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THE

MONTREAL MEDICAL JOURNAL.

VOL. XX.

JUNE, 1892.

No. 12.

Original Communications.

PSYCHOLOGY IN MEDICINE.

AN ADDRESS DELIVERED TO THE MEDICAL SOCIETY OF MCGILL COLLEGE.

BY PROF. J. CLARK MURRAY, LL.D.

A recent writer on the diseases of the nervous system has remarked that "the practice of medicine is not only one of physic but of psychology, and that the effect of drugs depends as much on the constitution of the patient's mind as on that of his body." This puts the matter in a stronger form than I should be inclined to express myself; but it indicates the opinion of an eminent authority, that there is a very real relation between the mind and the body, and that that relation is one which it is important for the medical practitioner to keep in view. It is quite true that this relation is one which it is extremely difficult, if not impossible, to explain; indeed, the relation of mind and body has been from of old regarded as among the incomprehensible facts of the universe. Consequently, we find numerous theories on the subject, running all the way between the most opposite extremes both in speculation and in practice. For at one extreme of speculation we come upon the theory of materialism, which endeavours to explain mind as a function of matter; while the opposite extreme is represented by an idealism which maintains that matter has no meaning except as an exponent of mind. In like manner the practical conduct of men shows, at one extreme, a sensuality which makes all the energies of mind subservient to the pleasures of the body; while the

other extreme runs towards an asceticism which strives in vain to reach a life of the soul in disregard of all bodily wants.

The perplexity arising from these discordant theories and practices may, perhaps, account for the fact that some scientists have been driven to what seems at first like a mere paradox, that there is no real relation between mind and body at all. This paradox first assumed definite shape in the philosophy of one of the great French thinkers of the seventeenth century, viz., Descartes. Descartes maintained that mind and body constitute two substances which are entirely independent of one another, and that, therefore, there is no interaction between the two. As a result of this, it was contended by Descartes that the mere animal is a material automaton, that it has no soul or mind at all. Descartes, indeed, was not the first to maintain this theory. He was anticipated, it seems, by a forgotten scientist of the previous century, a Spanish physician of the name of Pereira; and, curiously enough, there was a contemporary of Pereira, also a forgotten scientist, of the name of Rorarius, who maintained a theory at the opposite extreme from that of Pereira and Descartes. He contended that the lower animals have minds essentially similar to that of man, and even went the length of holding that many of them use their reason a great deal better than we do. Those of you who may be interested in this subject might consult the old dictionary of Bayle, under the articles on Pereira and Rorarius; for these contain a vast collection of curious information, which is not to be found easily elsewhere, on the history of the theories to which I have just referred. But, to come back to the doctrine of Descartes, that mind and body have no real connection with one another, I may observe that that theory seems to be favoured by some of the scientific thought of our own day, and especially among that school of thinkers who are commonly known by the name of Agnostics. It is not an uncommon feature of agnosticism to maintain that mind and matter are simply different phenomena or manifestations of one unknowable substance or force, but that they have no real or causal connection with each other. For instance, you will find occasionally in the writings of Huxley expressions which

seen to indicate his belief in this doctrine. That is especially the case with an interesting paper of his on the theory that animals are automata,—a paper which seems to have been suggested by a study of Descartes, and in which he endeavours to show how Descartes' doctrine is confirmed by some of the discoveries of modern philosophy. It may, therefore, be worth while to stop for a moment and consider what this theory with regard to the relation of mind and body implies. Now, I do not know that anyone is in a better position to test the theory by facts than the medical practitioner; for try to realise what medical practice would imply on this theory. Suppose, then, a patient in whose organism a morbid process begins. If that morbid process is not in the nervous tissues themselves, it will by-and-by attack these tissues and send a thrill up into the brain. Reacting from this excitement, the brain sends a stimulus along the motor nerves, sets the limbs of the patient in action, and causes him to move towards the residence of his medical adviser. There the vocal organs of the patient are set into activity, and produce vibrations of the air which strike upon the ear of the doctor, who is led in his turn to move the organs of his voice, and probably also to move his fingers for the purpose of writing out a prescription. The prescription is taken to an apothecary and made up, and ultimately administered to the patient. Now, according to the theory of Descartes, all this would go on precisely in the way in which it actually happens, even if there were no conscious thought or feeling either in the patient or in his medical adviser; that is to say, the purely physical or bodily actions are totally separate from any mental or conscious actions, and the two have no influence upon each other. I venture to say, however, that if the matter is put in this form, the theory of Descartes becomes obviously incredible. It may well be feared that, if a patient had no thoughts and feelings of a painful character, there would be very little chance of his proceeding to take medical advice and very little chance of the practitioner obtaining any fees. But the theory may be tested in another way; it may be tested in the light of modern evolutionism; for how is the origin of pain and pleasure to be explained on any

evolution theory? It must be supposed that the conscious feelings of pain and pleasure, when first experienced, gave to the animal that experienced them a certain advantage in the struggle for existence. If they did not, they would soon have vanished from the universe as mere *lusus naturæ* that fulfil no function. But the fact is, that pleasure and pain have remained through innumerable generations among the most prominent phenomena of animal life, and their continuance implies that they do fulfil some function, that they do give to animals a certain advantage in the struggle for existence. They can give this advantage, however, only if they have some causal efficiency, and consequently the conscious feelings of pleasure and pain must have a real influence upon the life of animals.

There must, therefore, be a real relation between mind and body; but, although the relation is a reality, science is not in a position to lay down any very general law on the subject. In fact, it is well always to be on our guard against the craving for sweeping generalizations before we have mastered the particular facts upon which our generalizations are to be founded. This caution, I may observe, was the great reform that Lord Bacon introduced into modern science. He pointed out that the fault of ancient and mediæval science consisted in leaping at once to the very highest generalizations, instead of being content with careful observations and with generalizations of a less sweeping character. He consequently recommended that we should form, first of all, what he called *axiomata media*; that is, axioms of a middling degree of generality. In fact, in science, as in common life, the familiar proverb holds good of "the more hurry the less speed." In science, as in common life, we have often to proceed slowly in order to be certain of reaching our end at last. Now, this is peculiarly the case with regard to the difficult problem of the relation of mind and body. It is better, therefore, to be content with the observation of particular facts and the formation of particular laws of moderate generality based upon these facts. Now, we find that science has already accumulated a large number, not only of useful observations, but of important special laws; and it may be worth while to illustrate these by a few

examples. Science may approach the relation of mind and body from two sides, either from the side of the body or from that of the mind.

I. Let us take the former first. Here the object of science is to find out those bodily conditions under which our conscious thoughts and feelings arise. Now, there is little difficulty with regard to the lower phase of our mental life,—that which is connected with bodily sensation. Here any man of average intelligence can at once observe at least the general conditions under which sensation is excited in the different bodily senses, and science is continually rendering such general observations more specific and exact. Thus it is not uncommon, in the psychology and physiology of the present day, to distinguish the sense of touch as the *mechanical* sense, because mechanical pressure forms the physical condition of its sensations. On the other hand, taste and smell are very often distinguished as *chemical* senses, because we have good ground for believing that the physical condition of their sensations is some kind of chemical action. Indeed, this may be said to have been proved in the case of smell. The effluvia of bodies apparently require to mingle with the oxygen of the atmosphere before they can excite the sensation of odour; and, consequently, bodies, like carburetted hydrogen, which do not readily combine with oxygen, are inodorous, and if the effluvia of a body are accompanied with a current of carbonic acid gas, which, of course, prevents oxidation, no odour is excited. Only those who have given some attention to physiological psychology in recent times can form any idea of the extent to which science has enlarged and corrected our knowledge with regard to the physical conditions under which different sensations are excited.

But it is not merely in the lowest department of mental life that the action of the body upon the mind is to be traced; the mental condition in general is evidently influenced to a very serious extent by the condition of the bodily organs. For instance, anyone who is suffering from dyspepsia, or even from a brief attack of indigestion, knows what a gloomy state of feeling is apt to be its accompaniment. In fact, from of old it has been

known that gloomy moods of the mind are very intimately connected with the condition of the liver; our word "melancholy" is simply a Greek word which means "black bile," and the Greek word was commonly used in its figurative sense as far back as the fifth century before Christ. A similar remark may be made with reference to the spleen, which is also a Greek word, and which was used by the ancient Greeks very much as we employ it,—not merely to denote one of the organs of digestion, but also peculiar mental moods that are supposed, though for no definite reason, to be in some way dependent upon that organ. In general, when the lower intestines are out of order, the mental condition is one of a gloomy kind. There is therefore a psychological foundation for the humorous remark of an old clergyman that he had never known of a hopeful and cheerful death-bed when the seat of disease lay below the diaphragm.

But not merely sensation and emotion, intellectual life also is dependent upon the condition of the body. That is obviously the case, for example, with the common bodily conditions of health and disease, of vigor and fatigue. Evidently intellectual work can be done with far greater ease during the fresh hours of the morning than at the end of a laborious day. It seems also that there are certain subtle conditions of the body which have an intimate connection, that we do not yet fully understand, with intellectual life; for instance, it is well known that the muscles of idiots display a want of that firmness and tonicity which is characteristic of healthy muscular tissue. It is an interesting fact that Laura Bridgeman, whose delicate touch made up to a marvellous extent for her want of sight and hearing, could detect mental imbecility by a peculiar flabbiness or softness in the touch of a person's hand. Now, it is true that we are not able to lay down any universal law with reference to the interaction between bodily and intellectual life, but science is in a fair way to discover particular laws that may be found to be of great practical utility. For instance, it seems now to be tolerably well established that the faculty of speech depends upon a certain portion of the brain, a little behind the left temple. In fact, recent physiology has shown that there are two defects

in the faculty of speech, two forms of aphasia, that are connected with different parts of the brain. One is called motor aphasia. In this deficiency the patient can understand what is spoken, but cannot speak himself. Now, this form of aphasia is found to be connected with a convolution which has attained its name from Broca. But there is another kind of aphasia which is known as sensory or auditory. In this deficiency the patient can utter sounds, but cannot understand what is said to him. This is found to be connected with a convolution a little behind and above that of Broca, a convolution which obtains its name from another physiologist, Wernicke. It is not only, however, the faculty of speech, but other faculties, that are dependent upon bodily conditions. It has long been known, for example, that memory is very profoundly affected by the state of the brain, so that injuries and diseases of the brain play at times the strangest freaks with the patient's power of recollection. It need not be added that the higher power of reasoning is also affected by the condition of the brain, because the various forms of insanity may be said to indicate the effects which diseases of the brain produce in impairing the reason of man.

