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TRAUMATIC TETANUS AND ITS
TREATMENT.

BY THOS. R. DUPUIS, M.D., M.R.C.S. ENG.,

Prof. of Clinical Surgery, R.C.P.S., Kingston.

Tetanus is, without doubt, one of the most fatal diseases known, and one which is very properly a dread to the surgeon; but, although it is so very fatal, we have fortunately an offset in the fact that it is not very common, hundreds of surgical cases progressing to a cure without so much as even a symptom of tetanus showing itself. In a practice of over thirty years, the last fifteen of which have been in a great measure devoted to surgery, I have not come in contact with more than five cases of this terrible disease. It is not, therefore, that I can speak from an extended experience, or that I can advance an accumulation of new facts respecting tetanus, that I have attempted this paper; but it is because, having tried many remedies in the cases which have come under my care, and watched the effects of the means used very closely, that I feel that I am in a position to say which I have found most useful, and which I would use again and recommend to others in the present state of our knowledge regarding this disease, and its treatment.

We shall therefore proceed *secundum artem*, with the consideration of tetanus, and leave any empirical methods of treatment to be noticed at the close of this paper.

Tetanus is briefly defined to be a disease in which there are tonic contractions of the voluntary muscles, irregular in time and varied in intensity, subject to exacerbation and remissions, and in the early stages to complete intermissions. Very often, early in the disease, the jaws become fixed by contraction of their muscles, and the condition of trismus is present; or the contractions seize upon the back muscles, producing opisthotonos; or the anterior muscles of the neck and trunk become affected, and emprosthotonos results; or finally the muscles of either side may contract, causing pleurosthotonos. The frequency of these different conditions arises in the order in which they are named.

There is always present more or less contraction of muscles during the course of tetanus; but there are paroxysms, in which the spasms increase, the pains become more severe, the thoracic and abdominal viscera more interfered with, and the body curvature greater, which are marked characteristics of this disease.

Systematic writers have divided tetanus into two kinds, viz., spontaneous or idiopathic, and traumatic. The first kind is said to be more common in tropical climates and amongst the dark races than among whites, and in temperate climates. Its cause is obscure. Constipation, with loaded bowels, exposure to wet and cold when the body is heated, exhaustion from long fatigue or watching, and several other causes, are given to account for it, such as unhealthy surroundings, and latterly, bacteria, etc. There is a possibility that the food and water in hot

climates, filled with living germs, may cause irritation within the system, or other agents of microscopic minuteness, entering the body through other avenues, may become sufficient to produce tetanus. If this be so it may be found that, philosophically considered, so-called spontaneous tetanus is as truly traumatic as that which proceeds from an apparent and well-marked wound. The causes of tetanus, according to the orthodox view, are divided into intrinsic and extrinsic; the former comprising such forces as operate from within, and is made to include the action of poisons, like strychnia, brucia, thebaia, cicuta, maculata, etc., as well as unhealthy conditions of system which may generate the *materies morbi* within it.

Extrinsic causes include all wounds and external injuries apparent to the senses. And it is remarkable how slight an injury will at times be followed by tetanus; the prick of a needle, the sting of a bee, the peck of a bird, too close paring of the nails, piercing the ears, extracting a tooth, the scratch of a cat, or bite of a mouse, venesection, small cuts, especially in tendinous parts, bruises, dislocations of small joints, etc. It does occur, also, after large and well-conducted operations, when some nerve trunk becomes irritated by implication of its branches in such a manner as to injure them. Dependent as tetanus is on an exaltation of the reflex functions of the spinal cord, any irritation conveyed to this by an injured nerve may set up such a morbid action in it that the efferent nerves may convey its influence to, and induce the spasmodic contractions of tetanus in, the muscles which they supply. Nicolaier-Rosenbach, Tizzoni, and Cattani, claim that they have discovered a tetanus bacillus which, after having been obtained by pure culture of the spores, in proper media, produced tetanus in mice inoculated with it; and they hold that this bacillus is the real cause of tetanus.

Of the pathology of tetanus, Mr. Timothy Holmes, of London, Eng., says that "nothing really is known." Others state that "changes are found in various parts of the cord; but chiefly in the medulla oblongata, the lumbar region, the gray substance, around the central canal and in the anterior horns. Very considerable dilatation of the vessels is always found. Exudation of a semi-fluid colloid substance,

hyperplasia of the neuroglia, and abundant nuclear proliferation in the gray matter, have been observed in recent microscopical investigations." J. McCarthy, in Heath's Dictionary of Practical Surgery, allows that certain poisons, generated in the system by unhealthy surroundings, may play a part in the causation of tetanus; acting by producing lesions of the brain and spinal cord.

The great question, however, to be solved is, how many of the changes, observed in those who die from tetanus are, *ante-mortem*, and how many *post-mortem*, and if any of them observed are sufficiently constant to warrant us in saying, "This is the undoubted pathology of tetanus." All the literature which I have consulted on the subject leaves us quite in the dark on this point. The recent notion advanced, that tetanus depends on bacterial lesions is, to say the least of it, to my mind, "not proven." And why, we may ask, need either environment or schizomycetes be called in to answer for the causation of tetanus? Have we not the injured nerves to account for it? And do we not have it occurring where neither of the foregoing factors could be suspected of playing a part? In the ward where my patient suffered tetanus, last winter, as many as seventy-five surgical operations are performed every winter, and his was the first case which, to my knowledge, for fifteen years, occurred in that ward! The operation upon him was performed in the same amphitheatre, and with the same antiseptic precautions which are in constant use for all my surgical cases, so that his surroundings could have had nothing to do with the development of the tetanus. Moreover, after the disease showed itself, he was not isolated, only placed in the quietest corner of the ward, and surrounded by a screen; and not one of the various surgical cases that were treated in the same ward during his illness showed the least sign of anything like tetanus. I am, therefore, not prepared to accept infection or micro-organisms as the chief factors in the etiology of tetanus. When reflex nerve irritation has been set up by any injury there is no doubt that unhygienic surroundings, or the multiplication of bacteria in a lowered vital condition of system, may have much to do with increasing and perpetuating the disease. This, it seems to me, is as far as I can go, in admitting the influ-

ence of those agents in the etiology of tetanus. I will now outline the symptoms as generally observed and laid down in books, adding others which I noted in the case under consideration, before proceeding to a detailed description of the case itself with its peculiarities, treatment, course, and termination.

When tetanus, due to a wound, is about to occur, the wound becomes irritable, cicatrization ceases, the suppuration changes its character, pains shoot towards the body, a feeling of stiffness in the neck, and difficulty in opening and closing the jaws, comes on—the jaws quite soon becoming tightly closed; the muscles of the pharynx suffer, and swallowing becomes difficult and painful, from spasms; the muscles of the face often assume a fixed position, the mouth being sometimes closed, and the lips protruding; but more frequently, as in my patient, the lips are drawn asunder, the forehead transversely wrinkled, the eyebrows elevated, and the angles of the mouth so raised by the contraction of the levatores and zygomatici, as to produce that peculiarly frightful expression, termed the *risus sardonius* or canine laugh. In a short time the muscular rigidity extends to the trunk and extremities, and the whole body becomes at times as stiff and inelastic as if frozen. The flexors of the upper extremities, and the extensors of the lower, suffer the most, and hence we find closure of the fingers, and “pointing of the toes.” But this is what we might expect, since the flexors of the hand and the extensors of the foot are homotypic muscles.

In the beginning of an attack of tetanus the rigidity is not, as a rule, general or constant; separate groups of muscles being separately affected, and remissions, or even complete intermissions, irregularly occurring. Soon, however, the intermissions cease, the paroxysms become more severe, and almost continuous, and extend to all the voluntary muscles; the body is then bent backwards, forwards, or sideways; the face is horribly distorted, the breathing is rendered difficult and painful, the heart's action is seriously interfered with; groans and even loud yells, and urine, and fæces, are forced from the patient by the spasms, and detonating expulsions of flatus per rectum. The feet are incurved and extended, the hands firmly clenched and drawn up, with the fore-arm towards the body, and the whole

condition of the sufferer one of the most excruciating torture. At this period of the disease the slightest cause—a breath of air, a touch, a word, a noise, two or three gathering around the patient's bed, almost only a look, is sufficient to excite a paroxysm, with all its attendant horrors. And it is just at this point that death is liable to occur from heart contraction (arrest in systole), or from spasms of the muscles of respiration. The temperature is not generally much raised until just preceding the close; the body is bathed in profuse perspiration; the pulse is, as a rule, quick and feeble; the bowels are constipated and the urine scanty. Sleeplessness is an annoying symptom. When sleep is procured by narcotics the spasms cease, when not too violent, but recur when the patient awakens; but when the spasms are severe they never really relax, and the patient is apt to awaken into a paroxysm. The tongue is frequently protruded from the mouth, by spasm, and caught and terribly lacerated by the teeth snapping suddenly together.

The prognosis of tetanus is always unfavorable, death occurring early in the disease. Hippocrates noticed that, when the patient survives beyond the fourth day, he stands a better chance of recovery. No doubt this is true, but death has occurred as far along as thirty-nine days after the commencement of the attack. It is generally believed that if life can be prolonged beyond three weeks, recovery is quite probable; but the periods of death, in 327 cases, analyzed by Mr. Roland, give us the most reliable data in this matter: 79 died within 2 days, 104 in from 2 to 5 days, 90 in from 5 to 10 days, 43 in from 10 to 22 days, and 11 beyond the 22nd day; giving an average period for death of between six and seven days. So unfavorable is the prognosis in every case, that we should keep death constantly before our own mind, and the minds of the patient's friends, while doing everything in our power to relieve and save.

The diagnosis of tetanus is not difficult, and need not claim our time and attention in this paper; the treatment is of the most importance to us, and it is in this that we shall find the greatest scope for ingenuity and good judgment. Amputation of the affected part, excision of a portion of the injured nerve, and stretching of

the nerve, have each been tried with variable degrees of success. Amputation offers the most rational chance for recovery; but it needs to be done early and in such a place and manner as to ensure ablation of all the diseased portion of the irritated nerve or nerves. Excision, or stretching, of the nerve, requires to be done before the central nervous organ becomes too much disorganized for rapid and complete recovery. Mr. Timothy Holmes makes a sweeping statement regarding the treatment of tetanus, saying that, "irrespective of these surgical measures, the treatment of tetanus is entirely empirical and completely unsuccessful." Nearly every drug in the pharmacopœia has been tried; some of them, at times, with an appearance of success, but at other times with decided failure. Cases that have recovered have done so under very different remedies, and giving one the impression that the strength of nature had struggled for the mastery, and had been successful, regardless of any medicines which may have been administered. Chloroform, chloral hydrate, bromide of potassium, cannabis indica, curara, nicotine, lobelia, eserine, aconite, warm baths, cold baths, ice to the spine, and many other remedies, have all been tried, without any one of them having shown itself a specific, or even a reliable remedy, in this disease.

