1839, says M. G., I have treated about sixty cases of rheumatism of all kinds, among which only four did not experience a radical cure; and in these marked enlargements and ankylosis had occurred, and the patients, partly from impatience and partly from fear of the expensive medicine, sought other assistance. In all the other cases, there resulted partly an entire cure of the most unpromising cases, partly decided relief. I have never employed veratrine internally in rheumatism, only externally. For the most part, I have abstained from all internal remedies: in some cases only assisting the cure by means of colchicum, iodine—especially the latter, in combination with veratrine, in chronic swellings of the joints without pain, in which this treatment was very serviceable. In neuralgia, M. G. sustains the opinion of Turnbull, that veratrine is especially useful in those cases in which the pain is not fixed in any one point,

but spreads itself over the extremities of the nerves, as is the case in rheumatic prosopalgia.

In all, nine cases of prosopalgia have been treated by him with veratrine, four of which came under his care from the commencement of the attack, and were cured in from three to four days—the longest being seven to eight days—by means of veratrine rubbings. In two epidemics of whooping-cough, M. G. found that by rubbing in veratrine over the vertebrae of the neck and upper part of the back, there was great relief experienced where the second stage was protracted in its length. The striking influence of veratrine on the urinary secretions has often been ascertained in general dropsy, as well of the skin as of the cavities, especially in cases where no organic disease was apparent: even where this was evident, M. G. has often observed benefit, even if only of a palliative character. The cases treated were some of them the result of cold, causing, instead of inflammatory rheumatism, an enormous exudation into the serous cavities, and other secondary dropsies after previously existing inflammations. But more marked effects were observed in dropsies consequent upon long and exhausting disease; as, in particular, after a severe typhoid epidemic he observed.

The last disease noticed, and that to which M. G. first directed his experiments with respect to the employment of veratrine, is paralysis. In three cases of paralysis of the facial nerve, consequent upon colds, the frictions with veratrine were employed with the most complete success, the power being restored in from six to thirteen days. In two cases of paralysis after apoplexy, one in a man 74 years old and the other in a man 62 years old, after all evidences of congestion and irritation had been removed, by means of antiphlogistic treatment, and the paralysis alone was left, M. G. employed the veratrine frictions with entire relief of this symptom. These are the only instances of this affection which he has as yet had an opportunity to treat; but they were so successful that he would recur to the use of this medicine whenever a similar condition presented itself to his observation.—*Zeitschrift für Therapie en Pharmakodynamik*. Freiburg, Dec. 1844. No. 3.

What more certain to degrade the profession in the eyes of the public, and to reduce to a level with the itinerant empiric and pretender, the man of education? Surely it will be conceded that the science of medicine cannot be benefited by such a course. It may prove advantageous to him who adopts it; it may be a means of garnishing well his pockets with the goods of this world; but sooner or later the miserable trick, the paltry subterfuge will be exposed, and the scorn and contempt of the profession which he has insulted and discredited, in his recourse to an expedient unworthy of an educated and an honest man, will as certainly not fail to overtake him. Every injury thus inflicted on the individual, is felt by the profession at large, of which he is a member. It cannot be otherwise, for in its very nature and essence, it casts discredit and disrepute on scientific practice, and opens wide the door for all the evils of unblushing quackery, between which and the former the distinctive characteristics become at once obliterated. Every medical man knows the susceptibility of the public to imposition of this nature. In fact, nobody knows better than he how easy it is to impose in this style, and how difficult it is to make people believe the imposition. It may be an invidious and thankless task to expose it. Be it so. We risk the thanks on what we conceive to be our duty, that of proscribing those vile attempts which destroy the confidence of the public in that honourable profession which most of our readers have selected, and the integrity of which each member is bound in his own person, to preserve and maintain.

British American Journal.

MONTREAL, FEBRUARY 15 TH, 1846.

PROFESSIONAL ETIQUETTE.

Qui didicit patriæ quid debeat, et quid amicis,

* * * * *

Reddere personæ scit convenientia cuique.

Horatii Op.