It appears, then, that the state of the body has a very powerful influence upon the state of the mind; and the question is naturally suggested, whether there is any general law that can give a full description of this influence. In seeking such a general law it is well to remember the caution already given against the seduction of sweeping generalizations. This was the fault of that old theory which occupied a prominent place in the earlier part of this century under the name of phrenology. The phrenologist had got hold of an important truth, but instead of being content with that truth, he attempted to carry it out to an extent which was altogether impossible in the state of science at that time, or, indeed, even in the state of science at the present day. We are yet very far from being in a position to map out the different parts of the brain as the old phrenologists did, allocating them to different mental functions; and therefore the most scientific physiologists of our time are content to make careful observations of facts and to form such cautious general-

izations as these facts seem to support. Now, there is one general law which has been announced by an eminent German physiologist of the name of Fechner, a law to the effect that to increase the intensity of any mental state in an arithmetical ratio you must increase the stimulus in a geometrical ratio. This law of Fechner's is, however, too sweeping, perhaps, to be regarded as satisfactorily established by anything that we know on the subject. The general fact, indeed, expressed in this law has long been known; and perhaps it is to be regarded as merely a particular application of a universal law, that, as an increase in any effect implies an increase of the resistance to be overcome, the force required must be increased at a much higher ratio than the effect which it is designed to produce. But while the general fact has long been well known, it is questionable whether science is yet in a position to express that fact with the mathematical precision which has been given to it in the law of Fechner. There is, indeed, always a danger in applying terms of mathematical exactness to subjects which scarcely admit of being exactly defined. That was the case, I may observe, with the famous law of Malthus in regard to population. Malthus contended that population tends to increase in a geometrical ratio, while the means of subsistence increase merely in an arithmetical ratio. But even the most earnest Malthusians of more recent times, like John Stuart Mill, have dropped the mathematical formula of this law, and are content to maintain merely that population tends to increase faster than the means of subsistence.

In regard to Fechner's law, probably we shall require to be satisfied with a similar vagueness of statement; and whatever statement we adopt, we must always bear in mind some very important qualifications to which the law is subject. For instance, every stimulus depends for its effect upon the state of the nervous system at the time. The same stimulus produces very different effects in health and in disease, in vigour and in fatigue. Perhaps, in fact, the freshness with which nature seems invested in the morning may depend upon the fact that our nervous system has been invigorated by the sleep of the night

before, and consequently the eyes receive a much more intense impression than they are capable of feeling after they have become exhausted by the day's labour. But not only does the state of the nervous system modify the effect of a stimulus, the mind also forms an important factor. You may attend to a stimulus or not, as you choose; and everyone knows that an impression to which no attention is given may produce comparatively little effect upon the mind, whereas the very same impression may produce a very profound effect if the attention is directed to it.

II. This, however, indicates that the mind itself is a factor which has to be taken into consideration, and therefore we may now pass to the second aspect in which this subject may be considered, that aspect in which we approach it from the side of the mind. As the body influences the mind, so the mind influences the body. For instance, it is well known that the feelings of the mind manifest themselves in peculiar bodily actions, which form, in fact, their common modes of expression. The expression of emotion is a subject that has long attracted attention, and Mr. Darwin especially has given an interest to it by his well-known work, "The Expression of the Emotions in Man and the Lower Animals." Without attempting here any general theory on the subject, it is sufficient to notice that different emotions affect different organs of the body or affect them in different ways. For instance, emotions of a cheerful character are apt to manifest themselves in a smile; the emotion of anger naturally furrows the brow into a frown; while grief most naturally excites the lachrymal glands of the eye and causes the effusion of tears. Here, however, we may notice the difficulty of laying down any very rigid universal law on the subject, because while the emotion of grief is commonly regarded as the natural cause of tears, these are not unfrequently excited by the opposite emotion of joy, as well as by the very different emotion of anger; and it has been noticed that the deepest griefs of all are those which are absolutely tearless. It is sufficient for our purpose, however, to notice the general fact that emotions do excite different organs of the body, and excite them to different kinds of action.

Sometimes, also, bodily sensations are produced by mental causes. For instance, if you see a painful wound in another person, you are very apt to feel a thrill of painful sensation shooting through the same part of your own organism which corresponds to that of the wound in the other person. Probably most medical students have had some experience of this on being present at painful surgical operations. This, in fact, forms the natural basis of sympathy in the human mind ; and it is obvious that the sympathetic effect is caused by the spectator realizing vividly in his own consciousness the pain which is felt by the sufferer. Now, if by a strong effort of imagination you can vividly represent any sensation to your mind, that sensation will be actually reproduced in your own consciousness, will be actually felt by you as if it had been produced by some cause in your own organism. Indeed, there is good ground for believing that, in many, if not in all such cases, there is some real change of tissue, just as when the sensation is produced by an external agent ; and there are numerous instances on record where genuine morbid states of tissue have been produced by the mere effect of vivid imagination. For instance, to take one out of a multitude of examples, I recollect a case recorded in a recent work on the influence of the mind upon the body, the case of a mother who saw her child with his foot just at the hinge of a heavy iron gate that was being closed. For a moment she had all the agony of realizing that her child's foot was about to be severely crushed in the hinge of the gate. Fortunately, the little foot just missed the gate, but the influence upon the mother was strikingly indicated by the fact that on the following day there was a veritable serious swelling on her foot, which did not disappear for some time afterwards. Any work on the subject, however, will give you numerous examples of the same effect.

To indicate the attitude of science towards this subject at the present day, it may be said that there is a tendency to look with a more kindly eye upon some stories that have come down to us from an earlier period and have been regarded as mere superstitions. Take, for example, the famous story of St. Francis of Assisi, a story which has in modern times been generally dis-

missed as a mere monkish legend. According to this story, St. Francis, by meditating upon the Saviour's death, produced in his own hands and feet the marks, or *stigmata*, as they are called, corresponding to those which were produced upon the Saviour by the nails on the cross. Of course, it is not possible for us to say whether the historical evidence is sufficient to prove that this actually took place; but the physiology and psychology of our time pronounce the story to be by no means an impossibility. In fact, within the last few years, a case of veritable stigmatization took place in Belgium. A peasant-girl of extremely devout temperament abandoned herself to a morbidly excessive meditation like that of St. Francis, and with a like result. The result was, of course, blazoned abroad in the popular mind as a miracle, and attracted so much attention that a commission was appointed by the Royal Academy of Medicine in Brussels, who went out and enquired into the facts. They reported that the stigmatization was perfectly genuine, although, of course, they accounted for it without assuming any preternatural agency.

In further illustration of this it is scarcely necessary to remind you of the general fact, which has always been well known, that bodily health is very powerfully influenced by the mental condition. As far, indeed, as calm intellectual work is concerned, it may be questioned whether, even when it is very severe, it produces the bodily effects that have been sometimes ascribed to it. In most cases where injurious effects upon the body are ascribed to excessive intellectual work, it will be found that the intellectual work has been accompanied with excessive emotional worry, or with other circumstances unfavourable to health, and that these accompaniments, rather than the quiet intellectual assertion, are the real cause of the bodily injury. There can be no doubt, however, of the fact that mental worry does produce the most disastrous effects upon bodily health. It affects, first of all, of course, the nervous system; but through the nervous it is apt to injure also other organs of the body. Thus, for example, the digestion is very seriously affected by this cause, so that even chronic dyspepsia results from a continued emotional strain.

It may be said, then, to be an established fact that morbid action is capable of being produced in the tissues of the body by the state of the mind. But if disease may be produced by mental causes, may not the same causes be employed for curative purposes? This will undoubtedly be admitted to be the most important practical aspect of the subject for medical students. Now, here it may be said that the curative influence of the mind is undoubted; but at the same time we must here, again, be on our guard against attempting too sweeping a generalization; we must be content with particular facts and a few limited laws. For instance, we know it to be a fact, and an exceedingly important fact, that cheerful moods of mind tend to preserve a healthy condition of body, and thus also to assist any curative agencies that may be employed as remedies for disease. The old proverb, "Laugh and grow fat," indicates that even popular intelligence was perfectly aware of the genial influence that a cheerful condition of mind exercises upon the bodily condition. This genial influence is manifested to us in everyday life. For instance, you may find yourself at times in a morbid condition of body, and a consequent morbid condition of mind. You may be sitting in solitude reflecting on your gloomy state, feeling the deepest despair with regard to your own prospects, and, perhaps, with regard to the prospects of the world in general. But in the midst of your morbid gloom a friend comes in with a bright smile on his face and some pleasant words on his tongue. He draws you into an agreeable conversation, and in the course of a few minutes you have forgotten the trouble from which you were suffering,—your mind is, in fact, withdrawn to a different subject altogether.