The typical case with recovery, which I purpose to bring before this meeting, was that of (J.B.) a man æt. 20 years, a native of Kingston, and a laborer by occupation. He is stout-looking, 5 ft. 8 in., high, and weighs 185 lbs.; but he is of that type, called of old, the phlegmatic temperament, and his muscles are flabby, his animal spirits sluggish, and his strength not as great as his appearance would indicate. His father is alive, and a confirmed asthmatic; his mother died from heart disease some years ago. On the 10th of January last, while stealing a ride from Toronto to Kingston, on a freight train, the toes on both his feet were frozen, the left one being more severely damaged than the right one. On the 11th he was admitted into the Kingston Hospital, complaining of great pain from the frostbites, and suffering weakness and nervous shock. He was given a warm bath, put to bed, a carbolated linseed meal poultice applied to the frozen parts, and hot animal broths, hot thin gruel, tea and milk, admini-

stered internally with full doses of morphine, given hypodermically, often enough to relieve pain. Supporting treatment with rest in bed and poulticing, were continued, and, notwithstanding this, eleven days elapsed before the line of demarcation was apparent on the left foot; and during all this time he was constantly complaining of severe pain in the left foot (the worst frozen one), and occasionally becoming so frantic from pain that he could scarce obtain ease in any manner. The sloughs on the toes of the right foot were not of sufficient extent to need amputation; the left one only requiring this. On the 22nd of January, I operated, removing the left great toe at the metacarpophalangeal joint. The operation was done under perfect antisepsis, and nothing was apparent to indicate anything but speedy recovery, such as has always taken place in amputations of extremities in similar cases in our wards. But the sequence was not of the usually favorable character; the pain continued to increase at the seat of the wound, to shoot up the front of the foot and instep, and into the leg, and thence upwards to the body. At the expiration of two days immense doses of morphine were required to procure ease, and he began to be restless and very greatly agitated. At this time he complained of pain in the head, but his temperature was not very much elevated, and his pulse but slightly quickened. On the morning of the 26th January, stiffness of the neck and difficulty in opening the jaws, slight spasms passing over him, like electric shocks, on the least provocation; an unhealthy appearance of the wound, pains radiating from it towards his body, warned us that we had to deal with incipient tetanus. From this time the disease developed rapidly, and exhibited in its course *all* the symptoms which have already been detailed, notwithstanding free purgation with calomel and jalap, large doses of bromide of potassium, a liberal use of morphine, and such nursing as his condition seemed to demand. As there was an irritation at the seat of the wound, which medicine could not reach, on the morning of the 31st January, nine days after the first operation, and five after the first symptoms of tetanus, I operated again, cutting as far back as the middle of the first metatarsal bone, and removing also the second toe at the metatarso-phalangeal joint. My idea was

to get back of the bifurcation of the inner branch of the anterior tibial nerve, as the irritation seemed to be chiefly in this nerve, and the branch to the second toe might have been one source of the irritation, from the fact that the outer side of the second toe had been frozen. I cut freely, used the strictest antiseptic precautions, and endeavored to remove all the diseased structures. Morphine was administered after the operation; and, in the afternoon of the same day, the following night, and the next morning, he felt better, and was able to take a considerable quantity of liquid food. In the evening of the second day, however, the change in his condition rendered it evident that the whole nervous system had become so irritated and excitable that, unless we could control the disease by medicine, there was no hope in his case.

On the 1st of February, I commenced the use of eserine, given hypodermically in $\frac{1}{30}$ gr. doses, every two hours, ordering it continued until some decided effect should be produced. After using it thus for five days without any appreciable effect—unless it might have been keeping the man from growing worse—I abandoned it, and returned to the use of large doses of k. br. every two hours, giving in connection with it, large doses of mist. assosætidae *per orem* when the patient could swallow, and *per rectum* when he could not swallow. Besides these, frictions to the surface with stimulating embrocations, partial massage, and all the liquid nourishment he could take, were administered. His bowels were kept properly open; his stomach continued retentive, vomiting having occurred only a few times, and this being more from the spasm of the abdominal muscles, than from any trouble in the stomach itself. Phenyle was used all this time as a disinfectant dressing to the wound, instead of bichloride of mercury.

On the 14th of February, as all the symptoms still continued unabated, and the patient could obtain no rest, I ordered drachm doses of chloral hydrate to be given by enema, in a thin solution of starch at bed-time, and to be repeated *pro re nata*. This had a decidedly good effect, for, after each administration, the patient obtained a short sleep and some rest. This was continued chiefly at night, and the pot. brom. during the day; though chloral hydrate was several times

given *per orem* during the day. This sort of treatment was persevered in up to the 21st of February—seven days—when we dropped the pot. brom., and resumed the use of eserine during the day time, but continued the chloral hydrate at night. On the 28th February—seven days more—so unchanged was his condition under this treatment that it was difficult to say whether he was better or worse. The occasional opisthotonos, the almost constant trismus, the contractions of the abdominal muscles expelling large quantities of flatus; the sudden, violent, and excruciating spasms passing over him, and interfering with the action of heart and lungs, from the least excitement, made the prognosis very grave, insomuch that our chief hope of recovery rested on the fact that time was in his favor, he having now maintained the struggle for thirty-three days.

As the patient had by this time become accustomed to the remedies we had been using, and the symptoms were not indicating satisfactory improvement, I resorted to the tr. aconite in *m. v.* doses, as recommended by Mr. Timothy Holmes. It was given every two hours, and certainly had a good effect (or else nature was working the cure), for the pulse became slower, the rigidity less, the respiration easier, and the spasms not so frequent or violent. From the 1st of March up to the 12th, the aconite was continued in varying quantities, supplemented by pot. brom. and chloral hydrate, and the patient steadily improved, so that on the 12th he was able to have a hot bath. This last did him so much good that it was repeated almost daily; the same medicines were continued, and the patient steadily progressed towards recovery.

On the 25th of March the patient was discharged, cured, having had a run of fifty-eight days of a severe attack of traumatic tetanus.

TEMPERATURE.—On the evening of January 22nd, the day of the first amputation, his temperature rose to $101\frac{2}{3}$, but, by the following evening it had gone down to $98\frac{2}{3}$; on the evening of the 24th it reached $100\frac{2}{3}$, but went down again by the following morning to $98\frac{2}{3}$. From this point it played up and back within about the same limits, till the 1st of February—the day after the second operation, when it suddenly rose to 102 ; by the morning of the 3rd, however, it was down to 99° . Only once after this

did it rise high enough to cause anxiety, and that was on the 5th February, when it reached 101 $\frac{2}{3}$; and it is worthy of note that at this period he had been taking eserine for four days. From this time onward the temperature gave no concern, as it ranged between 98 $\frac{2}{3}$ and 100, once getting up to 100 $\frac{2}{3}$, and once down to 98°.

The pulse kept up more persistently than the temperature, varying from 100 to 120 per minute, and not coming down to 90, or below, until after we had so freely used the aconite. The pulse was variable in volume, sometimes being full and bounding, sometimes small, feeble, and easily compressible. His skin was, most of the time, bathed in perspiration, as is the rule in tetanus. A bad odor exhaled from his body, besides the smell from his urine and fæces, which were frequently expelled into his bed by the tetanic spasms. Attempts to swallow food or drink, nearly brought on strangulation on several occasions; and, in consequence, he suffered at times on account of lack of nourishment.

His head was clear, and his mind unaffected, so that he fully realized all his sufferings. His respiration was very irregular, at times being quick and shallow, and at other times slow and deep, and often laborious and accompanied by heavy sighing. I need enter no further into details of symptoms, as nearly all symptoms belonging to tetanus were present in his case, at one period or another.

The treatment which I think benefitted him the most was that of large doses of pot. brom., assafoetida, tinct. of aconite, and chloral hydrate, together with the free hypodermic use of morphine. The eserine used may have done good—perhaps kept the patient from getting worse—but there was no marked effect from it. After using it for about ten days, then omitting it for about the same length of time, and then resuming its use again for several days, we could not perceive that its administration made any difference in the condition of the patient. I did not venture on curara, for I saw it used once and its effect was, I think, to hasten death; nor did I try cannabis indica, because, perhaps, I did not think of it, or did not consider it worth trying. Chloral hydrate and aconite were the most decided in their effects as anti-tetanic remedies, and next to these came the bromide of potassium. The hot bath had an excellent effect, but, of

course, the patient was then changing for the better. The friction with a stimulating embrocation, and the massage, I think, did good; but I have no doubt that the second amputation was the *sine qua non* to his recovery.

Some years ago, I tried, in a case of tetanus from a wound of the thumb, tincture of lobelia, tobacco enemata, bromide of potassium, chloroform, hot pediluvia, sinapisms, etc., without any avail, the patient dying on the 4th day. I have seen nearly all the standard remedies used and fail in the few cases of tetanus I have witnessed.

I have now outlined the treatment successfully pursued in the case of J.B.; but whether, when tried generally, it would be more successful than other methods or not, I am not in a position to say. Had I another case on hand, I should follow a similar course, namely, free purgation with calomel and jalap, morphine, pot. brom., assafoetida, chloral hydrate, aconite, eserine, stimulating embrocations, massage, a hot bath when possible, ice to the spine perhaps, quietness, and as much liquid nourishment as the patient could take.

Added to this course of treatment would be any other remedy which nascent symptoms might indicate, or which any peculiarity of constitution might demand, together with the best and most intelligent nursing which it would be possible to secure.

In Italy, Dr. Francesco Pavlini recommends subcutaneous injections of a one per cent. solution of carbol, at intervals of three hours, for the cure of tetanus; stating that in a very severe case in which warm baths and large doses of chloral hydrate had no effect, this treatment was successful—the temperature falling, and the severity and duration of the paroxysms being diminished, as early as the second day of its use. It was continued in gradually decreasing doses till the 27th day, when the cure was complete. In Bacelli's clinic, at Rome, a very severe case is said to have been successfully treated in a similar manner.