There is scarcely anything in a free country, where competition is nearly unlimited, upon which the respectability of the medical profession is so dependant as the strict preservation of that professional etiquette, which practitioners ought to acknowledge with regard to each other. Nothing can be clearer, than that the best, most scientific, and most enlightened practice must be looked upon with distrust and contempt by the community at large, when they see men engaged in the same pursuits, attempting to secure a livelihood by the same means, of, it may be, equal talents, discrimination and zeal, having recourse to the miserable trick of casting reproach upon each other's practice. What procedure is more likely to throw discredit on the science of medicine?

It will often happen that practitioners, unless they have confidence in the honourable feeling, or the understood etiquette or usage which ought to be observed with respect to each other, will be brought into collisions, anything but agreeable. These would be entirely obviated were each to appreciate, correctly, the others position. The right that rests with the public to seek advice from whom they please, and change their medical adviser as they like, is clear enough, and not to be found fault with; their right to indulge their whims or caprices, or to act upon what may appear to be to them good and sufficient grounds, as the case may actually be, is undeniable, and may not be questioned. But far otherwise should it be with the practitioner. His duty towards his brother practitioner demands from him caution in the reception of patients under such circumstances, a caution emanating from a right appreciation of professional honour. He who possesses a high sense of professional honour himself, will be the last to violate any of the rules of professional etiquette. The two are inseparable, and are engendered the one by the other. In the latter there is no coquetishness; it is a sort of eleventh command.

ment; it is the medical man's substitute for a criminal code; and in general, will be quite sufficient among those who understand the duties and the difficulties of their profession.

But in the ranks of the Medical Profession, as well, doubtless, as in other walks of life, there are to be found men who are constantly violating the simplest rules of professional etiquette whenever the slightest opportunity presents itself. Among this class we may, without a doubt, find very many whose ignorance may afford a palliation for such conduct, and it might be charitable to attribute similar conduct on the part of all such transgressors to the same cause. We are constrained, however, to acknowledge the humiliating fact, that some are to be met with, for whom no such palliating excuse can be offered, who, poacher-like, would worm themselves into their neighbour's practice, under the mask of friendship for the patient and anxiety for his welfare; or pirate-like, would invade in an open manner the domains of their neighbours, and not only rob them of their patients, but denounce, in unmeasured terms, the practice which had been previously adopted in the case. The proper treatment for such men is PROSCRIPTION, as the surest and most effective way of teaching them their duty, that duty which they have violated towards their neighbour and their profession at large.

The observations which we have now made have been chiefly elicited by the Brandtford trial for slander, of which one of our antecedent pages will be found to contain a record. The topic is one of far too vital importance to the best interests of the Profession, of which our Journal is the only advocate in this colony, to be permitted to die silently away. At the risk of being charged with individualizing, we have taken the subject in hand, and have endeavoured to treat it in a general manner: and if the slightest good emanates from these remarks, in arresting a practice fraught with so much injury to the Profession, in the advancement and prosperity of which each member must take a lively interest, our object will have been accomplished. We cannot, in conclusion, however, avoid this reflection, that those who interfere improperly or tamper with their neighbours' patients and practice, must be classed with that species, who, living on the confines of civilization, become the scourge of their kind; whose *appetite for receiving* bears most usually no adequate proportion with what they *give, or are even capable of giving*; and whose habits and disposition being predatory, should receive a similar reward.

COLD WATER CURE.

Hydrophathy is evidently on the increase in the United States, if indeed the establishment of fresh hydrophathic institutions is to be taken as a criterion of the fact. One of these has been lately founded at Brattleboro', Vt.; another at Biloxi, Harrison Co., Missouri; one at Northampton, Massachusettes; another, in a viridescent state, exists at New Lebanon Springs, New-York; and Phila-

delphia, New-York, and Morristown, rejoice in similar institutions for the *prolongation* of life.

What the next chimera may be it is impossible to say; certainly nothing is too extravagant not to meet with supporters. Of the various pathy's, however, this one stands chief in point of absurdity, but the greater the absurdity the more likely it is to receive encouragement. As was truly, and rather sarcastically observed by a friend in talking of this mode of treating diseases, "it most particularly recommends itself to the attention of *young ladies having wealthy old husbands*."

At an Adjourned Quarterly Meeting of the Medical Board for this District, held on the 6th inst., the following gentlemen severally received certificates for license to practice,

As Physicians and Surgeons.