It appears, therefore, that the influence of attention, by being directed to one subject and withdrawn from another, may produce important effects upon the bodily condition. I have just indicated how you may neutralize a painful feeling by the attention being withdrawn from the subject. Now, there are some cases in which complete anæsthesia may thus be produced; that is to say, the attention may be so completely withdrawn from a painful impression as to render all conscious feeling of

the impresssion impossible. This has been frequently asserted to happen in the case of soldiers who, in the excitement of a battle-charge, have received a mortal wound and gone on fighting without any sensation of suffering, until they have dropped down exhausted from the wound. Now, in the same way, if the attention is directed to any organ we can intensify the action which is set up in that organ, and thus there seems to be ground for the common belief that the effect of medical treatment in many cases depends upon the faith of the patient in its virtue. The patient adopts some remedy with the full expectation that a cure will be effected by its means, and it seems evident that this expectation on the part of the patient assists the action of the remedy. Consequently it is, I believe, well enough known in medical practice, that practitioners occasionally administer drugs of a perfectly innocuous, but perfectly inoperative character. They find that some patients will not be satisfied unless some remedy is administered. Without the remedy a patient of this class would probably be left in a disturbed and anxious condition of mind. But when he believes that he has received a remedy, he becomes perfectly contented, and the remedy produces its effect, not by any physical agency, but by the influence of the patient's mind. There seems to be little doubt that many of the so-called faith-cures are actually cures, cures that have been actually wrought by the faith of the persons themselves; and wherever these cures have been genuine, it is by no means impossible to explain them on ordinary psychological and physiological principles.

It is upon this influence of the mind on the body that the use of hypnotism in modern medical practice has been founded, for hypnotism simply intensifies the power which the mind is capable of exercising over the body. The operator who hypnotises a patient can suggest an idea to the patient's mind which will become perfectly over-mastering, will absorb his whole attention in the direction indicated, and produce the most perfect conviction. Consequently, if the mental condition of a patient can in its ordinary state exercise a curative effect, that effect can always be heightened if the patient is capable of being thrown

into the hypnotic state. It has long been known, for example, that complete anæsthesia may be produced by hypnotism, and the anæsthesia seems to be an effect of that influence of attention by which, as already pointed out, a man may be rendered wholly unconscious of an impression upon some sensitive organ by his attention being completely taken up with something else at the time. In the early part of this century hypnotism, or, as it was then called, animal magnetism, was very often used as an anæsthetic agent for the performance of surgical operations; and when chloroform was first discovered, it was announced as superseding animal magnetism in medical practice. Hypnotism presents some phenomena that are very perplexing, and are still far from having received any satisfactory explanation; but in scientific theory, and, still more, in professional practice, it is advisable to keep to the safe path of those sober practitioners who disclaim all pretence of calling into operation any occult force of nature, and trust to the agency of those familiar psychological laws which govern the suggestion of ideas to the patient's mind.

In these remarks on the place of psychology in medicine I have been obliged, by the limits of a single address, to confine myself to a few general principles, and have therefore been unable to give any adequate idea of the interest which gathers round the subject when the inquirer descends from the comparatively cold and colourless heights of lifeless generality to the warm and picturesque region of living fact. But there is one interest which the subject creates, and which ought to be of peculiar value to the student of medical science and art. For the psychological relations of his professional work raise it to a position among the noblest occupations in which the energy of man can be expended. A true physiological psychology forces us to a peculiar conception of the human organism. The idea of mere organization is found to be inadequate to explain the nature of man. The structure of the mere animal, like that of the plant, may be sufficiently described in terms of organization; in other words, the structure is one in which the parts are essentially organs—that is, instruments subservient to the uses of the

whole. But man is something more than a simple organism ; in him, while the different bodily organs are adapted to the purposes of the whole organism which they form, that organism is itself reduced to the position of a mere organ,—an instrument fitted for carrying out the purposes of a mind. Probably when anatomy and physiology have attained a completeness which they are far from claiming as yet, they may be able to show that every tissue of the human body is differentiated in a peculiar way from the corresponding tissues of other animals by the fact that it has to subserve the uses, not of a purely animal existence, but of human intelligence. And thus the profession of the medical practitioner is invested with an inspiring sacredness, when it is viewed as seeking to preserve, in the highest state of efficiency, that marvellous instrumentality which has been provided by the Maker of all for working out the vocation of intelligent moral beings.

CASE OF ARTERIO-SCLEROSIS.*

BY GEORGE T. ROSS, M.D.,

Professor of Physiology, Bishop's University, &c.

On the 24th of April last I was called at 1:30 A.M. to see Mr. A. B., a wholesale merchant of this city, who was taken suddenly ill. When I reached his house, fifteen or twenty minutes later, he was dead, and I received the following history. He had attended to business as usual that day, but feeling some indefinite pains in his chest, had called upon a physician on the way home, who prescribed a nerve tonic, not noticing anything serious in the superficial examination made at the time. The same evening he had enjoyed more than usual the company of friends and relatives, retiring in apparent good health at 1 A.M. Some twenty-five minutes afterward his brother, in the next room, was attracted by a peculiar noise, and on entering found a dying man. Breathing ceased within two or three minutes from the time he was thus discovered. A month and a half before this occurred he was laid up with what was called "grippe" while

* Read before the Medico-Chirurgical Society of Montreal.

visiting London, Ont. He never recovered his usual spirits after this attack, but told his wife frequently that he felt as if death were impending. His temper became irritable, and marked loss in weight was noticeable, all after the sickness mentioned. His depressed state of mind was not seriously regarded, as his disposition naturally was to exaggerate any illness he might have. Notwithstanding his wife's persuasion, he refused to consult a physician until the day he died. With the exception of two or three days sickness in January last, from which he fully recovered, his record of health seemed remarkably good for many years past. No specific history could be elicited, but about ten years ago he was said to have used alcohol excessively for a time, and was a heavy smoker of "strong" cigars. The chronic illness of a brother, to whom he was attached, who had frequent attacks of hemorrhage during the past thirteen or fourteen years, gave him great anxiety at times. This, in addition to business cares and worries to which he had been subjected more or less, were the only factors which could be made out as bearing on the case. He was a man of powerful build, medium height, and 40 years old. In closely questioning his wife, she said she had sometimes noticed a dark red discoloration of his ears, finger-nails, and back of neck, but it always passed off.

Report of Autopsy made by Dr. Finley twelve hours after death.—"Body well nourished and muscular. Rigor mortis well marked. A considerable amount of yellow fat in subcutaneous tissues and omentum. The fat is increased to a moderate extent on the surface of the heart. The organ is of normal size. The right side contains a considerable amount of dark-coloured fluid blood; the left a small quantity only. A small, dense fibroid patch is present on the ventricular septum, just below the aortic valves. This patch is irregular in outline, about half an inch in diameter, and extends irregularly into the wall of the septum to about half its depth. The mitral valve presents slight fibroid thickening on its auricular aspect, and there are a couple of small yellow plaques on the anterior cusp. The orifice of the left coronary artery is slightly narrowed, and on dissection both

coronary arteries are thickened and their lumens narrowed by numerous yellow plaques throughout their whole extent. The branch running in the anterior inter-ventricular groove is almost obliterated near its origin and just below the fibroid patch already referred to. The arch and descending aorta present a number of small, yellow, raised plaques, and these extend into the great branches of the arch and to the iliac arteries. The weight of the heart is 260 grammes. The pleural cavity is obliterated by organized adhesions, which are readily broken down. Both lungs are hyperæmic and œdematous. The abdominal organs are normal. The brain was not examined. Microscopically, the fibroid patch in the heart is mostly composed of a granular-looking, structureless tissue, with a small quantity of fibrous tissue, but no small round cells. The arterioles of the liver and kidney are normal. The renal artery showed distinct endarteritis."

Atheroma, arterio-sclerosis, or endarteritis deformans was first conceived as an independent affection by Messrs. Gull and Sutton. Atheroma, a term meaning *pap* or *pulp*, is described as a variety of fatty degeneration affecting especially the large arteries and valves of the heart. The disease is important, as leading to certain grave accidents and lesions pertaining to the parts affected. It consists primarily of a deposit beneath the lining membrane of the arteries, or the endocardium investing the valves of the heart, of a substance which presents a yellowish or whitish colour, and is of a cheesy consistence. Microscopically it is composed of fatty granules, with crystals of cholesterin in abundance, and certain earthy ingredients (*Flint*). The disease presents three tolerably well defined stages (*Little*). (a) In the first stage we notice, when the vessel is slit open, greyish patches by which the membrane is irregularly thickened; these patches seem to lie on the surface of the membrane, but this is deceptive,—the endothelium lies between them and the bloodstream, and is, at least at the beginning of the morbid process, unaffected. The material of which the patches are formed is really situated between the tunica interna and tunica media; it is semi-cartilaginous in consistence, and is formed by an abnormally rapid multiplication of the deeper cells of the interna, the

new growth pushing up this tunic with its superimposed endothelium and so causing a bulging into the interior of the vessel. The process is of the nature of an inflammatory change ; that is, it consists in the proliferation of cellular elements in consequence of some influence which has excited them to unnatural growth.

(b) In the second stage, the cellular elements of which the new growth is composed undergo a process of fatty degeneration ; and in consequence it becomes yellowish in colour and pasty in consistence ; this pasty appearance caused the name atheroma to be originally given to the disease. It not unfrequently happens that the whole of the internal coat with its endothelium is involved in the softening and gives way under pressure of the blood, leaving an excavation, the so-called atheromatous ulcer, the floor of which is formed by the media and adventitia. (c) In other instances the pasty mass, instead of being washed away, becomes the seat of calcific deposit ; this being the so-called third stage of the process. The appearance of a vessel in which atheromatous disease has reached this stage is very striking ; plaques, which present to the naked eye the appearance of bone, but do not show its minute structure, are observed at intervals in the walls of the vessel, and their comparatively sharp spiculæ project into its interior ; in the aorta it is not uncommon to find such plates an inch long and half an inch broad, and in the smaller arteries the calcific deposit sometimes forms a ring round the vessel. In the latter the calcareous particles appear to be deposited in the patch while it is still firm, so that the second stage of the process is wanting.