MORTON'S METHOD OF SPINA BIFIDA.

BY DR. JENNER, OF KINGSVILLE.

Read before the Ontario Medical Association.

On March 1st, I was called to see a child 3 weeks old, who had a spina bifida situated at the junction of the dorsal and lumbar vertebræ,

The tumor was about the size of a duck's egg. Sessile and the opening communicating with the spinal cord large; the laminae of two vertebrae being absent. The walls of the tumor were extremely thin in places and became very tense when the child cried or strained at stool. The mother had been attended by a midwife who undertook to cure the tumor by applying a salve, the effect of which with pressure had produced a superficial slough, and a small quantity of serous fluid was escaping from a minute puncture in this part of the tumor.

The child was large and well nourished. Complete in every other part. The parents were very anxious to have something done; so after explaining to them the dangers of interfering by operative procedure with such cases, and the possibility of hydrocephalus supervening, even though the tumor were cured, I resorted to Morton's method of injecting a solution of iodine, gr. 10, pot. iod., gr. 30, and glycerine, ℥i.

I tapped the tumor, without anaesthetising the child, with a small sized trocar and canula; drew off four drachms of fluid, and immediately injected through the canula one drachm of the iodine solution, allowing what would to escape, keeping up a gentle pressure around the base of the tumor to prevent the fluid entering the spinal canal. Considerable inflammation followed in the sac, and evidently caused pain for about four hours, after which the child was easy. I instructed them to keep a piece of lint saturated in a solution of tannin on the tumor continually, and again on the 7th, one week after, I repeated the operation. The sac was smaller, and contained but one drachm of fluid. No untoward symptoms had followed the first operation, and as the signs were favorable the parents were anxious to proceed with the treatment.

Apparently much more pain followed the second operation, but neither convulsions nor symptoms of paralysis followed, and on the 18th, eleven days later, I repeated the operation for the last time. The walls of the sac were much thickened, and the tumor lessened in size, but there was evident fluctuation and tension when the child cried.

In my haste I forgot my injection fluid, but had some iodized phenol in my case which I

used instead, first injecting ten minims of a 12% solution of muriate of cocaine to annul the pain, and immediately after one drachm of glycerine containing 15 minims of iodized phenol. I squeezed as much of this out as I could, put on a dressing of bichloride cotton and ordered them to dress the child. Within two minutes after the operation the child became restless; breathing labored and fast; pulse small, quick, and rapid; muscular twitchings occurred in the limbs and face, and a general convulsive seizure followed soon after; the head was drawn back; the spine arched forward; knees flexed on thighs, and thighs on abdomen; arms drawn up and rigid; thumbs in palms; cheeks drawn in; the under lip completely hidden beneath the upper jaw; abdominal muscles rigid but not retracted; eyes at times staring and then rolled up beneath the lid; the child, I think, did not lose consciousness. I put it in warm baths, gave brandy and bromide of potassium freely every few minutes, until within an hour all rigidity and convulsive twitchings passed off; the child became limp as a rag. I am not sure that it was not drunk. Surface warm but pale, and bathed in perspiration; pulse small, but soft and regular; vomited several times; could detect no odor in the vomited matter but the brandy; while in convulsions it urinated freely. It was reported next day all right but weak.

I saw it two weeks ago—nearly three months after first operation. It was in perfect health, large of its age, and very fleshy. The tumor was not larger than a pigeon's egg. Comparatively hard and non-fluctuating. No change in its appearance or feeling could be detected when the child cried or strained. The parents were satisfied to let well enough alone and so was I. The opening communicating with the spinal canal was not much, if any, smaller.

In the *British Medical Journal*, Oct. 20, 1888, Dr. Geo. Taylor reports a child, aet. 5 months, who had a spina bifida treated successfully by Morton's method.

In the following number of same journal Mr. Rundee reports a girl, aet. 2 years, who had been treated when five weeks old by same method, and who subsequently developed well marked hydrocephalus, but the tumor gradually contracted.

Nov. 20th, 1888, in *British Medical Journal*, Dr. Pearcy reports a case which he had cured by injecting the iodo-glycerine solution.

HÆMOPTYSIS IN ELDERLY PEOPLE IN ABSENCE OF TUBERCULAR AND CARDIAC DISEASE.

BY A. M'PHEDRAN, M.B.,

Lecturer on Clinical Medicine in the University of Toronto.

In his work on pulmonary consumption, Dr. Theodore Williams thus formulates his conclusions on hæmoptysis, from the results of many thousand cases. Streaks of blood, as occur in the sputa of bronchitis and pneumonia, are set aside. Hæmoptysis may, then, arise from (1) alteration in the composition of the blood, as in scurvy, purpura, and, markedly, in hæmophilia. (2) From congestion of the lungs, through cold or alcoholism. In the latter, all organs are gorged with blood and friable, and more than a pint may be expectorated, and in congestion from cold he has seen the hæmoptysis exceed that quantity, and no pulmonary lesion be found after death. (3) Cancer, and hydatids of the lungs. (4) Disease of the heart and great vessels, especially aneurism of the aorta—these are common causes. (5) Strain on the heart from over-exertion, resulting in pulmonary congestion. (6) Embolism and thrombosis of pulmonary vessels. (7) Disease of menstruation. (8) In bronchiectasis much blood spitting may occur. And (9) injuries to the thorax and lungs.

Now, if we except these causes, he says, we may lay down as a law that hæmoptysis, exceeding one ounce in amount, is due to changes in the pulmonary blood-vessels, connected with phthisis. Like all laws this, too, has its exceptions.

Last year, Sir Andrew Clark described a rare form of hæmoptysis, occurring in elderly people* who were then, and remained, free from evidences of pulmonary tuberculosis or cardiac disease. In these cases the hemorrhages were usually moderate in quantity, and recurred at short intervals. It sometimes persisted for days. In all his cases there appeared to be some bronchial catarrh, with slight emphysema, and a rheumatic tendency. In two fatal cases the

bronchial mucosa was found inflamed; the anterior parts of both lungs were pale, dry, and emphysematous; in the lower and back parts of both lungs, which were deeply congested, were many patches of emphysema surrounded by hemorrhagic extravasations. There was no evidence of tubercle, cancer, or any coarse change that could lead to hemorrhage.

A microscopic examination showed that wherever there was an emphysematous patch there was a diseased artery; and if the artery was much diseased the capillaries and veins were also affected; and generally, if the artery was obstructed and degenerating, there was hemorrhage. Clark's opinion is that the disease of the artery was the first to occur, resulting in a deficient supply of blood to the part involved; then followed the degeneration of the venous radicles and capillaries, causing, in turn, true atrophic emphysema. The strength of the vessel-wall being thus impaired, increased blood pressure from thrombus, or other cause, led to rupture and extravasation. The change in the vessel-walls was found to consist chiefly in a hyaline infiltration of the middle and internal coats of the vessel, similar to the changes found in the vessels of diseased articulations of arthritic cases, hence he suggested the propriety of applying the term "arthritic hæmoptysis" to such cases.

The following case probably belongs to this interesting class: Thomas N., aged 60, a nervous, energetic man, a large manufacturer. Had always been healthy. Was addicted to alcoholics some years ago. In the effort to break the habit he acquired an appetitè for chloral, and to get rid of that became addicted to opium, which he had taken regularly for the last fifteen years. Has had slight rheumatic attacks, to the extent of slight pains in the shoulders and other joints. On account of the loss of his teeth, he had lived on a slop diet for the last few years. In October, 1889, he had a sharp attack of bronchial catarrh with troublesome cough. The pulse was full and hard; the anterior walls considerably calcified. The urine rather dark, scanty, and high sp. gr.; bowels rather constipated. The chest in front was somewhat hyper-resonant, there being evidently slight emphysema. Chloride of ammonium was given for the bronchitis, and nitro-glycerine to relax the arteries and relieve their tension. The bowels were moved freely. He

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made a satisfactory recovery. He was cautioned of his danger, especially of apoplexy, on account of the high arterial tension and diseased vessel-walls, but he was too busy to heed advice.

On the night of November 6th, fairly free hæmoptysis occurred, probably a pint of blood being coughed up. At five in the morning the pulse was 90, strong and full, respiration about 22, t. mp. normal, and continued so. He was ordered magnesia sulphate, one drachm, in a small quantity of water, hourly, until the bowels were moved freely; and nitro-glycerine, $\frac{1}{50}$ grain, every three hours, to relax the pulse. By evening, two free alvine evacuations had occurred, but the pulse was little altered. Nitro-glycerine, $\frac{1}{5}$ grain, was continued, the result being carefully watched, and the saline given three times a day and calomel at night, to keep bowels open. Next day the pulse was softer, the urine fairly abundant, sp. gr. 1018; no albumen; pale. Hemorrhages in lessening quantities recurred for three days; cough was not troublesome. Careful examination of the lungs revealed no evidence of disease except, perhaps, slight hyper-resonance on each side of the sternum. The chief trouble after this was in overcoming the opium habit; he was kept in bed for a couple of weeks, with daily massage and good personal care. He improved satisfactorily, the craving for opium soon ceasing, but he was kept in his room for nearly two months. The magnes. sulph. was replaced by Hunyadi mineral water, and later by Carlsbad salt, as being a better diuretic. His health has been excellent since.

In this case the cause of the hæmoptysis is certainly not included in Williams' list of causes already quoted; it resembles closely those described by Sir Andrew Clark, and was probably due to the same cause. In the treatment of these cases, Clark is very emphatic in the assertion that the hæmorrhage is aggravated, or at least maintained, by the methods usually followed in hæmoptysis, by the frequent administration of large doses of the strong astringents, of ergot, the application of ice to the chest, and by the free indulgence in liquids, to allay the thirst which the astringents create. For my own part, it is at most only in exceptional cases that I have seen unmistakable benefit result from such treatment in hæmoptysis of any kind;

at present, I cannot recall such a case. Fortunately, Clark's paper came to hand while the case given was in progress, and I was gratified to find myself carrying out a general plan of treatment in close accord with that recommended by so eminent a practitioner.