Hector Peitier, Esq., M.D., Edinburgh.
William Aitken, Esq., Surgeon, Glasgow.
Messrs. L. D. Lafontaine and Boniface Craig.

As Apothecaries.

Messrs. G. B. Sabine and William Brough.

Braithwaite's Retrospect.—July to December, 1845.

We thank the Editor for his attention in forwarding to us a copy of this valuable *recueil* of medical literature. This publication is undoubtedly one of the best digests of the existing state of medical knowledge of the day; and should be in the possession of every medical practitioner who desires to keep up his knowledge with the advancing progress of medical and surgical science. We therefore earnestly recommend it to the consideration of the Profession in this country, on the shelves of whose libraries no more instructive volume could be placed.

TO CORRESPONDENTS.

We have on hand several communications of which our limited space temporarily obliges us to postpone the publication. Among them are Dr. David's and Dr. Marsden's papers, the reception of which we noticed in our last number. A paper on "*Eurpurassa*" has been received through Dr. Crusset of Toronto, and an interesting "*Case of Poisoning by Camphor*," from Dr. Reynolds of Brockville. These, with other communications, will receive early attention, commensurate with the space we have proposed to devote to the original Department.

Our next number will contain the lecture: "*On the uses and abuses of Phrenology*," lately delivered before the Natural History Society of this city, by the Rev. W. T. Leach, A.M. We feel persuaded that it will amply repay a perusal, and give as unqualified pleasure to the reader, as it did to a majority of its hearers on the evening of its delivery.

A number of business letters have been received. We particularly notice one from Dr. Taylor, (Ristigouche). Dr. Grassel's hint will be attended to. We shall endeavour to send the copies of the report by private opportunity.

We earnestly request those of our subscribers who are in arrears, to remit to the office the amount of their subscriptions.

BOOKS, &c., RECEIVED.

Boston Medical and Surgical Journal, Nos. 24, 25, and 1, 2.
American Journal of Medical Science, January No.
The Medical Examiner, Philadelphia, January No.
The New Orleans Medical and Surgical Journal, January No.
American Journal of Dental Science, December No.
Dublin Medical Press, Nos. 361, '2, '3, '4, '5.
Provincial Medical and Surgical Journal, Nos. 50, 51, 52, 53.
Catalogue Medical Institution, Geneva College, 1845—6.
American Journal of Science and Arts, January No.
Buffalo Medical Journal, February No.
New York Medical and Surgical Reporter, Nos. 8, 9.
Braithwaite's Retrospect, July to December, 1845.
The Medical News and Library, Philadelphia, Jan. No.
Stockton's Dental Intelligencer, No. 3.
Annual Report of the Bloomingdale Lunatic Asylum.

At a Meeting of the Medico-Chirurgical Society of Montreal, the following Tariff of Medical Fees was unanimously adopted, and Members of the Profession not belonging to the Society were requested to append their Signatures to it:—

MONTREAL MEDICAL TARIFF.

	1st Class.			2d Class.		
	£	s.	d.	£	s.	d.
Single Visits from 7 o'clock, A.M., to 8 o'clock, P.M., (day visits),	0	5	0	0	2	6
Advice at the Practitioner's residence,	0	5	0	0	2	6
Acute Cases, requiring more visits than one in the day; for each subsequent visit,	0	5	0	0	2	6
Evening Visits, (i. e. from 8 o'clock, P.M., to 10 o'clock, P.M.)	0	10	0	0	5	0
Night Visits, (i. e. from 10 o'clock, P.M., to 7 o'clock, A.M.)	1	5	0	0	15	0
Detention during the whole night,	3	0	0	2	0	0
Consultation with a Physician or Surgeon,	1	5	0	0	15	0
For each subsequent consultation up to the fifth one, if not daily,	1	0	0	0	10	0
" " " if daily,	0	15	0	0	10	0
Consultation by letter between medical men,	1	5	0	1	5	0
Written Advice and Certificate,	1	0	0	0	10	0

VISITS TO THE COUNTRY.