Some authors have divided cases of arterio-sclerosis into nodular, senile and diffuse forms. The macroscopic appearances of the nodular variety are quite characteristic. The aorta presents in the early stages, from the ring to bifurcation, numerous flat projections yellowish or yellowish-white in colour, hemispherical in outline, and situated particularly about the orifices of the branches. In the early stage these patches are scattered, and do not involve the entire intima. In more advanced grades the patches undergo atheromatous changes. The material constituting the patch softens and breaks up into granular material

consisting of molecular debris. Here the primary alteration consists in a local infiltration in the media and adventitia, chiefly about the vasa vasorum, the affection being really a mesarteritis and a periarteritis. These changes lead to weakening of the wall in the affected area, at which spot the proliferative changes commence in the intima, particularly in the subendothelial structures, with gradual thickening and the formation of an atheromatous patch of nodular arterio-sclerosis. The researches of Thoma show that this is really a compensatory process, and that before its degeneration the nodular patch, which post-mortem projects beyond the lumen, during life fills up and obliterates what would otherwise be a depression of the wall in consequence of the weakening of the media. This condition is one which may lead to dilatation or aneurism in the early stage, before the weakened spot is thickened by the internal changes. In the second of this division, viz., *senile arterio-sclerosis*, the larger arteries are dilated and tortuous, the walls thin but stiff, and often converted into rigid tubes. The subendothelial tissue undergoes degeneration and in spots breaks down, forming the atheromatous abscesses. The greater portion of the intima may be occupied by rough calcareous plates. The heart may not be enlarged. In the third form, viz., *diffuse arterio-sclerosis*, the process is widespread in the aorta and branches, and may be associated with the nodular form. The subjects of this variety are usually middle-aged men, say 40 to 45 years, but it may occur early. The affection is very prevalent among negroes. It is met with in strongly-built, muscular men, and they rarely present on the autopsy-table signs of general oedema, or if this exists, it has come on during the last few days of life. In this group the heart shows the most important changes, the weight being increased. Fibrous myocarditis is often present, particularly when the coronary arteries are involved.

The cause of this disease is now generally conceded to be over-strain of the vessels. The onset of arterio-sclerosis depends (*Osler*), in the first place, upon the quality of arterial tissue which the individual has inherited; and, secondly, upon the wear and tear to which he has subjected this tissue. That the former

is the more important is shown in cases where the disease occurs in early life, where none of the recognized causes have existed. For example, a man of about 30 years may have arteries of 60 years, and a man of 40 years may have arteries as much degenerated as they should be at 80 years; and this was found in the case which I bring before your attention to-night.

Entire families sometimes show this tendency to early arteriosclerosis, a tendency which cannot be explained in any other way than that in the make-up of the machine bad material was used for the tubing. More commonly this disease results from the bad use of good vessels, and among the causes of this condition are the following:—

1. Chronic intoxications.
2. Over-eating
3. Over-work of the muscles.
4. Renal disease.

5. A cachectic state of the system or some cause that alters the constitution of the blood and weakens the heart's action, such as prostrating illness and the mental conditions of anxiety and grief.

The dangers to which atheromatous arteries expose the person in whom they exist are varied. The stream of blood is retarded by the projection of the new growth into the vessel, and still more by the destruction of the elasticity of its coats; and hence ensues a failure in the nutrition of the organ which depends for its supply on the diseased vessel; this is said to be a cause of cerebral softening. When the paste-like mass is washed away, it sometimes happens that the blood insinuates itself between the coats of the vessel, producing a dissecting aneurism; or the portion of the vessel which has been marked by the removal of the internal coat yields to the pressure of the current and a sacculated aneurism is originated; sometimes the diseased vessel bursts. Cerebral vessels, probably on account of the thinness of their walls, are specially liable to rupture when they are the seat of atheromatous changes; and occasionally a diseased coronary artery has given way, filling the pericardium with blood. Arteries have been completely occluded by fibrin deposited on the

spiculated edges of calcareous plates, causing senile gangrene; embolic plugging of distant vessels at times results from the detachment of such fibrinous clots and the washing away of atheromatous debris. Rigidity of the larger arteries from this disease is a frequent cause of hypertrophy of the left ventricle, on which increased work is imposed owing to loss of elasticity in the vessels.

Osler says that in this disease many patients never come under observation during life, but are seen for the first time on the post-mortem table, having died suddenly from blocking of a coronary artery, cerebral hemorrhage, or rupture of an aneurism. Among important symptoms of arterio-sclerosis are the following:

Hypertrophy of Heart.—In consequence of the peripheral resistance and increased work the left ventricle increases in size. The chamber may be little, if at all, dilated. The signs pathognomonic of arterio-sclerosis are: increased arterial tension, a palpable thickening of the arteries, hypertrophy of left ventricle and accentuation of the aortic second sound. For years the patient may maintain good health, there may be no renal signs, or perhaps transient albuminuria. The subsequent history will depend on the accidents which are so liable to happen, and may be cardiac, cerebral, renal, etc.

Increased arterial tension has been mentioned as an important sign. It may be difficult to estimate how much of the hardness and firmness is due to the tension of the blood within the vessel and how much to the thickening of the wall. If, for example, when the radial is compressed with the index finger the vessel can be felt pulsating beyond the point of compression, its walls are sclerosed—(Osler).

At the heart, the involvement of the coronary arteries may lead to some of the symptoms already referred to, viz., thrombosis with sudden death, fibroid degeneration, aneurism of the heart, rupture, and angina pectoris. Angina is almost always associated with arterio-sclerosis. Dilatation ultimately following hypertrophy may give us dyspnoea, scanty urine, and serous effusions. The existence of a loud blowing murmur at the apex may lead the physician erroneously to suppose the existing dis-

tress is due to chronic valvular disease, if he is seeing the patient for the first time. The *cerebral symptoms* are important and varied. Transient hemiplegia, monoplegia, or aphasia may occur in advanced arterio-sclerosis. Recovery may be perfect. It is not clearly known upon what these attacks depend. *Renal symptoms* are found in many cases. It is difficult to decide clinically whether the arterial or the renal disease has been primary. *Respiratory symptoms* are often found, particularly bronchitis.

As to the treatment of this disease it is mainly preventive, in avoiding those influences which act as causes of the disease, viz., indulgence in alcoholic beverages to the extent of bringing about a gouty state of the blood; excessive muscular efforts, particularly in constrained positions; postures which involve the long-continued contraction of muscles, and, as far as the brain and heart are concerned, all those states which favour over fullness of their respective arteries,—*in the brain*, excessive mental application, deficient sleep, prolonged periods of sexual excitement (*Little*), grief, or prolonged anxiety; *in the heart*, efforts which involve holding the breath, causing distension of the right cavities and preventing free return of blood from their walls. This is what causes the life of the pearl diver to be a precarious and short one. Some of these men die from the effects of disturbed blood pressure in a few months, while deafness and incipient paralysis are common features. Could we prevent syphilis and the abuse of alcohol, could we ensure everybody against excessive bodily and mental strain, we should go far to obviate the necessity for trying to treat these arterial changes and their allies, concomitants and results, at least until a late period of life. Plumbism is, according to English writers, another cause of a preventable kind. The chief means of prevention is a strictly hygienic manner of life. Although there is reason to believe that arterio-sclerosis may be a matter of inheritance, yet the tendency can be effectually combated or delayed by temperance and moderation in all things—food and drink, work and play—and by the cultivation of an equable temper. The arteries which are the favourite seat of syphilitic changes are

those of the brain. As it is impossible to be sure whether a syphilitic arteritis has gone beyond the point up to which retrogression may take place under the use of pot. iod. and hydrg., the patient should be given the benefit of the doubt by full anti-syphilitic measures. Apart from syphilis, the treatment of this disease varies with the presence or absence of compensating cardiac hypertrophy. If this be present, we should maintain it by careful regulation of the diet and exercise. The nutrition of the heart muscle is assisted by simple, nutritious, easily digested food; pure air, sufficient sleep, properly graduated exercise, bathing, and careful clothing of the body, it being remembered that the kidneys are seldom perfectly sound in these cases. The retention of excrementitious products being believed to cause arterial tension, careful attention to kidneys and bowels is imperative. In general atheroma, over-exertion or sudden exertion must be avoided. In many cases there are no certain means of knowing the exact condition of the cerebral or coronary vessels, for these may be the seat of advanced disease while the radials and temporals may appear healthy; while, on the other hand, autopsies have shown the reverse condition may exist. It is notorious that individuals whose peripheral arteries are calcareous to the last degree not infrequently enjoy a life of surprising length and comfort. Drug treatment is always of secondary importance, except in syphilis, when pot. iod. is given; improvement or iodism being the indications of dosage. No drug can materially influence endarteritis other than specific origin. Bartholow and some others claim that salts of gold control the formation and cause absorption of connective tissue growth, and hence are indicated in this disease. It is given in the form of double chloride of gold and sodium, 1-20 to 1-40 gr. post cib. In persistently high arterial tension nitro-glycerine (m. i. of 1 per cent. solution) is indicated. This is put up in tablet triturates for convenience and accuracy. The nitrates relax unstripped muscle fibre remarkably. Diuretics, diaphoretics and purgatives are useful when indicated.

If compensatory hypertrophy is failing, the treatment is quite different. Rest is imperative, except in obesity with fatty heart,

when Oertel's treatment carefully supervised will be applicable. Alcohol may be useful for impaired appetite and digestive power with the other many aids in this direction. If it be true that digitalis increases arterial tension, while strophanthus does not, the latter is to be preferred in this class of cases ; some authors maintain that this difference is, however, somewhat theoretical. If digitalis be useful, Balfour's suggestion to give it with an interval of twelve hours between each dose enables us to give the drug without the danger of accumulation.

Sleep is of the utmost importance, and morphia is one of the best hypnotics, apart from its usefulness in angina. In cases of great tension in muscular subjects, striking relief is afforded by abstraction of 15 to 20 ozs. of blood.