The indication for treatment seemed to be to secure elimination from the blood of waste products which the hard pulse and scanty urine showed were in excess in that fluid, and, in all probability, were largely, if not wholly, the immediate etiological factor in the production of the hæmorrhage. It was with this object in view that the sulphate of magnesia was given to act freely on the intestinal tract; and nitro-glycerine to relax the arterial tension and prevent rupture of a vessel in some other organ, also to promote excretion by the kidneys. That the sulphate of magnesia has great influence in arresting bleeding in many cases of hæmoptysis, I have seen undoubted evidence in a goodly number of cases. In one case, a gentleman in the drug trade, who has been the subject of repeated hæmorrhages for the last fifteen years, due to some undiscoverable cause, though probably phthisical, the attacks of bleeding are nearly always preceded by a feeling of general fulness. On my advice, as soon as this feeling is perceived, the amount of liquid taken is reduced to a minimum, and one-half drachm doses of the sulphate are taken in one or two drachms of water every hour until a free evacuation is obtained. The feeling of fulness then passes off and no hæmorrhage occurs; but if the sulphate is neglected, the bleeding always follows.

NOTES ON A CASE OF PAROXYSMAL HÆMATURIA.

BY DR. SAUNDERS, OF KINGSTON.

Read before the Ontario Medical Association.

I have preferred to use the above name rather than the more generally accepted ones of hæmatinuria or hæmoglobinuria, because there may be a doubt in the case I am about to relate; whether it was not one of true discharge of blood through the kidneys, although repeated microscopic examinations failed to detect the presence in the urine of blood corpuscles, and the marked icteric tint would seem to indicate that free hæmoglobin was present in

the blood, and that dissolution of the blood corpuscles occurred in the systemic circulation, and was not confined to the kidneys. Although the disease is comparatively rare, yet a good many cases are recorded; but it is remarkable how few seem to have terminated fatally, and afforded opportunity for *post mortem* examination, and in those few that I have been able to find recorded, although some lesion of the kidney has been found, as in case by Murri, where tubercle was present in both kidneys, with collections of pigment in the cortical tubes, and in one recorded by Otto. The patient, W. H., first came to me on Nov. 8th, 1885. He was then 35 years of age; a shoemaker by trade; married twice; four children by first wife; had been a carter; never very robust. About eight years previously, while carting, had been crushed between the wheel of his cart and a wall on his left side. He had suffered severely at the time, and was laid up for some weeks. When able to get about again, was unable to resume the more laborious occupation and took to shoemaking, and had fair health until about a year previous to my seeing him, when he began to lose color and strength and noticed that his urine was at times dark and at other times light-colored and natural in appearance; he had no pain, but previous to passing dark urine would experience a sensation of weight in the right loin. When I saw him he had a pallid exsanguine countenance, with a peculiar bright yellow tinge, most marked about the face and eyes; he had just passed urine of a dark porter color, with an abundant chocolate-colored flocculent sediment; specific gravity 1022; acid containing a slight trace of albumen; under the microscope the sediment showed abundant granular tube casts and granular debris, but no blood-cells. The blood reaction was readily obtained by the guaiacum test; his breath was short, especially on exertion; the lungs and heart were apparently sound; his appetite good and bowels regular; color of stools normal; the next time he passed urine it was normal in color and appearance; I found no albumen or tube casts; he never had malaria or lived in malarious neighborhoods, nor had he had syphilis; he had always been temperate in his habits; but without, as I have said, ever being very strong, had always been fairly

healthy. On enquiry, I found that the attacks of hæmaturia occurred with variable frequency, sometimes daily and sometimes not for several days; under tonic treatment, iron, etc., he improved in health and color, but the occasional attacks of hæmaturia continued; astringents, such as gallic acid, were useless, but under the administration of ergotine in 3 grain pills, they became much less frequent; so much so that he, of his own accord, would resort to them whenever the attacks came on. After the first three months, from occurring three or four times a week, they diminished in frequency gradually, till during the last year or two of his life, he would often go two or three months without an attack. The phenomena attending them were always the same; they would be induced by over-fatigue or exposure to cold; a sensation of chilliness would come on, accompanied by the feeling of weight in the right loin; the complexion, always pallid, would change to a bright light yellow, and in an hour or so he would pass urine of a dark chocolate color, once or twice, rarely more; after which it would be clear and natural as before, and in a day or two his complexion would clear up again. So invariably was this the case, that I was usually able to tell by his appearance on coming into my office that he was either about to pass bloody urine or had just done so. The character of the urine was always, as I have described, normal in the intervals, but during the attacks having all the characteristics of bloody urine, save that blood corpuscles were absent. During the time that I was attending him, a little over four years, his wife miscarried twice at about three months, and had two healthy living children. On January 13th, while the epidemic of influenza was at its height, he came to my office with the initial symptoms of influenza, chill, headache, etc., and a short time after passed bloody urine once or twice; he then remained free from an attack till the 28th, when a second attack occurred; this was succeeded by oozing of blood from the gums, and the frequent passage of the black tarry stools, which persisted for several days in spite of all treatment, and he died exhausted on Feb. 6th. No recurrence of the hæmaturia took place after the 28th of January. A *post mortem* examination was made seven hours after

death by Drs. Henderson, Mundell, and myself. The body was well nourished; very pale; the abdomen only was examined; there was about half an inch of fat on the abdominal walls, and the omentum and mesentery were loaded with soft fat; the stomach was disturbed with gas and fluid, pale but healthy; the intestines contracted and pale; the liver small, slightly fatty, but not otherwise diseased; the gall bladder distended; the spleen normal in appearance, rather small; the right kidney was normal in size and appearance; the left kidney about twice the natural size; the pelvis filled with soft fat that nearly obliterated its cavity; nearly the whole of the medullary and the greater part of the cortical portion was infiltrated with fat, by which the characteristic structure appeared to be destroyed and replaced, a few small patches only retaining the normal appearance. Owing to the objections of friends, we were unable to take it away for microscopical examination. The left ureter was normal in calibre and appearance, except that a short distance from the kidney it bifurcated and was double for four or five inches, when it joined again and entered the bladder single; the bladder was moderately distended with pale urine, the mucous membrane lining it being pale, but otherwise healthy. The patient evidently died of some other disease, and, though the left kidney was found enlarged to double its normal size, yet the writers agree that the changes noticed were insufficient to account for the phenomena. Indeed the majority of writers on the subject seem to be agreed that the original source of the discharge of blood-stained urine is not to be found in the kidney, but is to be sought either in the nervous system or in a pathological condition of the blood itself, and this view is borne out by the peculiar phenomena attendant on the occurrence of the paroxysm, these being generally brought on by exposure to cold, and commencing with a sensation of chilliness. This initiatory chill, however, seems to me to be no more than the consequence of the sudden escape of the contents of the blood corpuscles, and is paralleled by the chilly sensation that attends a sudden and copious flow of blood under any circumstances. I have just said that the majority of writers (as far as I have been able to find) regard the dissolution of blood

corpuscles as occurring independently of any kidney lesion, but there are some exceptions to this view. Dr. Stephen Mackenzie, in his elaborate article on this disease published in the *Lancet* in 1884, says that he formerly thought that the kidney was the seat of the change, and that Murri held the same view but had discarded it, and he himself in the light of recent investigations felt it necessary to reconsider the question. Sir W. Gull believes there is reason for thinking that a blow or injury to the loins may be the cause of this affection, and cites a case in point; and Roberts, both in his work on urinary diseases, and in the article on the subject in Reynolds' System of Medicine, whilst admitting that injury may cause hæmaturia or even hæmatinuria, would hesitate in the absence of further evidence to accept injury as a cause of paroxysmal hæmatinuria. He regards the pathology as obscure, but it is clear that the kidneys themselves are affected, the symptoms pointing to sudden but transitory congestion of the renal capillaries, with escape of their contents, but without rupture of their walls. Into the relation that the nervous system bears to the attacks I do not propose to enter; this part of the subject has been carefully investigated and as thoroughly discussed as the present state of knowledge will allow by many, notably by Dr. Stephen Mackenzie, in the article already referred to, and also more recently in a very interesting paper by Drs. Bristow and Copeman, published in the *Lancet* last year, recording a series of experiments performed by themselves on a patient under their care. My chief object in relating this case is to show that in some instances, at any rate, the disease may be dependent upon kidney lesion, and also to point out that owing to the infrequency with which it proves fatal, and the consequent paucity of *post mortem* examinations, the assumption that is made by most observers that the blood change takes place elsewhere than in the kidneys, and that such structural disease as has been noticed is insufficient to account for it, is based rather upon theoretical grounds than upon actual observation. It seems probable that there are at least two distinct causes for the affection; that just as jaundice may be of hepatogenous or hæmatogenous origin, so paroxysmal hæmaturia may be of

local or of general origin, and that the case I have just related, and those referred to by Mackenzie, Harley, Gull, Bristowe, and other similar ones, were due to local disorder; while those met in malarial districts, as described by Flint and Tyson (in Pepper's System of Medicine), owe their origin to that general derangement of the nervous system and disorganization of the blood that intense malarial poison is capable of inducing. This distinction is a matter of considerable importance as regards treatment, because if it is true that, in the one case, the disease consists in perverted action of the vasomotor nerves of the kidney, those remedies might be expected to prove serviceable which, like ergot, have a direct action upon these nerves, and this I found to be true in my case; while, in the other, such medicines would probably prove useless, and benefit would be more likely to follow an antimalarial treatment. It is rather singular that those American authors whom I have referred to, and Bartholow, ignore the existence of paroxysmal hæmaturia of other than malarial origin, and speak of the disease as though it were invariably due to that cause.

Selections.

CEREBRAL LOCALIZATION.

(An Abstract.)

The Croonian Lectures on Cerebral Localization, delivered by David Ferrier before the Royal College of Physicians of London, have recently been published. In these lectures the author's purpose was to sketch the evolution of the doctrine of cerebral localization and to indicate the principal data on which it is based, and to discuss, in the light of the most recent investigations, the evidence for and against the existence of specific centres, and their exact position in the cerebral cortex.

Before considering the facts bearing directly upon the specific localization of function in the cerebral cortex, the effects of ablation of the cerebral hemispheres in different classes of animals were considered. Recent researches on the effects of the removal of the cerebral hemispheres, by improved methods, have necessitated some important modifications of the doctrines which, up to quite a recent date, have been entertained on the subject.