To St. John's, { In Winter,	7	10	0	7	10	0
{ In Summer,	5	0	0	5	0	0
To Chambly, { In Winter,	5	0	0	5	0	0
{ In Summer,	2	0	0	2	0	0
To Laprairie, { In Winter,	1	5	0	1	5	0
{ In Summer,	1	10	0	1	10	0
Longueil,	2	0	0	2	0	0
Lachine,	1	10	0	1	10	0
St. Laurent,	0	15	0	0	15	0
Cote des Neiges,	1	5	0	1	5	0
Long Point,	2	0	0	2	0	0
Point au Tremble,	10	0	0	10	0	0
Beauharnois and St. Anns,	5	0	0	5	0	0
Terrebonne,						

	1st Class.			2d Class.				1st Class.			2d Class.		
	£	s.	d.	£	s.	d.		£	s.	d.	£	s.	d.
In all ordinary cases of Midwifery,	5	0	0	3	0	0	Capital Operations,	20	0	0	10	0	0
Attendance with a Midwife,	5	0	0	3	0	0	Lithotomy,	30	0	0			
Extraction,	7	10	0	4	5	0	Cataract and Artificial Pupil,	20	0	0	10	0	0
Extracting Placenta,	2	10	0	1	5	0	Minor Operations,	5	0	0	2	10	0
							Removing Tonsil,	2	10	0	1	0	0
							Setting Fractures of Thigh,	5	0	0	3	0	0
							" " of Leg and Arm,	3	0	0	2	0	0
OPERATIONS.													
Bleeding,	0	5	0	0	2	6	Daily Prescriptions,	0	2	6	0	2	6
Vaccination,	0	10	0	0	5	0	Extra Prescriptions,	0	5	0	0	5	0
Introduction of Catheter,	1	0	0	0	10	0							
" of Probang,	2	10	0	1	5	0							

A. F. Holmes,
 W. Nelson,
 F. C. T. Arnoldi, M.D.
 Henry Mount,
 Geo. W. Campbell,
 Robert L. MacDonnell,
 F. Morson,
 F. Badgley,
 A. Rowand,
 H. Nelson,
 Peter Munro,
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 Wm. Sutherland,
 Arthur Fisher,
 W. E. Scott, M.D.
 Daniel Arnoldi,

D. P. Brousseau,
 Frederick Cushing,
 J. Vallée,
 G. Bibaud,
 James Bowie,
 John Minshall,
 Robt. Godfrey, M.D.
 L. Papineau,
 A. H. David,
 Alexander Long,
 E. Regnier,
 J. H. H. Trestler,
 G. Wm. Coderre,
 L. P. Tavernier,
 C. A. Regnault,
 G. W. Trudel, M.D.

Published by Order,

ROBERT L. MACDONNELL, M.D.

Secretary Medico-Chirurgical Society.

BILL OF MORTALITY for the CITY OF MONTREAL, for the month ending JANUARY 31, 1846.

DISEASES.	Male.	Female.	Total.	AGE.														
				Under 1.	1 & under 3	3 — 5	5 — 10	10 — 15	15 — 25	25 — 35	35 — 45	45 — 55	55 — 75	75 upwards				
EPIDEMIC OR INFECTIOUS,.....	Measles,.....	44	53	97	30	49	11	6	1									
	Scarlatina,.....	1	1	2	1		1											
	Small Pox,.....	19	2	21	4	1												
	Hopping Cough,.....	9	3	12	3	1		1										
	Fever,.....	20	25	45	9	20	5	5	2	2				2				1
DISEASES OF BRAIN AND NERVOUS SYSTEM,.....	Apoplexy,.....	2	1	3								1						2
	Convulsions,.....	9	5	14	5	1		1										
	Dentition,.....	3	2	5	3	2												
DISEASES OF THE RESPIRATORY ORGANS,.....	Consumption,.....	21	30	51	10	8	1		1	4	11	9	5	2				
	Croup,.....	6	8	14	9	2	1	1	1									
	Asthma,.....	1		1														1
	Pleurisy,.....	1		1								1						
DISEASES OF ABDOMINAL VISCERA AND CIRCULATING SYSTEM,.....	Intern. hæmorrh.	1	1	2				1						1				
	Dropsy,.....		1	1					1									
OTHER DISEASES, AND DISEASES NOT SPECIALLY DESIGNATED,.....	Age or Infirmary,.....	3	9	12														9
	Inflammation,.....	3	1	4	2						2							
	Child-birth,.....		1	1								1						
	Accidental,.....	1		1		1												
	Still-born,.....	6	4	10	10													1
Unknown,.....	2	2	4	2														
Total,.....	121	151	271	84	88	19	15	6	9	14	11	6	16	3				

* One a Female Canadian, aged 104.