This serious disease, affecting as it does the seat of life itself, demands from a practitioner the exercise of the utmost skill and mature judgment which a careful, painstaking study of a given case enables him to apply. The elucidation of the many problems which arise in such cases has occupied the attention of the brightest intellects of the profession, and yet the insidious onset of the disease, giving no note of warning to the patient ; the impossibility of procuring, after the disease is recognized, precise and positive data regarding the condition of the internal organs primarily or secondarily affected ; the impossibility of judging with certainty in some cases as to whether death is imminent or remote ; and the utter unreliability of any known drug in simple arterio-sclerosis, leave much to be desired in the further exploration of what has long been a *terra incognita*.

AN INQUIRY INTO THE CAUSATION OF LOCAL MOTOR PARALYSIS AFTER PARTIAL POISON- ING BY CHARCOAL VAPOUR.

By A. BRUÈRE, M.D., EDIN.

(Read before the Medico-Chirurgical Society of Montreal.)

Instances of local motor paralysis occurring after partial poisoning by charcoal vapour have been published by Schachmann, Comby, Leudet, Rendu, and others.* Among the forms of local paralysis that have been observed I may mention paralysis of the portio dura of the 7th nerve, and paralysis of the musculo-spiral. This motor paralysis may or may not be absolute. It is associated, though not invariably, with impairment of sensation, and with a more or less rapid wasting of the paralysed muscles, with loss of power to respond to the faradic stimulus.

The occurrence of local paralysis on the second or third day after partial poisoning by charcoal fumes has led observers to ascribe the paralysis to the action of a poison circulating in the blood. If the paralysis be referable to the presence in the blood of a toxic substance derived from charcoal vapour, what is that substance?

The now classical experiments of Félix Leblanc, published in 1842,† have established the fact that carbonic oxide is the toxic agent in air vitiated by charcoal vapour, and that carbon dioxide and the hydrocarbons present play only a very secondary part in the causation of the toxic effects observed in cases of poisoning by charcoal vapour. Leblanc has shown experimentally that air containing from one to two per cent. of methane and ethylene may be breathed a long time without causing obvious toxic symptoms, and that the amount of those gases and of carbon dioxide that a dog can tolerate without dying is much larger than the amount of those gases present in air rendered irrespirable by the combustion of charcoal.

Leblanc's observations have been confirmed by Cl. Bernard, Vogel, Biefel, Poleck and others, all agreeing in considering

* *France Médicale*, Paris, vol. ii, pp. 893-897, 1886.
p. 377, 1892.

Bull. Acad. de Méd., Paris, s. 2, v. 12, 1883, pp. 1073-1077.
L'Union Médicale, s. 3, v. 33, 1882, p. 380, &c.

† *Annales de Chimie et de Physique*, s. 3, v. 5, 1842, p. 223 et seq.

carbonic oxide *the* poisonous agent, which by its action on the economy causes the poisonous symptoms observed in man and animals placed in air vitiated by charcoal fumes.

Now, the deleterious effects of carbonic oxide are due to its special action on the blood. We are all aware that this gas displaces the oxygen of oxyhæmoglobin volume for volume, and combines with the hæmoglobin to form a compound far more stable than oxyhæmoglobin; for the compound is capable of resisting the action of reducing agents and, to a certain extent, that of putrefaction. The presence of carbonic oxide, in the blood of animals poisoned by the gas, can always be ascertained on spectroscopic analysis, the absorption spectrum of carbonic oxide-hæmoglobin being characterized by two bands between Fraunhofer's lines D and E, very like those of oxyhæmoglobin, but placed closer together and nearer the line E. These bands are not affected by reducing agents.

After partial poisoning by carbonic oxide the gas is eliminated from the system. Some hold, with Gréhant, that it is eliminated unchanged. Others maintain, with Cheneau and Pokrowsky, that the carbonic oxide-hæmoglobin becomes dissociated into carbonic oxide and hæmoglobin, and that the carbonic oxide links itself to an additional atom of oxygen and is eliminated as carbon dioxide. Whatever be the form in which the carbonic oxide is got rid of, the fact remains that its compound with hæmoglobin entirely disappears, after a time, from the blood of animals partially poisoned by the gas, examination of their blood with the spectroscope revealing not a trace of its presence.

In view of the occurrence of paralytic symptoms after partial poisoning by carbonic oxide, and of the probability of the carbonic oxide-hæmoglobin remaining undissociated in the blood long enough to cause those symptoms, I thought it of interest to determine experimentally the length of time that the carbonic oxide-hæmoglobin might persist unchanged in the blood of living animals. This idea had already occurred to Gréhant, and in a paper communicated to the Académie des Sciences of Paris in 1873, he expressed the view that the elimination of carbonic oxide from the blood of animals poisoned by the gas was effected in a comparatively short time. By employing a method of his own for the quantitative esti-

mation of carbonic oxide combined with hæmoglobin, he claimed to have established that almost all the carbonic oxide present in the blood after poisoning by the gas may, in the case of dogs, be eliminated in about four days.

I was led to doubt Gréhan's assertion by the accidental discovery of carbonic oxide-hæmoglobin in the blood of a living dog, ten hours after the inhalation of carbonic oxide. It was therefore worth one's while to investigate the subject more fully.

The method of experiment adopted consisted in causing animals to breathe a mixture of pure carbonic oxide and air, the volume of the former gas being so small as to cause only a very gradual intoxication. The animals were observed and rescued as soon as symptoms of carbonic oxide poisoning were evinced. Immediately after being rescued, their blood was examined with the spectroscope for the absorption bands of carbonic oxide-hæmoglobin. The animals were then kept under observation, and their blood examined with the spectroscope from time to time.

The apparatus used for the administration of the mixture of carbonic oxide and air is as follows:—

A gasometer into which a known volume of pure carbonic oxide, prepared by Jungfleisch's method, is introduced. After noting the temperature of the room and the atmospheric pressure, air is introduced and its volume measured, one of the limbs supporting the bell of the gasometer being graduated. The mixture is allowed to stand for twenty-four hours that diffusion of the gases may be thorough, and before beginning the experiment the volume of the gaseous mixture in the gasometer is read off at the then temperature and pressure. It was necessary to note any difference in the temperature and pressure, in order to be able to account for any change in the volume of the gaseous mixture which might otherwise be put down to absorption of the gases by water in the gasometer. Although carbonic oxide is very sparingly soluble in water, I thought it advisable to have a layer of olive oil on the surface of the water in the gasometer in order to prevent its absorption. The exit pipe of the gasometer is connected with the top of a bell jar, by means of rubber tubing, and from the centre of the stand on which the jar rests a rubber tube leads

to a wash-bottle. After making sure that there is no carbonic oxide in the blood of the rabbit or guinea-pig to be experimented on, the animal is placed under the bell-jar, the ground edge of which has been previously well greased. The gaseous mixture in the gasometer is then turned on, its rapidity of outflow being indicated by the rate at which it bubbles through the water in the wash bottle. Its rate of outflow is regulated by removing or adding to the weights placed on the top of the bell of the gasometer. It was essential that there should be a constant stream of the gaseous mixture through the bell-jar in which the animal was placed, in order to prevent any undue accumulation of the carbon dioxide exhaled by the animal, which carbon dioxide, if it had accumulated, might have caused asphyxia before the small quantity of carbonic oxide present in the gaseous mixture had had time to affect the animal to any appreciable extent.

Fifteen experiments were performed to ascertain the length of time that carbonic oxide-hæmoglobin persisted in the blood of living animals poisoned by carbonic oxide, eight on guinea-pigs and seven on rabbits, and the compound was found to persist for from thirty-five to seventy hours. Several hours after poisoning by carbonic oxide, I was able, by extracting the blood gases and analysing them over mercury, to separate and absorb by cuprous chloride measurable quantities of carbonic oxide. These results show that the elimination of carbonic oxide from the blood of animals partially poisoned by the gas is gradual, and is affected much more slowly than Gréhant has stated.

Now, since carbonic oxide-hæmoglobin has been detected in the blood of living animals several hours after the inhalation of carbonic oxide, may it not be that the forms of local paralysis observed after poisoning by charcoal vapour are due to the action of carbonic oxide either on nerve trunks or on their nuclei of origin, or on their peripheral terminations, or on the muscles themselves?

We know that dissociation of carbonic oxide-hæmoglobin does take place in the body, the only point which remains doubtful being whether the carbonic oxide leaves the body as such, or whether it combines with oxygen to form carbon dioxide. May it not be that dissociation of carbonic oxide-

hæmoglobin into carbonic oxide and hæmoglobin takes place in the systemic capillaries, and that the carbonic oxide set free diffuses through the capillary walls and exerts a special action on the tissues, and especially on muscle and nerve?

And if so, what is the result of that direct action of the poison on muscle and nerve? Does it merely impair their excitability, or does it induce some inflammatory process in them? We are aware that some poisonous gases exert a direct toxic action on muscle and nerve by which their excitability is impaired and eventually abolished. The experiments of Kaufmann and Rosenthal on the direct action of sulphuretted hydrogen on muscle, those of Castell with various gases on the excised heart of the frog, and my own experiments with phosphuretted hydrogen and hydrogen selenide on muscle and nerve, furnish some evidence of the direct toxic action of those gases. Has carbonic oxide any direct action on muscle and nerve? Claud Bernard must have thought of the possibility of its having a direct action on muscle and nerve, for after repeating some of Nysten's experiments with the gas, he placed nerve muscle preparations in a mixture of carbonic oxide and air contained in a bell-jar, and found that even after a stay of an hour in the gaseous mixture the nerves and muscles were still excitable. The proportion of carbonic oxide to air in that mixture had not been ascertained. The volume of carbonic oxide present might have been so small as to have no appreciable action on the muscles and nerves in an hour. I therefore thought it well to try the direct action of pure and undiluted carbonic oxide, or of a known volume of carbonic oxide mixed with a known volume of air. Nerve-muscle preparations were subjected to the action of the gas in jars standing over mercury, and their excitability was tested at regular intervals of time with single induction shocks. I found that even after a stay of three hours in the undiluted gas the muscles and nerves were still excitable. Frog's muscles kept for ten hours in a moist atmosphere containing .5 per cent. of carbonic oxide still responded to electrical stimulation.