Beginning with *fishes*, it was stated that, when in osseous fishes, the ganglia (which correspond morphologically to the cerebral hemispheres of vertebrates) are entirely removed, there is little, if anything, to distinguish them from perfectly normal animals. They maintain their normal attitude and use their tails and fins with the same vigor and precision as before. A fish without cerebral hemispheres can see, distinguish colors to some extent, catch its prey, discriminate between different kinds of food, direct its movements with precision, and, in fact, behave, to all appearances, like a normal animal.

Frogs deprived of their cerebral hemispheres behave, *cæteris paribus*, essentially like fishes similarly treated; they maintain their normal attitude and resist all attempts to overthrow their equilibrium. It would, in fact, be difficult, so far as their movements and response to peripheral stimuli are concerned, to distinguish between a normal and a brainless frog. If the back be gently stroked, the frog will answer uniformly with a croak, as if of pleasure or enjoyment. Like the fish, it possesses some form of vision. It has been shown, moreover, by the recent experiments of Schrader, contrary to the views formerly held by most observers, that removal of the hemispheres deprives the frog neither of spontaneity nor of special instincts, nor of the ability to feed itself. It would appear, therefore, if these observations are correct, that the brainless frog behaves precisely like the brainless fish above described.

Birds.—After removal of the cerebral hemispheres of pigeons they show no disturbance of station or locomotion. Left to themselves, they appear at first, at least, to be plunged in profound sleep; from this condition they are easily aroused by a gentle push or pinch. They start at loud sounds, such as a pistol-shot, made in their immediate vicinity. The question as to the sense of sight in brainless pigeons has been much discussed. Schrader, however, finds that, within a few days after the operation, these pigeons behaved in such a manner as can only be explained by their still retaining some form of vision; they not only avoid obstacles in their path, but appear able to fly from one place and alight securely on another. We are thus obliged to class birds with fishes and frogs, which, with-

out doubt, retain their sense of sight, and guide their movements accordingly, notwithstanding the complete removal of their cerebral hemispheres.

Mammals.—While the removal of the cerebral hemispheres (including *corpora striata*) in the lower vertebrates is compatible with survival for a considerable length of time, the case is different with mammals. In these the operation causes fatal shock, or is followed by secondary effects which result in speedy death. For this reason it is not found possible to determine, as in the lower vertebrates, what functions, after considerable lapse of time, might still be exhibited by the lower centres in the entire absence of the higher. The hemispheres have been removed from rabbits and guinea-pigs—all spontaneity seems to be abolished; but it is usual for the animals, after the period of quiescence has passed, to make apparently spontaneous running movements, which, however, are found to depend upon irritation, caused by the secondary changes set up in the wound.

Whether, after the removal of the cerebral hemispheres, rabbits and other rodents can see, is a question which has been the subject of lively controversy. The question is one which cannot be said to be definitely settled, though the facts mentioned in regard to fishes, frogs, and birds, would incline one to believe that the conclusion arrived at by Christiani, in his experiments, is correct. He is of opinion that, although they do not see like normal rabbits, they are still able to guide their movements in accordance with retinal impressions. Goltz, by repeated operations, destroyed a large extent of both hemispheres of two dogs; he thus describes their condition: "Both animals were essentially only wandering, eating, and drinking; reflex machines. Both were utterly indifferent to man and beast. Both had obtuseness of all their senses. Each had sensation in every part of the skin, and effected movements with all its muscles. Neither exhibited any expression of pleasure; on the other hand, both were easily roused to wrath. Both were profoundly demented."

Dr. Ferrier remarks that the impairment of all the sensory and motor faculties in these and other dogs operated upon by Goltz—in which it is certain that not one of the specific centres was entirely destroyed—would, without doubt,

have been more profound than in rabbits and guinea-pigs, had it been possible to extirpate the hemispheres entirely; and when we come to consider the effects of partial cerebral lesion in man, we shall see reason for believing that if in him the whole of the hemispheres were removed, providing this were compatible with life, there would be such complete and enduring paralysis of motion and annihilation of all the forms of sense, that scarce a trace would remain to those responsive and adaptive reactions which survive the removal of the cerebral hemispheres in animals lower in the scale.

It thus appears that, notwithstanding the complete extirpation of the cerebral hemispheres, animals, in proportion to their lowness in the scale, besides duly retaining and regulating all their organic functions, remain possessed of varied powers which may be classed, generally, under the heads of equilibration, co-ordination of locomotion, emotional expression, and adaptive reactions, in accordance with impressions made upon their organs of sense. These are organized in the mesencephalic and spinal centres in the highest degree in fishes, frogs, and pigeons, to a less degree in the lower mammals, and least of all in monkeys and in man.

The question as to whether the actions of the lower centres are indicative or not of intelligence, was briefly discussed. We are entitled to say that the activity of the lower centres does not affect the consciousness of the individual; for when, by lesion of the internal capsule, the sensory tracts are cut off from their cortical connections, the individual has absolutely no consciousness of impressions made upon his organs of sense, so that we may conclude that, in man at least, states of consciousness are indissolubly connected with the activity of the cerebral hemispheres. There seems to be nothing which can, *a priori*, be urged against the notion that the various factors of intelligence have their substrata in definite regions, specially related to certain motor and sensory functions.

Dax (1836) established the special relation of aphasia to right hemiplegia and lesions of the left hemisphere; but the connection between aphemia, or aphasia and lesion, more particularly of a definite region of the left hemisphere, namely, the base of the third frontal convolution, was pointed out by Broca (1861). The

next great advance in cerebral localization was made by Hughlings Jackson (1861), who, from a study of the forms of epilepsy, now appropriately known by his name, furnished cogent reasons for believing that certain convolutions near, and functionally related to, the corpus striatum had a direct motor significance. The whole subject of cerebral physiology and pathology was revolutionized by the discovery, first made by Fritsch and Kitzig in 1870, that certain definite movements could be excited by the direct application of electrical stimulation to the definite regions of the cortex cerebri in dogs.

The characters and conditions of the excitability of the cerebral cortex were discussed. In normal states, the grey matter of the cortex is entirely, or almost entirely, insensible to mechanical stimulation; when, however, the cortex becomes inflamed and congested by exposure, or traumatic lesion, it becomes irritable to mechanical stimulation. The most effective excitant is the application, by closely-approximated electrodes, of a galvanic or a faradic current of moderate intensity. When an animal is sufficiently narcotised to abolish all restless or spontaneous movements—and the anæsthesia must not be too profound, else all reactions cease—the application of the electrodes to different regions calls forth definite motor reactions with such uniformity that, when once the limits of the said region have been accurately defined, one may confidently predict the exact movement which will occur in animals of the same species. This fact, which is beyond all dispute, has been frequently demonstrated by Ferrier, Horsley, and others. The chief objection to the direct excitability of the cortex itself is found in the fact that, even after removal of the cortex, similar reactions are still obtainable when the electrodes are placed on the subjacent medullary fibres. It is, *a priori*, most likely that there is also functional differentiation of the cortical centres to which the medullary fibres are distributed, and that the grey matter is, under normal conditions, the natural excitant of the reactions which we are able to produce by artificial stimulation with the electric current, and a comparison of the respective reactions of the cortex and medullary fibres indicates such differences as can only be explained on the supposition that the cortical centres are

themselves excitable. A much stronger current is necessary to produce the ordinary reaction by exciting the medullary fibres. The time lost between the application of the stimulus and the occurrence of the muscular contraction is much greater in the case of the cortex than in that of the medullary fibres. The significance of this fact is, that the grey matter does not act like an inert layer which merely allows transmission of the electric current to the medullary fibres, but like other nerve centres, stores up and transforms the stimuli which it has received into its own energy. There is also a characteristic difference in the muscular curves registered on stimulation of the cortex and medullary fibres respectively. The effects of localized destruction of the cortex are the counterpart of those of irritation, however produced, and we may conclude from this that there is the same functional differentiation of the cortex as in the medullary fibres.

The lecturer then described in detail the phenomena of electrical irritation of the brain of the monkey, more especially as determined by his own experiments and those of Horsley, Schafer, and Beavor, which, though in all essentials confirming his own, have been marked out with more elaborate detail and minuteness.

The *prefrontal lobe* gives no, or very doubtful, response to electrical stimulation. *Behind this and anterior to the precentral sulcus*, stimulation causes opening of the eyes, dilatation of the pupils, and movements of the head and eyes to the opposite side. At the upper extremity of the central convolutions—ascending frontal, ascending parietal, and postero-parietal lobule—and extending over the margin of the hemisphere into the posterior part of the marginal convolution, or para-central lobule, electrical stimulation causes movements of the lower extremities.

Below the leg area and partly in front of it and occupying the middle third, or rather two-fourths, of the central convolutions, there is a region, stimulation of which causes movements of the upper extremity. Corresponding regions were indicated in the brain of the dog, cat, and rabbit.

Below the arm area, and occupying the lower third of the central convolutions there is a region, stimulation of which causes movements of the face, mouth, and tongue.

It has further been demonstrated by Semon and Horsley that excitation of the lower extremity of the ascending frontal convolution causes phonatory closure of the vocal cords.

The areas for the head and eyes, arm and leg, extend over the margin of the hemisphere into the mesial aspect or marginal convolution.

Excitation of this marginal convolution from before backwards causes movements of the spine, tail, and pelvis; behind these, extension of the hip, flexion of the leg, and lastly, movement of the foot and toes.

Stimulation of the angular gyrus causes movements of the eyeballs, and occasionally of the head, to the opposite side.

Excitation of the occipital lobe causes movements of the eyeballs, but less constant and less easily excited than from stimulation of the angular gyrus.

Stimulation of the superior temporal gyrus causes pricking of the opposite ear, opening of the eyes, dilatation of the pupils, and direction of the head and eyes to the opposite side.

Stimulation of the hippocampal lobule or anterior extremity of the hippocampal gyrus in monkeys, dogs, cats, and rabbits, cause torsion of the nostril on the same side, as if from irritation applied directly to the nostril itself.

Whether complete parallelism obtains between the brain of the monkey and the brain of man is a question which, until recently, could only be answered by reference to the facts of localized lesions.