MONTHLY METEOROLOGICAL REGISTER AT MONTREAL FOR JANUARY, 1846.

DATE.	THERMOMETER.				BAROMETER.				WINDS.	WEATHER.		
	7 A.M.	3 P.M.	10 P.M.	Mean.	7 A.M.	3 P.M.	10 P.M.	Mean.		7 A.M.	3 P.M.	10 P.M.
1,	- 6	+ 8	+13	+ 1.	31.41	30.28	29.98	31.33		Fair	Fair	Snow
2,	+16	" 21	" 20	" 20.	22.65	29.52	29.30	29.72		Snow	Snow	Snow
3,	" 22	" 23	" 20	" 22.5	29.43	29.57	21.70	29.57		Snow	Fair	Fair
4,	" 19	" 27	" 25	" 23.	29.82	21.85	30.04	29.91		Fair	Fair	Fair
5,	" 18	" 21	" 23	" 21.	31.18	31.24	31.32	30.27		Fair	Fair	Fair
6,	" 19	" 29	" 21	" 21.	31.46	30.33	31.33	31.39		Fair	Fair	Fair
7,	" 20	" 31	" 22	" 25.5	31.09	29.87	29.68	21.88		Snow	Snow	Snow
8,	" 23	" 35	" 24	" 28.5	29.64	21.66	23.75	29.68		Snow	Fair	Fair
9,	" 20	" 21	" 15	" 20.5	29.84	29.86	21.87	29.83		Fair	Fair	Fair
10,	" 13	" 25	" 16	" 19.	29.82	29.78	21.70	21.77		Fair	Fair	Fair
11,	" 14	" 20	" 17	" 17.	21.67	29.59	29.60	29.62		Fair	Snow	Fair
12,	" 13	" 21	" 20	" 21.	21.67	29.71	29.83	29.74		Fair	Fair	Fair
13,	" 15	" 29	" 15	" 17.5	31.05	30.05	30.10	30.07		Fair	Fair	Fair
14,	" 23	" 26	" 31	" 27.5	31.00	29.97	29.90	29.95		Fair	Fair	Fair
15,	" 32	" 33	" 35	" 35.	22.96	21.86	21.83	29.86		Fair	Fair	Fair
16,	" 17	" 19	" 5	" 18.	29.95	29.91	29.90	29.91		Fair	Fair	Fair
17,	" 1	" 11	" 0	" 6.	29.94	29.96	29.97	21.96		Fair	Fair	Fair
18,	-13	" 0	- 3	" 6.5	31.28	30.13	31.22	30.21		Fair	Fair	Fair
19,	-10	" 6	+ 1	- 2.	30.30	30.35	31.45	30.37		Fair	Fair	Fair
20,	- 7	" 12	" 11	+ 2.5	30.45	30.38	30.16	30.33		Fair	Fair	Fair
21,	+13	" 29	" 2	" 16.5	31.01	30.02	33.97	33.03		Fair	Fair	Fair
22,	- 5	" 14	" 10	" 4.5	30.14	31.26	30.33	30.24		Fair	Fair	Fair
23,	- 2	" 14	" 7	" 6.	30.50	31.43	30.32	30.42		Fair	Fair	Fair
24,	+10	" 21	" 32	" 15.5	30.14	31.00	29.66	29.93		Fair	Fair	Fair
25,	" 33	" 40	" 25	" 35.5	21.65	29.67	29.85	29.72		Fair	Fair	Fair
26,	" 18	" 21	" 13	" 19.5	29.90	29.88	29.85	29.88		Fair	Snow	Fair
27,	- 2	" 16	" 6	" 7.	30.05	29.98	29.94	29.99		Fair	Fair	Fair
28,	+14	" 30	" 15	" 22.	29.86	29.99	30.23	31.04		Cloudy	Fair	Fair
29,	" 4	" 18	" 18	" 11.	30.27	30.17	29.96	30.13		Foggy	Fair	Cloudy
30,	" 31	" 37	" 31	" 34.	29.70	21.63	29.57	29.63		Rain	Rain	Rain
31,	" 13	" 19	" 9	" 16.	30.01	31.16	30.43	30.21		Fair	Fair	Fair

ⓘ Omitted in consequence of the severe illness of the gentleman taking these observations.