It would therefore seem that carbonic oxide does not impair the excitability of muscle and nerve to any appreciable extent.

What, then, is the cause of the local paralysis induced by carbonic oxide? Are we to refer it to the direct action of the

poison on the nucleus of origin of the implicated nerve? There is abundant evidence of a general action of the poison on motor and other centres in the brain and cord. The symptoms of acute poisoning by carbonic oxide furnish a clear proof of such a general action. Can it be that most of the motor cells in the brain and cord recover in some minutes from the effects of the poison, with the exception of a comparatively few cells presiding over the muscles which remain paralysed? I am not prepared to admit any such direct and limited action of the poison resulting in the impairment of the excitability of motor cells, but as regards the possibility of the nuclei of motor nerves being involved, one should bear in mind the fact that after death by carbonic oxide the brain and cord have been found congested, their vessels being turgid with florid blood. Punctiform hemorrhages have been observed in such situations as the grey matter of the convolutions, the corpus striatum, and the medulla. I need hardly say that a hemorrhagic focus occurring either in the immediate neighbourhood of, or in the nucleus of a motor nerve would either impair or paralyse its function. The presence of cerebral hemorrhage would also account for those cases of well marked hemiplegia which sometimes occur after poisoning by carbon monoxide. The tendency of inflammatory changes to follow upon hemorrhagic effusions, however small, should also be borne in mind in this connection.

I am inclined, on the whole, to refer the local paralysis to neuritis of the nerves supplying the paralysed muscles. The more or less rapid loss on the part of the muscles of faradic excitability, the fact that sometimes there is tenderness along the course of the affected nerves, the occasional occurrence of trophic changes in the skin of the affected part, all point to peripheral neuritis. But the question arises, is it a toxic neuritis, or is it due to some other cause? We know that neuritis may be induced by certain poisons. For instance, the neuritis occurring during apparent convalescence from diphtheria, and after poisoning by certain organic and metallic poisons may be said to be of toxic origin. Does carbonic oxide induce a toxic neuritis?

Although I cannot but admit the possibility of that being the case, since neuritis occurs after poisoning by diffusible

compounds, such as alcohol and bisulphide of carbon, I am bound to say that, except in one instance, I have failed to induce neuritis experimentally by the repeated administration of carbonic oxide. The exceptional case I refer to was that of a dog which had had repeated inhalations of carbonic oxide, and which, after twenty-seven days, gave evidence of local neuritis, but even in this case it was doubtful whether the neuritis was a toxic neuritis or one due to traumatism. I may say that I have never been able to confirm that result.

I believe that most of the cases of local paralysis which follow upon poisoning by carbonic oxide are due, not to toxic neuritis, but to neuritis brought on by undue exposure to cold of the poisoned persons. I must, however, allow that the presence of carbonic oxide in the blood of such persons, by diminishing the amount of hæmoglobin available for conveying oxygen to the tissues, will tend to impair their vitality, and that a nerve, the vitality of which has been lowered, will be especially liable to inflammatory changes.

Reviews and Notices of Books.

A System of Practical Therapeutics. Edited by HOBART AMORY HARE, M.D., assisted by W. CURYSTIE, M.D. Vol. II. Philadelphia: Lea Brothers. 1892.

The second volume of this already well known work opens with an extremely comprehensive article on Syphilis by R. W. Taylor, occupying 182 pages. The author strongly advocates postponing specific treatment until secondary symptoms appear, and urges not only the usual plea of doubt in diagnosis in the first stage, but also expresses his belief that early treatment with mercury is actually harmful. If this view is correct, it removes much responsibility from the practitioner in the treatment of the primary sore. The protoiodide is regarded as a useful remedy in the first few months, but inunction should form the back-bone of treatment.

Excellent articles on Scarlatina, Measles, Rötheln and Chicken-pox, by J. Lewis Smith, follow.

In the treatment of Smallpox, by Wm. H. Welch, much atten-

tion is naturally devoted to prophylaxis. Compulsory vaccination is the only way to eradicate the scourge, and "as every unvaccinated person is liable to contract smallpox and disseminate the contagion among others, he should therefore be regarded in the light of a public enemy and dealt with accordingly. Surely it is not an unreasonable position to assume that no person through ignorance or prejudice should be allowed to contravene the public welfare." The Montreal epidemic of 1885 certainly proves that strong measures can be carried out in spite of the most prejudiced opposition. Lymph from a vaccine vesicle, or, failing this, a scab from a healthy infant, is preferred to animal lymph, as causing a milder eruption and in being more prompt in its action.

All the important measures in use at the present day in the treatment of Typhoid are discussed by F. P. Henry. Under the head of prophylaxis, an interesting account of the modes of infection is introduced. The remarkable statistics of Brand, by which over 1200 cases were treated with the cold bath with a mortality of one, are quoted, but, unfortunately, observers on this side of the Atlantic have as yet not attained such results. Antipyretics are regarded with favour, although but little mention is made of their depressing effects. Following Leibermeister, a dose of calomel in the early stage is considered beneficial, and to various intestinal antiseptics an important rôle is attributed.

An elaborate article on Yellow Fever, by Jerome Cochran, is much enhanced in value by including a formal expression of opinion by physicians of the Southern States and Havana.

Diphtheria and true Croup are included among the affections of the respiratory tract, and have been entrusted to Dr. J. C. Cameron, assisted by Dr. H. S. Birkett. Both diseases are regarded as due to the same virus, and thus necessarily requiring a similar general plan of treatment. Regarding the malady as a local one, with general manifestations and due to a specific bacillus, the treatment is directed against both. The main points are treated clearly, and without padding with unnecessary and obsolete therapeutic measures.

In the article on Cardiac Disease, by W. H. Thompson, there

is a decided tendency to enter into details of treatment for conditions which are more easily recognized by the pathologist than the clinician. The section on chronic heart disease is mostly occupied by a rambling discourse on symptomatology. In a work specially devoted to treatment we are surely not too exacting in demanding an explanation of the mode of action of digitalis. We are told that the drug is a "nervine," that its "beneficial effects are due to the cramp-like contraction which it induces in the heart," and that it can only be regarded as a "temporary makeshift." Its valuable action in increasing arterial tension is regarded as a disadvantage. Nitro-glycerin is highly spoken of as an adjuvant to digitalis, but no distinction is drawn in its use between such different affections as cases of cardiac hypertrophy with arterial sclerosis and cases of failing compensation in mitral disease. The quickened pulse of arterial sclerosis is regarded as indicative of subacute endocarditis and calls for aconite and corrosive sublimate. We heartily recommend the writer to peruse the works of such a physician as Balfour if he is ever called upon to review this section.

In pleasing contrast to the above is a scientific article on Angina Pectoris, based on physiological principles. We can well overlook the omission of minute details in treatment when such clear general principles are laid down.

Space prevents us from alluding to all the other articles. Dr. Blackader contributes a valuable and practical chapter on the affections of the mouth and salivary glands. Shattuck's remarks on arterial sclerosis and on diseases of the blood reach the high level which we expect from a professor in the great Harvard school.

In conclusion, we can only express our pleasure in the work as a whole. Stores of knowledge are collected in almost every chapter, and even the most ardent prescription-hunter will be satisfied by the numerous combinations presented.

Society Proceedings.

MEDICO-CHIRURGICAL SOCIETY OF MONTREAL.

Stated Meeting, April 1st, 1892.

F. BULLER, M.D., PRESIDENT, IN THE CHAIR.

Bothriocephalus Latus.—DR. JOHNSTON exhibited for Dr. Sutherland a specimen of this variety of tapeworm. The patient who had passed it is a woman aged 23, a native of County Cavan, Ireland, and has lived in Canada since October, 1885. She is a servant, and has lived during that period with the same family, and, with the exception of the three summer months in 1890, always in Montreal. It is difficult to date the onset of her symptoms, which were voracious appetite, headache, vertigo and vomiting. Dr. Sutherland gave her a purgative and she passed the worm. The case is of interest on account of the extreme rarity of this variety of tapeworm in America. Dr. Leidy knew of no case indigenous in America, and all the cases he had seen were in immigrants. The worm is very common in Europe, especially Russia, Belgium, Switzerland and Ireland. This patient had in all probability brought the worm with her from Ireland six years ago. The cysticercus is found in the pike, perch, salmon and trout, but how it gets into these fish is uncertain, probably through some intermediate host, as a small shell-fish. Dr. Johnston gave a short account of the other varieties of tapeworm.

DR. F. W. CAMPBELL said he had lately seen a great many cases of worms, and he thought that many persons are affected and do not know it, and that the symptoms do not amount to anything until attention is drawn to them. The treatment is the same for all the varieties.

DR. MILLS said that all worms when passed should be burned and not carelessly thrown away, so as to prevent the lower animals becoming affected. Symptoms may range all the way from nothing to partial paralysis and lameness. He cited the case of a dog that was lame, and which, after a purgative, passed four worms and immediately recovered. He asked if pecan or areca

nut had been tried in human beings, for it has long been looked upon as the best remedy for tapeworm in the dog.

DR. PROUDFOOT said that kamala, 60 grains three times a day or inside of five hours, was very efficacious.