Movements of the opposite sides of the body have been observed by stimulation of the cortex through the dura mater. Recently, surgeons have, on many occasions, resorted to gentle faradization of the cortex, in order to define accurately the regions which they desired to extirpate for the cure of focal epilepsy. One case has been reported by Horsley, another by Keen. The results correspond very closely with the position of the various centres as already defined.

Two other cases are recorded, and the following comment is made: All these results are in close harmony with those obtained on stimulation of the cortex of the brain of the monkey; therefore, we have reason to believe that, *cæteris paribus*, the functional relations of the human cortex are identical with those of the lower animals.

Facts may be adduced which justify the conclusion that the areas, as a whole, are as completely differentiated from each other as the limbs themselves, or one organ of sense from another.

The question as to the signification of the motor reactions which result from the electrical stimulation of the different cortical regions is disputed. The method of excitation itself is not competent to solve these questions, and requires, as a complement, the strictly localised destruction of those areas, stimulation of which gives rise to definite motor reactions.

A careful consideration of the reactions in different orders of animals, and the fact that similar movements are in some cases excitable from different cortical regions, led Ferrier to believe that they might have various significations, and he formed the hypothesis that some might be due to stimulation of motor regions proper, while others might be looked upon as the associated expression of subjected sensation. On this hypothesis he instituted localized destructive experiments, and thus determined the existence of sensory or perceptive centres, respectively related to the different forms of sensibility, as well as of centres, more especially, if not exclusively, motor in character.

The existence of distinct sensory centres has been confirmed by succeeding physiologists and clinical research, and Ferrier has the satisfaction of thinking that such errors as he has committed in the delimitation of the various sensory regions have been errors more of omission than of commission, and that the localities in which he originally fixed the respective sensory areas correspond, in part at least, with the position assigned to them by the most reliable experimental clinical methods.

(To be continued.)

THE PATHOLOGY OF GENU VALGUM, OR KNOCK-KNEE.

BY PROFESSOR HUMPHRY, F.R.S.

Mr. Keetley's paper on "Genu Valgum," in the number of the *Illustrated Medical News* for December 7, suggests to me to make a few remarks on the pathology of the affection.

I have for many years taught that the *essential* feature of genu valgum is a *deficiency in growth at the outer part of the lower epiphysial*

line of the femur. If a thigh bone be placed with its lower articular surface upon a table or any horizontal plane, in the position which it normally occupies in the erect posture, a plumb-line would fall from the upper weight-receiving part of the head of the bone, obliquely, through the shaft and through the *outer* condyle (not between the condyles). This, therefore, is the line of weight, and the weight is borne chiefly upon the *inner* part of the shaft above, and below upon the *outer* part of the shaft, the *outer* part of the epiphysial line, and the *outer* condyle. To enable it to fulfil its greater weight-bearing function, the outer condyle, as compared with the inner condyle, is broader and flatter beneath; and a section shows it to be composed of denser cancellous plates, which have a more vertical disposition.

Further, owing to the inclination inwards of the thigh as it descends (which, by the way, is a human feature associated with the width of the pelvis and the erect posture), the muscular traction, viz., that of the *quadriceps extensor*, through the patella, that of the abductors *gluteus maximus* and *tensor vaginæ femoris*, through the ilio-tibial band, and that of the *biceps flexor*, which enjoys the advantage of leverage afforded by the projecting head of the fibula, is in all positions exerted chiefly upon the outer condyle. This conformation and relation of parts, added to the great leverage given by the thigh above and by the leg below, make a demand—rather throw a difficulty—upon the growing force in the outer part of the epiphysial line, which in some young, perhaps rickety, persons it is not quite equal to meet and overcome. It has to be observed that the growth at this epiphysial line is greater and more prolonged than at any other part of the frame. The growth also takes place almost entirely on the shaft side of the line, the addition to the epiphysis from it being slight. The defect, therefore, to which, in the main, I attribute the deformity of knock-knee, is an imperfection in the growth of the *outer* and lower part—the supra-condyloid part—of the shaft of the femur; and the imperfection is to be attributed to the insufficiency of the growing force in this part of the epiphysial line to overcome the resistance offered by the weight of the body and the traction of the muscles.

When the knee affected with this deformity is bent, two things are observed: *First*, that the leg loses its outward slant and assumes its proper direction, viz., in the same plane with the thigh. This is owing to the fact that the circumference of the condyle acquires its normal dimensions, inasmuch as the growth here is not interfered with by any undue pressure, and the hinder, rounder part accordingly projects backwards to the same level as does the corresponding part of the inner condyle. *Secondly*, that the patella has not its usual prominence anteriorly, which is in consequence of the absence of that prominence of the lower part of the outer condyle whereby the patella in the naturally formed knee is carried forward so as to constitute the foremost and most conspicuous feature of the flexed joint.

In the examination of specimens in many museums at home and abroad, by which the above views were confirmed, as they were still further confirmed by the observations of Mikulicz, I have seldom had reason to think there has been any undue amount of growth of the inner condyle or of the part above it; and such hyper-growth, especially unsymmetrical, in an epiphysis or part of an epiphysis, is very rare. I may add that it is difficult to see how the deformity could be produced by a relaxation of ligaments, or by any other cause than an obliquity of one or both of the articular surfaces of the bones of the joint.

Although I thus believe that the essential feature in the pathology of knock-knee is an obliquity of the under part of the articular surface of the femur, consequent on impaired growth of the lower and outer, or supra-condyloid, and chief weight-bearing part of the shaft of the femur, I am well aware that other causes may combine with this one or may exist without it. Such are (1) a similar interference with growth at the outer part of the epiphysial line of the tibia, inducing an obliquity of the articular surface of that bone. This is usually less marked than the corresponding defect in the femur, owing probably, in part, to the less amount of growth which takes place at the upper end of the tibia, as compared with that at the lower end of the femur. (2) The incurving of the lower part of the shaft of the femur, or of the upper part of the shaft of the tibia,

or of both, after the manner commonly seen in the shafts of rickety bones.

A deficiency in cell-formation and a deficiency and irregularity in bone-formation at epiphysial lines are common features of rickets, and cause the deficiency of growth, especially in the lower limbs, of rickety persons. Though the cell-formative processes are deficient, the bone-formative processes are still more so. This causes that relative super-abundance of unossified cells which led to the mistaken idea of an actual super-abundance of them; and this causes also that bulging of the circumference of the epiphysial cartilages which is commonly observed in rickety children at the lower end of the radius, at the sternal ends of the ribs, and, to a less extent, at the bones of the knee and ankle. It is this deficiency in the power of cell-formation and ossification manifesting itself in the lower and outer weight-bearing part of the femur, and in a less degree and less often in the subjacent part of the tibia, which is the common cause of knock-knee, though, as I have said, other rickety manifestations in either or both of these bones may lead to, or contribute to, the same result; and bulging at the weak and yielding parts of these epiphysial lines may not uncommonly be detected.

I may observe that in the ordinary lateral curvature of the spine it is a similar deficiency of growth and ossification, together with bulging, at the upper and lower epiphysial lines of the centre, or bodies, of the vertebræ on one side, together with a flexure or yielding of the bodies themselves, which is the prime feature of the deformity, and which is brought about by the weight being allowed to fall unduly upon that side; lateral curvature and knock-knee being therefore alike of a rickety nature, though both not infrequently occur after the period of life at which rickets usually manifests itself in other bones. The rickety spine of the infant is usually manifested in a bending backwards of the column at the lumbar and lower dorsal parts, and indicates a difficulty in evolving that specially human feature of the column, the anterior dorsi-lumbar curve.

With regard to treatment, I would only remark—*First*, as a preventive, that children should not be encouraged or allowed to stand and walk early, especially when the head is

large. *Secondly*, the natural growing forces will commonly rectify slight abnormalities in the young. In bad cases, which are met with almost exclusively among the poor, where proper attention, etc., cannot be given, I have long used a simple frame, consisting of two light wooden splints united below by a thin band of metal with footpieces and united above by a narrow semi-circular bar of metal. In this frame the child is seated, with the feet on the foot-pieces and the buttocks within the semi-circular bar, the whole being well padded; and the limbs are bandaged to the side splints so as to prevent walking, and therefore prevent any weight being thrown upon the limbs, and so as to exercise pressure upon certain parts of the limbs as may be required—upon the inner side of the knees, for instance, in knock-knee. The limbs and the child may be released at night, and the frame reapplied in the day, or it may be kept on night and day. I have found this very effective in remedying the rickety deformities of the lower limbs in children. *Thirdly*, in more severe cases, and in older children, osteotomy is required.—*Journal of Anatomy and Physiology.*

THE
Canadian Practitioner

A SEMI-MONTHLY REVIEW OF THE PROGRESS
OF THE MEDICAL SCIENCES.

Contributions of various descriptions are invited. We shall be glad to receive from our friends everywhere current medical news of general interest.

When a change of address occurs please promptly notify the Publishers, THE J. E. BRYANT COMPANY (Limited), 58 Bay Street.

TORONTO, SEPTEMBER 16, 1890.

THE CANADIAN MEDICAL ASSOCIATION.

The annual meeting of the Canadian Medical Association was held in Toronto on September 9th, 10th, and 11th, in the building of the Education Department in St. James' Square. The attendance was not as large as was expected, there being only 100 present. The unusually large meeting of the Provincial Society in June probably interfered, to a certain extent,

with the success of the September meeting. Apart from this, however, the number of members from distant parts of the Dominion was remarkably small. Dr. Chown, of Winnipeg, and Praeger, of Nanaimo, B.C., were the sole representatives of the vast territory extending from Western Ontario to the Pacific Coast. Dr. Muir, of Truro, N.S., alone represented the Provinces down "by the sea." Fortunately the quality was good while the quantity was small, but, all the same, that won't make what they call a *big meeting*. The "Montreal contingent" were on hand in full force, and contributed much towards the success of the meeting intellectually and otherwise. Ottawa sent Sir James Grant and Drs. Harry Wright and Prevost.