TERM. } Max. Temp., +40° on the 25th.
 } Min. " -13° " 18th.
 Mean of the Month, +17°.56

BAROMETER. } Maximum, 30.50 Inches on the 23d.
 } Minimum, 29.33 " " 21.
 Mean of Month, 29.99 Inches.

MONTHLY METEOROLOGICAL REGISTER AT H. M. MAGNETICAL OBSERVATORY, TORONTO, C. W.—JANUARY, 1846.

Latitude 43°. 39' 4". N. Longitude 79°. 21' 5". W. Elevation above Lake Ontario, 108 Feet.

DAY.	Barometer at Temp. of 32°.		Tension of Vapour.		Temperature of the Air.			Humidity of the Air.			Wind.			Snow.	WEATHER.			
	7 A.M.	3 P.M.	10 P.M.	Mean.	7 A.M.	3 P.M.	10 P.M.	Mean.	7 A.M.	3 P.M.	10 P.M.	Mean.	7 A.M.			3 P.M.	10 P.M.	
1,	29.684	29.469	29.229	29.364	133	176	190	175	29.0	32.3	35.4	33.3	82	96	92	91	—	Slight snow a.m., raining p.m.
2,	29.907	28.835	29.042	28.982	215	198	148	177	36.6	35.6	32.0	33.7	100	95	82	90	—	Rain a.m., snow p.m.
3,	29.356	29.407	29.477	29.482	151	153	112	152	29.8	35.6	32.0	32.6	91	73	78	82	—	Clear a.m., had 10 p.m., wd fresh, am. Clouded.
4,	29.548	29.538	—	—	141	161	—	—	29.6	34.7	—	—	85	82	—	—	—	Mostly clouded.
5,	29.716	29.832	29.634	29.861	144	171	148	149	28.2	34.6	29.0	29.5	93	86	91	91	—	Clouded a.m., snow and rain p.m.
6,	30.016	29.911	29.773	29.801	169	170	175	173	29.8	33.2	32.8	32.7	96	90	95	93	—	Clear a.m., snow and rain p.m.
7,	29.360	29.200	29.271	29.283	132	213	190	196	31.8	36.3	31.8	35.1	95	100	95	96	—	Clear a.m., snow and rain p.m.
8,	29.415	29.473	29.573	29.506	170	152	162	158	33.4	33.6	29.6	31.5	90	78	98	89	—	Showing slightly, occasionally.
9,	29.547	29.555	29.553	29.553	146	138	132	143	27.8	29.8	28.6	28.7	96	83	82	90	—	Generally light detached clouds.
10,	29.470	29.378	29.278	29.318	147	142	151	141	29.9	31.0	31.0	29.2	85	81	89	87	—	Overcast with dense haze.
11,	29.186	29.190	—	—	150	165	—	—	28.2	32.0	—	—	97	92	—	—	—	Overcast, slight snow p.m.
12,	29.339	29.438	29.627	29.523	121	113	080	098	24.6	24.9	18.1	20.8	89	82	77	84	—	Densely overcast.
13,	29.785	29.818	29.738	29.760	068	097	104	097	9.7	23.8	22.6	21.1	94	74	83	82	—	Detached clouds. Mostly clear.
14,	29.562	29.615	29.636	29.630	130	152	140	135	28.0	31.8	28.6	28.0	84	74	89	87	—	Slight snow a.m. Clear p.m.
15,	29.646	29.509	29.552	29.550	128	181	187	166	24.8	40.2	38.0	34.9	93	74	82	82	—	Generally clear.
16,	29.482	29.470	29.486	29.491	113	115	096	113	30.6	26.6	21.2	24.0	86	79	81	83	—	Halo a.m., hazy.
17,	29.547	29.580	29.772	29.739	084	085	050	053	10.6	12.4	7.0	9.3	85	67	77	74	—	Halo a.m., hazy. Clear p.m.
18,	29.913	29.889	—	—	—	—	096	—	5.9	16.6	—	—	98	—	—	—	—	Overcast.
19,	30.116	30.156	30.148	30.132	068	075	059	062	7.0	15.8	8.0	10.2	60	72	87	83	—	Clouded a.m. Clear p.m.
20,	30.073	29.993	29.692	29.822	087	114	111	099	9.4	22.2	24.6	19.5	95	79	82	88	—	Overcast with dense haze.
21,	29.596	22.525	29.712	29.659	112	126	078	093	22.2	22.6	14.1	17.5	91	89	89	88	—	Overst a.m. Sn'ing 9 a.m. to 4 p.m.
22,	30.120	30.184	30.029	30.214	040	075	072	064	0.4	19.1	13.2	10.5	87	69	85	84	—	Clear and unbrk. W. drisk to fresh all day.
23,	30.319	30.181	30.041	30.142	061	094	082	082	5.4	21.8	16.1	15.7	100	78	87	88	—	Clear. Auroral light in N. p.m.
24,	29.891	29.618	29.461	29.608	090	153	153	146	19.1	34.6	31.8	29.9	83	75	86	86	—	Clouded a.m. Generally clear p.m.
25,	29.498	29.514	—	—	168	226	—	—	34.0	39.9	—	—	86	93	—	—	—	Light clouds generally.
26,	29.322	29.246	29.430	29.363	131	215	157	175	34.0	37.2	30.4	32.0	98	98	93	91	—	Raining a.m. Snow from 6 p.m.
27,	29.638	29.664	29.526	29.616	084	107	138	115	15.8	23.4	27.8	23.9	90	82	89	86	—	Ceased sn'ing 2 a.m., hazy all day.
28,	29.658	29.722	29.677	29.677	159	165	177	166	31.6	36.8	33.3	33.8	90	76	94	86	—	Densely overcast.
29,	29.679	29.540	29.409	29.497	164	181	205	183	33.1	35.0	36.2	35.7	85	91	94	90	—	Overst a.m. Raining from 3 p.m.
30,	29.262	29.201	29.202	29.263	216	230	209	205	37.1	40.9	37.8	36.1	99	94	93	94	—	Ceased raining 2 p.m. Showy all day.
31,	29.590	29.824	29.687	29.837	073	082	066	074	15.6	19.8	11.8	15.8	79	74	81	78	—	Sn. am., day drdy. Cr-p. p.m. W. fresh.
Mean	29.627	29.596	29.610	29.614	126	142	131	133	23.6	29.5	26.1	26.1	90	83	87	87	—	