Intercranial Cyst.—DR. HINGSTON showed before the Society a young woman who had been brought to him suffering from intense pain in the head and down the side of the face, and was at the time screaming violently. She was in an ensanguine condition, pulse very feeble, and apparently dying. He sent her to the Hotel Dieu Hospital, and the next day she was put under chloroform and a horse-shoe-shaped incision was made on the right side of the head, about $2\frac{1}{2}$ inches above the ear; the flap was turned up and a piece of bone about the size of a 25 cent piece removed, without injuring the dura; this was then cut through, and in the cavity of the arachnoid he found a small cyst, like a limited serous effusion or limited arachnoiditis; on opening this, fluid of the consistency of olive oil, but not pus, escaped, the membrane collapsed, and pulsation was observed. The wound was closed with fine silk and union took place by first intention. She now has no pain, sleeps well, eats enormously, and has gained 20 lbs. in weight.

DR. SHEPHERD asked why the operation had been performed at that particular spot, if there was any history of injury, if there were any motor symptoms, and how such a condition could be distinguished from hysteria.

DR. LAFLEUR asked if the patient had been an epileptic.

The PRESIDENT asked if the fluid had been examined, and if an ophthalmoscopic examination had been made.

DR. HINGSTON, in reply, said that there had been no motor symptoms, and the reason he had chosen that particular spot was that the pain seemed to be a little more intense there than in other parts of the head. She was not an epileptic, but there was a history of an injury twelve months before, when she was struck on the affected side of the head by a falling ladder. He replied in the negative to both the questions asked by Dr. Buller.

DR. SHEPHERD exhibited the following specimens obtained from the dissecting-room:—

(1) *Fissured Sternum.* The fissure was of small size, and was situated about the centre of the meso sternum.

(2) *Fracture of the Scaphoid Bone of Foot.* This was taken from a male subject who had lost his great toe and the terminal phalanges of the two next, due, evidently, to a crushing injury. The portion of the scaphoid articulating with the external cuneiform was separated. It was much increased in size owing to the throwing out of new bone, and had a large surface articulating with the cuboid bone.

(3) *Fracture through the Laminae of the 5th Lumbar Vertebra.* This was found in a male subject. The separation of the neural arch from the body of the 5th lumbar vertebra was complete, the arch being kept in place by the articulations with the first sacral vertebra. A false joint united the neural arch to the body, and there was no evidence of new bone having been thrown out. It was not a failure of union, as the separation was not in the line of the neuro-central suture. Dr. Shepherd could find no record of such a fracture in works on the subject.

(4) *A Displaced Abnormal Kidney with six Renal Arteries.* This specimen was found in the left side of a female subject. The kidney was an abnormal one with an anterior hilum; its lower end was situated near the commencement of the internal iliac artery, the hilum being opposite the bifurcation of the aorta. It received two arteries from the abdominal aorta, two from the common, and two from the internal iliac arteries; these vessels entered it on the internal border from the superior to lower end. One artery of large size, however, wound round beneath the kidney and entered its convex external border. This vessel came from the internal iliac, and was opposite the hilum. The veins were also multiple. The supra-renal capsule was in its normal position, and did not descend with the kidney, being separated from it by several inches. The right kidney, although normal in position, was supplied by three arteries. Dr. Shepherd remarked that multiple renal arteries occurred in his experience in about 10 per cent. of subjects, and were due to a persistence of the primitive condition, where a separate artery is supplied to the kidney opposite each vertebral segment. These anomalies

were of great importance to surgeons, and might give rise to serious trouble in extirpating the kidney. Dr. Shepherd related a case where he had met with these supernumerary vessels in operation on the living subject.

Five Laparotomies, with four Recoveries and one Death.—

DR. LAPHORN SMITH said: I have to report the following five cases in addition to those I have already reported to this Society, although the pleasure of doing so is marred by my having to acknowledge my second death:—

Mrs. S., aged 64, a patient of Dr. Aubrey of Côte St. Paul, came under my care on the 17th July, 1891, giving me the following history: Menstruation had commenced at 16, and had always been regular, though painful the first two days, and always profuse, lasting a week. She was married at 21, and has had only one child, who is now 42 years of age. Since the birth of her child menstruation has been almost painless until it stopped at the age of 46. Twenty-four years ago her left breast was removed for cancer by the late Dr. R. P. Howard, and there has been no recurrence of the disease. Three years ago she began to have trouble with her water, being unable to hold it, and six months before my seeing her she had noticed a lump growing in the abdomen. On bimanual examination I found a hard, oval tumour rising to the level of the umbilicus above and projecting into the pelvis below, and it had a nodule on either side of it the size and shape of ovaries. The abdominal wall was very thin, and the tumour was freely movable in the abdomen. On pushing up the cervix uteri motion was communicated to the tumour, and pressure on the tumour caused motion of the uterus. It presented the symptoms of a fibroid tumour in the fundus uteri, with portions of it in a cystic condition. Fearing that the tumour might be cancerous, the patient was very anxious for an operation. Accordingly, with the assistance of Drs. Perrigo and Springle, and in the presence of Drs. Aubrey and Mitchell, I performed abdominal section at Strong's Hospital. On opening the abdomen the tumour was found to be fibro-cystic, but there were a great many very tensely filled loculi, the larger ones of which I emptied. But it had no connection whatever with the uterus

or ovaries. It seemed to spring from the mesentery about the level of the second lumbar vertebra. On endeavouring to find a pedicle to tie I found that a coil of intestine was so intimately connected with it that it would have been impossible to have enucleated it down to the vertebra without tearing the peritoneum off the intestine. The tumour was behind the peritoneum, and in endeavouring to peel the latter off it I exposed the right ureter and right common iliac artery. As I was prepared for hysterotomy I had a *serre nœud* with me, so I passed the cord of it around the base of the tumour as far back as I could without catching the above-mentioned coil of intestine, and tightened it up and cut off the tumour. In freeing it from adhesions a good deal of oozing occurred, which required a great many silk ligatures to arrest, but finally the abdomen was cleaned dry and the *serre nœud* was brought out with its very short stump, which was not more than three-quarters of an inch long from the spinal column. In fact it would be more correct to say that the very slack abdominal walls were brought under the *écraseur* so as to embrace the stump, and two pins were passed through the stump above the *serre nœud* to prevent it from slipping off. The abdomen was closed with silkworm gut and no drainage tube was used, the wound being dressed with dry boracic acid and absorbent cotton. The *écraseur* came away about the twelfth day with a small slough, the temperature never going above 100°. About the fourth day a clear, slightly yellow, watery discharge was noticed welling up from the inferior angle of the wound in considerable quantity. It had no odour, and I was uncertain of its nature, although I thought it might be lymph coming from the thoracic duct, which I feared I had included in one of my ligatures which had been placed very near the duct. On the other hand, it might have been urine escaping from a possible wound of the bladder. I therefore introduced a glass catheter into the bladder and left it for some hours without at all diminishing the flow from the wound. In order to be certain about it, I placed the patient on her face for a few hours and collected a few ounces of the fluid, which I handed to Dr. Bruère without telling him where it came from. He next day handed me the

result of a careful chemical analysis clearly proving that it was urine, and convincing me that it was due to a wound of the ureter. The patient made an excellent recovery for her age, being able to walk about outside in two months and frequently driving into town since. I devised a great many contrivances for catching the urine and conveying it into a rubber bag attached to her leg, but none of them was satisfactory; but after a few months the fistula gradually ceased to flow, and now there is only a slight moisture.

Mrs. W., æt. 36, came under my care in January, 1891, for a very close stricture of the rectum, which would hardly admit a No. 8 catheter. Her abdomen was enormously distended. She had no previous history of syphilis, nor did the stricture present the appearance of being malignant. It seemed rather to have been due to simple ulcer of the rectum, which had been repaired by cicatricial retracting tissue. She called my attention to a lump in the abdomen extending across from one hypochondriac region to the other, and extending downwards and backwards in the direction of the descending colon. I took her into my ward at the Women's Hospital and called a consultation of the staff. In the opinion of the majority, myself among the number, this lump was thought to be an accumulation of feces due to the impossibility which existed of anything but liquid motions passing so small an opening as her rectum. I divided the stricture backwards towards the sacrum in the middle line, and opened it up to two inches in diameter. She took a powder containing 40 grains of compound jalap and 10 grains of calomel with the result that she passed a great many very copious stools with great relief of the distension and partial disappearance of the tumour. The purgation was repeated a few times with still further benefit, and she was discharged feeling remarkably well. She remained so for about a year, when, having neglected to pass the bougie, her stricture returned and the abdomen filled up as before. I again divided the stricture and cleared out the bowels, but the abdomen remained distended with ascitic fluid, and the lump between the umbilicus and the ensiform cartilage could now be felt very distinctly. She was very anxious to have

this fluid drawn off, but declined any serious operation for the present. I therefore decided to make an incision to let out the water, and at the same time to settle the diagnosis of the tumour, whether it was faecal accumulation or malignant disease of the intestine. Accordingly, assisted by Dr. England, and in the presence of my class, on the 20th of February I made a two-inch incision between the ensiform cartilage and the umbilicus, allowing a quantity of straw-coloured serum to escape. On introducing my finger and raising the omentum a hard, slightly nodular tumour could be felt occupying the situation of the head of the pancreas, which was enlarged to the size of an orange. As I had not been able to obtain the patient's consent to removal of the tumor at present, I replaced the omentum and sewed up the incision with silkworm gut, obtaining union by first intention and without the temperature ever rising above $99\frac{1}{2}^{\circ}$ during the next two weeks, when she was discharged. In fact she was sitting up next day. It is my intention, as soon as she consents, to undertake this rather formidable operation of removing the tumour, as it is evidently beginning to endanger her life very seriously.