Although the meeting was not large, it was a pleasant and successful one in all respects. Many excellent papers were read and freely discussed. We hope to publish some of these and expect to give a full report of the proceedings in our next issue. We were much pleased to see Dr. W. Warren Potter, of Buffalo, a guest of the Association. The many friends he made in Toronto will gladly give him a cordial welcome when he visits us on future occasions. The visitors were well entertained by the Torontonians. There was a very pleasant yacht excursion on the afternoon of the 10th, in the Oriole, Aileen, and Abeona. Commodore Ross was in command, but at a critical moment when the waves were running high, and one side of the yachts was running low, the skilful and daring veteran from the East, Admiral Rogers Tomme, assumed control, and saved the fleet from shipwreck and general disaster. A banquet was given by the Profession of Toronto on the evening of the 11th, in the Queen's Hotel, and passed off very pleasantly indeed. We have not space for much of a personal nature, but we cannot refrain from saying a word for the President, Dr. James Ross. His untiring efforts in the interests of the Association, and the members present, contributed very much indeed towards the success of the meeting in all directions.

The next meeting will be held in Montreal, under the Presidency of Dr. T. G. Roddick, who has been for many years one of the most able and enthusiastic workers in the Associa-

tion. Dr. James Bell had made certain arrangements for next summer which would prevent him from acting as Secretary, and the Committee on Nominations very reluctantly allowed him to retire. Dr. Birkett, of Montreal, was elected General Secretary, and Dr. W. H. B. Aikins, Treasurer (re-elected).

HYPNOTISM.

Between twenty and thirty years ago it was quite the fashion for travelling *professors* to make public exhibition of their powers in mesmerism. The favorite subject for such experiments was a respectable, innocent, rather weak-minded citizen, who could be brought quickly and completely under the *spell*. That such exhibitions were highly successful from the *professor's* point of view, cannot be doubted. The amateur mesmerist was frequently called in to exhibit his skill in the drawing-room, and responded, with more or less success.

In recent years, medical scientists have devoted considerable attention to mesmerism, under the name of hypnotism. Success has attended the efforts of modern hypnotists just as it smiled on the labors of both the ignorant and learned peripatetics and drawing-room showmen of former times. Great results were promised. The old fad with the new name was to become a wondrous therapeutic agent. The hypnotizer was to eagle-eye the suffering victim, and cry "presto, pass"—pains were then to vanish, and balmy sleep was to gently steal over the weary invalid.

The subject was very thoroughly discussed at the last meeting of the British Medical Association, and good effects are likely to accrue therefrom. There appeared to be a general consensus of opinion that hypnotism was a powerful agent when applied to a limited number of individuals. Dr. Gairdner, of Glasgow, was fully impressed with its powers at a drawing-room exhibition which he witnessed, but at the same time had a feeling that there was something "no canny" about it. Scotch shrewdness and common sense are not easily dissipated by the glare of scientific sensationalism. Dr. Norman Kerr acknowledged that a limited number were susceptible, but the after effect was a disturbed mental balance and nerve exhaustion

One of the speakers referred to the moral aspect of the question, and doubted if many of the members would allow their wives or daughters to be hypnotized.

We have no doubt that hypnotism, when effective, is likely to injure the subject mentally, morally, or physically, or in all ways combined. It frequently changes him into the condition of a peculiar cataleptic, who has given himself, body and soul, for the time being, into the hands of the hypnotizer. Its influence for good is so limited, and its powers for evil are so great, that we think it should not be countenanced in any shape or form.

We are pleased to know that the Birmingham discussion has fully awakened the British medical profession to the grave dangers associated with hypnotism; and one of the results likely to follow will be the introduction of a bill at the next session of the British Parliament, which will prevent, or at least restrict, the public exhibitions of hypnotic powers which have lately become so common.

Hospital Reports.

INJURY TO THE RIGHT SHOULDER RESULTING IN A STIFF JOINT— TREATMENT BY MANIPU- LATION—RECOVERY.

UNDER THE CARE OF A. PRIMROSE, M.B., C.M.,
EDIN., M.R.C.S. ENG., IN THE TORONTO
GENERAL HOSPITAL.

M.H., *æt.* 51, laborer, admitted into the Toronto General Hospital on June 23rd, with the following history. Nine months ago, while engaged driving a team of horses he was thrown violently upon his shoulder. He suffered a good deal of pain at the time, and this persisted for a considerable time; he was, however, able to use the arm in a limited way for two or three days, although this caused him pain, and the amount of movement at the joint was somewhat restricted. One month after injury he consulted a doctor; liniments were used with temporary relief of the pain. For some months he continued the use of various liniments, and steamed the joint without acquiring any benefit. Six months after the injury he consulted another doctor, who told him the bone was diseased,

and blistered the part freely. A third doctor was called in a short time afterwards, who stated that there had been a dislocation at the shoulder joint at the time of the injury; he treated the patient for six weeks but did him no good. He then came to the hospital. On admission, the shoulder presented a perfectly normal appearance; there was no swelling nor redness about the joint; there was no muscular wasting, and the bony prominences were in their normal relation to one another. The patient complained of no pain when at rest, but there was considerable pain on movement; he refers the pain more particularly to the region of the acromio-clavicular articulation. He states that occasionally he suffers from a dull aching pain over the biceps muscle, and shooting pains through the shoulder. Movement at the joint is very considerably restricted; there is little or no rotatory movement possible, the arm can be abducted from the side but chiefly by rotation of the scapula; the arm cannot be carried above the head; forward and backward movements are very limited. It is possible to place the finger tips of the disabled limb on the opposite shoulder, and, at the same time, to bring the arm down to the chest wall. There was no dislocation.

The patient's general health was good; there was no history of tubercular disease in the family, and the man has always been strong. The case was diagnosed as one in which stiffness of the joint had followed traumatism in consequence of the formation of adhesions. In all probability there had been some laceration of the soft parts at the time of the injury, the subsequent pain caused the patient to keep the joint at rest, and in consequence, during the reparative processes, adhesion formed within the joint.

Treatment: On July 4th chloroform was administered, the shoulder girdle was firmly held by an assistant to prevent rotation or other movements of the scapula. Movements were then conducted at the shoulder joint. On flexing at the elbow, and, using the forearm as a lever, rotating the arm outwards, a number of adhesions gave way with an audible tear; this was accomplished without undue force. The various movements of abduction, etc., were then systematically carried out, and the result was

that very free action indeed was obtained. The arm was laid across the chest and a bandage applied, and patient was sent to bed. He complained of considerable pain after the operation; evaporating lotions were applied, and the arm kept at rest for 48 hours. Passive movement was subsequently conducted, and after a few days the patient was encouraged to use his arm as freely as possible. During the following fortnight he carried heavy articles about the ward, and practised on a horizontal bar, lifting himself up and supporting his weight with his arms raised above his head.

He left the hospital three weeks after the operation. All pain has subsided, and the extent of movement at the joint was practically normal.

Clinical Notes.

REMOVAL OF THE INTERNAL SAPH- ENOUS VEIN FOR VARIX.

BY J. R. LOGAN, M.D., M.R.C.S. ENG., GRAND
FORKS, NORTH DAKOTA.

The patient, a tall, heavy man, aged 34, received, about eleven years ago, a crush of the right leg in a sawmill; the tibia and fibula were broken about four inches above the ankle joint and the soft parts badly lacerated. In telling his own story, he states that 109 stitches were taken in the leg at that time. During convalescence from this injury, he noticed a small soft swelling on the inner side of the leg about four inches above the ankle, which his medical attendant pronounced an enlarged vein. From this time on, he says, that he has noticed a steady growth of the varicosity, until it has involved the whole internal saphenous vein to within a couple of inches of the saphenous opening. For the last eight years he has suffered from a succession of varicose ulcers, being laid up about three times a year on this account; for the past year he has been unable to work for a month without a recurrence. Palliative treatment has been of very little apparent benefit. I first admitted him to the county hospital last March, and in view of his history, comparative youth, and the failure of palliative treatment, advised the removal of the vein; he would not consent to this, and in about four

weeks left the hospital with the ulcer healed. About the middle of July he returned with an ulcer larger than a silver dollar near the inner ankle, and begged to have the operation done. After a few days rest in bed, with disinfection of the leg and ulcer, I operated on July 18, 1890, as follows:—The right leg and thigh were shaved, washed with hot water and soap, and packed in a wet carbolic dressing for about four hours. Ether was then administered, and when on the table the whole limb was thoroughly scrubbed with 1 in 2000 bichloride solution, and covered with towels wrung out of the same solution—only the immediate field of operation being exposed at any one time. A piece of rubber tubing was tied around the thigh high up, tightly enough to arrest venous circulation. The incision began about two inches below the saphenous opening, when the vein was found, and divided between two catgut ligatures. The incision was then extended downwards over the distended vein for six or eight inches, cutting through subcutaneous fat and superficial fascia; the vein, thus exposed in parts, was then laid bare by running a director around the vessel and here and there dividing the bands of fascia which bound it down. When a lateral branch was exposed it was divided between two catgut ligatures; in this way the operation was practically a bloodless one; and the main vein, being thus kept distended with blood, was more easily dealt with. Nineteen tributary branches were thus tied off in the removal of the whole vein, the majority being met with around the knee and in the leg. After dissecting out the first six or eight inches the wound was irrigated, covered with a hot bichloride towel, and the incision continued below in the same manner. By these steps about twenty eight inches of dilated and tortuous vein were removed through a twenty-five inch incision, which reached nearly to the ankle joint, terminating just above the ulcer. The whole wound was then exposed, thoroughly irrigated, and sutured with interrupted catgut sutures at about three-quarter inch intervals; five small drainage tubes were inserted at places where the dissection seemed to have caused a tendency to formation of pockets under the skin. The incision was dusted with iodoform and dressed with sublimate gauze, and then very firmly and

evenly bandaged. The ulcer was then exposed, thoroughly cleaned and scraped, and thickly covered with iodoform. After forty-eight hours the wound was dressed and all drainage tubes removed. On the fifth day again dressed, and found healed throughout almost its whole extent. The ulcer was then dressed and found healed, except a small spot not larger than a five cent piece. Healing continued uninterruptedly, and patient was walking in three weeks. At this date he is working as second cook and waiter at the hospital, and is apparently perfectly cured.