* Rain, 0.700. † Rain not appreciable. ‡ Rain, 0.415. § Rain, 0.375. ¶ Rain, 0.070. ** Rain, 0.550. †† Rain, 0.230.

To be corrected in the Register for December, 1845, { Temperature, at 7 a.m., on the 12th, for 1.6, read —1.6, or 1.6 below zero. Proportion of Wind from each Quarter—

Highest Barometer, 30.236 at 9 a.m., of 23d.
 Lowest do, 28.929 at 2 p.m., of 2d.
 Highest Temperature, 44.0 on 25th, p.m.,
 Lowest do, 1.0 on 22d, p.m.,
 Mean Daily Range, 13.9
 Extreme Daily Range, 29.2 on 31st, p.m.—1st Feb., a.m.,
 Proportion of Calm,

Under the head of Tension of Vapour, is given the elastic force of the Aqueous Vapour in the Atmosphere at each Observation, in decimals of an Inch of Mercury, or the proportion of the Barometric pressure due to its presence.
 Under the head of Humidity of the Air, is given the proportion the Aqueous Vapour bears to the quantity of air capable of sustaining at the existing temperature, saturation being represented by 100.
 The Instruments are Standard Instruments. The Rain Gauge 27 ft. at above the soil.—The Means entered are the Means by 24 hourly Observations, from 6 a.m., to 6 a.m.
 The quantity of Rain received each 24 hours, is noted at 9 a.m., and is marked in inches.
 The Observations entered in the column for 7, a.m., or Sundays, is actually taken at 9 a.m. The two Observations taken on Sunday are not included in any of the means.

Mean Temp, for Jan, 17.7
 29.5
 1842 27.8
 1843 29.7
 1844 29.7
 1845 28.7
 1846 28.7
 1848 28.1