Remarks.—The varicose condition followed an injury to the vein and seemed to be directly caused by it. This, I think, may be found to be a more common cause of varicose veins than it has heretofore been considered. I believe the injury was the beginning of a hyperplasia, which condition gradually proceeded from the point of injury and slowly involved the whole vein. Mr. Pearce Gould has considered varicosities as an inherent growth of the vein, rather than as being due to the usually enumerated causes. It is possible also, as W. H. Bennett suggests in his late monograph, that a large proportion of varicosities originate in congenital defects of the venous apparatus and are in some patients distinctly hereditary, and that most of the so-called originating causes, such as local pressures, constipation, pressure of a long column of blood, etc., are in reality only causes of an increase of the disease or of certain symptoms connected with it, and that we must look for some other originating cause. As to treatment: In this case the removal of the whole disease seemed to be justified from the youth of the patient, 34 years, the fact that he had to work hard as a laboring man for his living, and the failure of palliative methods of treatment. From the history of the steady growth of the varicosis upwards from the point of injury, it seemed proper to endeavor to arrest the growth by removal of the diseased vein.

No other method of radical cure can compare with the *total* removal of the varicosis in point of safety or comfort to the patient, as with perfect antisepsis the wound heals quickly and painlessly, and concomitant ulcers are more quickly healed than by any other treatment. I

believe that the day has come when all such painful and dangerous methods as the use of caustics, obliteration with pins, intra or extra-venous injections, etc., should belong to the surgery of the past, and in all cases where the radical cure is determined on, the modern surgeon will remove the varix.

I would advocate more frequent resort to this operation, even in the slighter cases of varix, since I understand the pathology of the disease to be a hyperplastic growth of the vein; it may, and of en does continue, under palliative supporting treatment, even when such treatment is successful in preventing the usual sequelæ of ulceration, pain, etc.

Correspondence.

LODGE PRACTICE.

Editor of CANADIAN PRACTITIONER:

DEAR SIR,—I have watched with interest your articles on "Contract Practice." Your Queen City appears to be seriously affected with it. I think it would be well if you could hear from all the counties in the Province on this matter, so that the profession would know its prevalence, and the feeling existing in reference to it. With your permission I shall speak a few words for the county of Brant. If the other counties have done as much as our own to rise above the practice, you may well look to the country districts for a precedent. The matter has time and again been broached at our Provincial Association, but the time is too short for a discussion that would necessarily take more minutes than our meetings can spare, and hence it has never been definitely acted upon. I think it would facilitate matters very much were you to allow space in your journal for a thorough discussion. Our Association might then be ready at its next meeting to take a vote, without a prolonged debate. After a lengthy consideration of the question by the Brant County Medical Association, the following resolution was carried unanimously at a meeting held June 10th, 1878:—"That in the opinion of this Association contract practice, except in so far as it relates to government situations and charitable institutions, is not expedient in the interests either of the profession or the public." "It is there-

fore further resolved, that the members of this Association will not, hereafter, engage in such practice, except for such time as may be necessary to terminate any existing engagement." These resolutions were published in your journal and the *Lancet*. That some members of the Association were thought not to be above reproach appears from the following resolution of March 2nd, 1880: "That whereas it is believed that the resolutions of this Association regarding contract practice have not been fully carried out, the matter be taken up at the next regular meeting." There is nothing in the minutes after this until March 3rd, 1885, when the following motion was carried: "That the resolution of June 10th, 1878, relating to contract practice, be rescinded." This latter motion was the outcome of a belief that certain members were carrying on this lodge practice clandestinely, and that those who were not engaged in this practice would not undertake it under any circumstances, and that those who were would be relieved from the censure of the Association. In fact, it was considered that a Provincial resolution would have more effect on the erring or weaker ones. The matter, although it appears to have taken a retrograde movement, according to this resolution, has actually progressed, as will appear from the fact that members of our profession who were, at the time of passing the first resolution mentioned, actively engaged in lodge practice, would not now undertake it under any consideration, and from the fact that some of our benevolent lodges have done away with the contract doctor. Other lodges, I am led to believe, would do likewise, but for a clause in their charter compelling them to appoint a physician. I will now give a few reasons that I gave a deputation who waited on me to become a lodge doctor, when I first entered private practice. By appointing a physician as lodge doctor, many of the well-to-do are placed on a par with those who are not. Some of you are able to pay our regular fees, and those who are not, I will not ask them. I do not think whether a man belongs to a society or not when he asks for my assistance. If well-to-do, I expect my pay; if poor and cannot pay, I will help him. Those who are well-to-do pay no more fees than the poorest, and get their medical attendance at the same rate. Those members who do not wish

to employ the lodge doctor are not allowed any reduction in their fees. This is a great injustice. Again, it hampers the liberty of the patient in the choice of a physician. It appears rather degrading that the physician is selected simply because he is the lodge doctor. The physician should be selected from some higher motive. And, again, the practice interferes with medical harmony. Take e.g. the following case, which is not of infrequent occurrence: The husband of a family, who for trivial ailments consults the lodge doctor, is taken seriously ill, while under his care. Then he and the rest of the family wish their regular physician. Now, it is not a pleasant task for the latter to undertake. I feel that I have been benefited by the societies, although I have never attended one. There are families, the husbands of which I do not attend, which feel that they can pay me better, when the lodge doctor is paid so little. I feel for the lodge doctor. Again, I hear the complaint that many lodge members are very exacting with their physician, more so than is professionally required. But I was told by the deputation that it would help me into practice. Yes, I answered, and it will help me out of it. I have too much respect for those who are many years my senior in practice to take from them patients between whom the best of good feeling exists, by becoming a lodge doctor for a fee which cannot remunerate me for my services. I am willing to take my time and turn, assist my seniors, and get my patients from some higher motive. I am now twenty years a graduate, and never regret the stand which I took. In some of the States I am assured the benevolent societies have no lodge doctor, members being allowed perfect freedom in the choice of their physician. What could be better in a country where the State is watchful that none but qualified persons shall be allowed to practice?

Yours truly,

W. BURT.

Paris, Sept. 2nd, 1890.

Pamphlets Received.

The Sewerage of Columbus, Ohio. Address of Col. G. E. Waring, Jr.

Dosimetry in Colorado, by J. E. MacNeill M.D., Denver, Colorado.

Reformation in the Practice of Medicine by the Dosimetric Method of Practice, by J. E. MacNeill, M.D.

An Analysis of Some of the Ocular Symptoms Observed in so-called General Paresis. By Charles A. Oliver, M.D., Philadelphia.

Recherches cliniques et thérapeutiques sur l'Épilepsie, l'Hystérie, et l'Idiotie, par Bourneville, Sollier et Pilliet. Paris: Bureaux du Progrès Médical, 14 Rue des L'armes.

Book Notices.

Essentials of Anatomy and Manual of Practical Dissection, together with the Anatomy of the Viscera.—By Charles B. Nancrede, M.D., Professor of Surgery and of Clinical Surgery in the University of Michigan, Ann Arbor, etc. Third edition, revised and enlarged. Philadelphia: W. B. Saunders, 1890.

This is a small book of 388 pages, illustrated by 30 lithographic plates in colors, and 180 wood-cuts. The matter in the text of the book is presented in the form of questions and answers. This method of writing books for students is now becoming very common, and we think the advantages are questionable. The subject of anatomy at all events cannot, in our estimation, be efficiently studied in this way. In the study of anatomy the student should be encouraged to examine for himself dissected parts, bones, etc., and should consult a text book giving a clear description of the part under examination; his work is hampered if he has to classify his knowledge of details under the heading of appropriate questions. This is, we consider, the chief objection to the text-book of Prof. Nancrede. The illustrations are excellent; the plates are taken from the works of MacLise, Savage, Nuhn, and Hirschfeld. The last edition of Gray's Anatomy has been chosen as the chief authority in compiling the work, the descriptive portions of the work are accurate, and as full as one would expect in a volume of its size. The work is not suitable for the dissecting room, as it treats of the different anatomical systems of the body separately, and does not

give the dissections of regions; it cannot therefore be substituted for Ellis, Cunningham, or Heath. The book is neatly bound and printed, and the plates are beautifully executed—in fact the volume is well worth possessing for the plates alone.

Wood's Medical and Surgical Monographs.—Vol. VI.; number 3. June, 1890. Contents: Bronchial Asthma: Cause, Pathology, and Treatment. By John C. Thorowgood, M.D., F.R.C.P. Convulsive Seizures: By J. Hughlings Jackson, M.D., F.R.C.P. Surgical Treatment of Diseases of the Brain: By Ernest von Bergmann, Berlin. William Wood & Co.: New York, 1890.

This volume of Wood's well-known series is particularly attractive. Each article will be found of special interest, and is written by an eminent authority on the subject dealt with.

The paper by Dr. Thorowgood will be found very useful; the ætiology and pathology of asthma are fully inquired into, and many valuable suggestions are given for the treatment of bronchial asthma in its various manifestations. The essays of Dr. Hughlings Jackson and von Bergmann are of unusual interest.

Book Reviews.

In the May number of *Wood's Medical and Surgical Monographs* are to be found the following treatises: Insanity at the Puerperal, Climacteric, and Lactational Periods, by W. Bevan Lewis; Treatment of Diseases of Women by Massage, by Dr. Robert Ziegenspeck, Munich; Treatment of Internal Derangements of the Knee Joint by Operation, by Herbert W. Allingham, F.R.C.S.; The Idiopathic Enlargements of the Heart, by Dr. Oscar Frantzel, Berlin.

Wood's Library for July, 1890, contains: Stricture of the Rectum, by Chas. B. Kelsey, M.D.; Influence of Heredity on Alcoholism, by Dr. Paul Sollier; Rabies, by Louis Pasteur;

Colotomy, by Thomas Bryant, F.R.C.S.; Massage of the Abdomen, by Dr. Rubens Hirschberg.

Births, Marriages, and Deaths.

BIRTHS.

LOGAN—At Grand Forks, North Dakota, on September 1st, the wife of Dr. J. R. Logan, of a daughter.

MARRIAGES.

MCLACHLIN—VAN CORTLANDT—On the 20th inst., at the residence of E. W. Strathy, Lachine, Claude McLachlin, of Arnprior, to Mabel, daughter of the late Ed Van Cortlandt, M.D., of Ottawa.

DEATHS.

O'NEIL—Dr. T. O'Neil, Trenton, died Sept. 9th, of consumption. He graduated at Queen's College two years ago.

COLLEGE OF Physicians and Surgeons

OF ONTARIO.

Medical Council Fall Examinations

SEPTEMBER, 1890,

IN TORONTO AND KINGSTON.

The written Primary and Final Examinations commence on Tuesday, the 23rd September, 1890.

By Order

R. A. PYNE, Registrar,

*College Physicians and Surgeons
of Ontario, Toronto.*

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