Miss X. came under my care at the Woman's Hospital on the 27th February, 1892, with the following history. She had always been healthy, with the exception of having lost the use of one eye and ear after scarlet fever. She was seduced by a commercial traveller, and was delivered at term on the 29th of January. The perineum was very unyielding, and a laceration of both it and the cervix occurred, the former being torn through into the rectum, which latter, however, was promptly sewed up by Mr. Hackett, the house surgeon. On the 30th her evening temperature was a little over 99° , on the 31st it rose to 103° , and next day to 104° . From that time till the 24th Feb. her temperature oscillated between 104° at night and $97\frac{1}{2}^{\circ}$ in the morning. As soon as the temperature began to rise Dr. Reddy ordered the stitches to be removed from the perineum, which was found to be suppurating, and every antiseptic measure was employed, such as bichloride intra-uterine injections, etc. She was transferred to my care on the 27th Feb., when, on examina-

tion, I found the uterus and appendages all glued together in a mass of peritonitic exudation as though they had been set in plaster-of-Paris, the roof of the vagina feeling like a solid board. In Douglas's cul-de-sac could be felt a prominent oval body extremely sensitive to touch, which was thought to be the ovary. I diagnosed pus tubes leaking into the peritoneal cavity and strongly advised abdominal section, in which my colleagues concurred. Accordingly, as soon as the consent of the patient and her friends was obtained, which required eight or ten days, during which her condition became more and more alarming, I opened the abdomen, with the assistance of Dr. England, on the 5th of March, in the presence of twenty members of my class and visitors. After cutting through the abdominal wall I was unable to get into the peritoneal cavity owing to omental peritoneum being glued to the parietal peritoneum by solid cheesy exudation. On extending my incision a little lower down I came upon an abscess cavity containing half an ounce of pus apparently between the omentum and the parietal peritoneum, which had been walled off by exudation. After cleaning this out with weak bichloride solution I tried to get into the pelvis by that road, but could make no headway. I then tried to enter by the upper end of my incision, which I managed to do. By pushing aside the omentum above the point where it was adherent half-way up to the umbilicus, I was able to introduce my finger into the abdomen. I then dug away for a quarter of an hour in Douglas cul-de-sac, and succeeded in extracting the two ovaries, which I brought to the surface. The patient had given her consent to the operation on condition that I would spare her ovaries if they were not seriously diseased, and as they appeared healthy I returned them. I then made a search for the tubes, but it was impossible to distinguish them from the solid lymph in which they were imbedded. At one time I dug out with great difficulty what seemed to be one of them, and tied and removed it, but no trace of the tube could be found in it. On the left side of the uterus I could feel about a half an inch of the tube. On the right side I could not distinguish it from the solid material in which the uterus was imbedded. Even the space between the

uterus and bladder was filled in with this lymph cement so firmly that I could plough a furrow with my finger tip between them, but could not tear this material off the uterus. By this time I felt that to continue longer would be endangering the patient too much, so I washed out the abdomen with several gallons of hot water, introduced a good sized drainage tube, and closed the wound with silkworm gut. The patient vomited a good deal, but reacted nicely, and on the fourth day the drainage tube was removed, by which time the bloody exudation had changed to lymph. On removing the tube I had to rotate it, when something gave way, and on examining the tube I found a tiny segment of intestine in one of the holes. The day following my attention was called to the dressing, which had been kept for me, and which I found to be saturated with bile coming from a small intestinal fistula. This, however, gradually diminished, and at the end of a week had closed entirely. The temperature did not fall to normal until the fifth day, since which it has never gone above 100° , and it has reached that only once or twice. This is now the 26th day, and the patient is walking about the ward eating heartily and free from pain and fever, and is to go home to-morrow. The stitches were removed on the 20th day.

Mrs. L., a very stout Indian woman, 35 years of age, came under my care at the Montreal Dispensary with all the complete set of reflex symptoms which would have filled the programme for either an umbilical hernia or a lacerated cervix, both of which conditions act as irritants to the great sympathetic nerve. In order to cure her I determined to remove the two sources of irritation at the same time; so after a few weeks preparatory treatment I took her into the Woman's Hospital, and, with the assistance of Dr. England, performed abdominal section. The incision was begun four inches above the round opening in the abdominal wall, and had to go through more than two inches of fat before reaching the external oblique. In continuing my incision downwards on the director inserted under the skin I suddenly came upon many coils of the intestine over which there was absolutely nothing but the parietal peritoneum and the skin, which was not thicker than the finest kid. If I had made my

incision as usual through the skin I would certainly have gone through the intestine, of which there was much more than one would have any suspicion of there being, judging from the outside appearance. Just above the hernial sac the abdominal wall was fully three inches thick, while over the sac it was not more than one-sixteenth of an inch thick. The intestine was returned and the hernial opening was closed with carefully prepared catgut. Previous to closing the opening, three silk worm gut sutures were passed about an inch from the edges of the opening, and they were only tied after the opening was closed with the catgut. My object in not dissecting out the sac was to obtain a larger area of adherent surface than could be obtained by leaving only the clean cut edges of the peritoneum. The wound was dressed with dry boracic acid, and the patient being drawn down to the edge of the table, her cervix was repaired according to Emmet's method. The two operations consumed less than an hour, the A. C. E. mixture being used. She had no vomiting afterwards, and she was up and about on the 14th day, and is going home to-morrow, the 21st day.

Mrs. B., æt. 36, came under my care at the Montreal Dispensary suffering from pain and other symptoms which appeared to be due to a tumour filling the right vaginal fornix and pushing the uterus to the left, which was very tender on pressure and firmly fixed to the floor of the pelvis, and which I took to be ovarian. Acting on the principle that all ovarian tumours should be removed as soon as diagnosed, I advised operation, to which the patient consented, owing to the severe attacks of pain and reflex symptoms. My colleagues concurred in the advisability of this course, and accordingly on the 5th March, assisted by Dr. England, I made a section. The adhesions proved to be very dense and snapped like violin strings. When near the surface the tumour burst and its contents escaped into the abdominal cavity. The cystic ovaries and tubes of the right side were ligated and removed. The abdominal cavity was well irrigated with boiled water, a drainage tube inserted, and the wound closed with silkworm gut. There was a great deal of vomiting and thirst, and I allowed her to take considerable water. She

was very restless on the third day. There being nothing but a little clear serum coming from the tube I removed it, and ordered salines to start the bowels; and that night they suddenly began during the temporary absence of the nurse, when the patient raised herself in bed to reach to the bed-pan, but fell back in a faint. During the night they were moved a great many times, and she complained a great deal of pain. When I saw her on the morning of the fourth day she was very comfortable, although her pulse was weak and rapid. There were no other symptoms of hemorrhage, but her face appeared haggard. That evening I was hurriedly summoned and found her sinking fast. She did not appear blanched, and I did not feel justified in opening her. This was a mistake, for she died a few hours later, as I believe, from hemorrhage, although the friends absolutely refused to allow a post-mortem.

DR. HINGSTON had met with a somewhat similar condition, though there was no hernia and the patient enormously fat, and that he had come down on the peritoneum when he least expected to.

Gastro-Enterostomy.—DR. JAMES BELL then read a paper on this subject, which appeared in the May number of this JOURNAL.

DR. SHEPHERD thought that this was the first operation of the kind performed in Canada, and regretted that the result had not been more successful, for the technique was without fault. He had been interested to note that the American surgeons are discarding rings and going back to the immediate suturing of the two openings in the intestine.

DR. MILLS asked what was the reason that a loop of intestine had been retained, and how was the digestion affected in these cases?

DR. BELL said that rings alone without layers of sutures are insufficient; the advantage in the use of rings is that it greatly shortens the operation. In answer to Dr. Mills he said that it would have been impossible to remove the affected tissue, and that the digestion must be more or less impaired.

Stated Meeting, April 15th, 1891.

F. BULLER, M.D., PRESIDENT, IN THE CHAIR.

Double Hydro-Salpinx.—DR. FINLEY exhibited the specimen and gave the following account of the autopsy. A woman, aged 40, a confirmed drunkard, with evidence of syphilis in the thickening of the skull-cap. The uterus was pushed to the left side by a large cyst on the right. The right tube passed into the cyst; the ligament of the ovary was seen, but the ovary itself was closely blended with the walls of the cyst; the cyst contained a clear yellow fluid. A smaller cyst was seen on the left side. The woman had evidently borne children, as there were seen scars on the os uteri and lines on the abdominal wall.

Cerebral Hemorrhage.—DR. FINLEY gave the history of an autopsy performed on a patient who had died suddenly. A large hemorrhage was found on the right side of the brain, and which had ruptured into the ventricles. It was outside the optic thalamus and was as large as a hen's egg. The kidneys showed granular degeneration and the left ventricle of the heart was hypertrophied. The arteries of the brain showed plaques and much thickening of the intima. It was a case of granular kidney with sclerosis of the cerebral arteries, but no miliary aneurisms were found.

DR. ARMSTRONG related the clinical history of the case. The patient, who was a middle-aged woman hardly 40, had first come under his care a year ago for dyspeptic symptoms. The urine was free from albumen and the specific gravity was normal. He did not see her again until a week before her death, when she consulted him for lowness of spirits, melancholy, loss of appetite, and general weakness. The urine was then found loaded with albumen, granular and hyaline casts; he had not detected any sclerosed condition of the arteries. The history of the attack, as given by her friends, was that she had been at church, and owing to the nature of the discourse had become very excited; while she was walking home her right leg gave way and she took a few dragging steps, and within a few minutes lost consciousness. Dr. Armstrong had seen her just before death; respirations ceased first, the pulse remaining good.

DR. HUTCHINSON had seen the patient immediately after the seizure. She was in a convulsion like that due to uræmia, and he was in doubt whether the hemorrhage occurred in the first place or followed the convulsion. He had found her in a state of opisthotonos with rigidity of the muscles of the arms and legs.

Vesical Calculus.—DR. JAS. BELL exhibited a small calculus which he had removed from the bladder of a boy of 14, who had exceedingly slight symptoms for six months, there being only a little pain after micturition. No pus or blood was ever present in the urine, which only differed from normal by containing a somewhat larger quantity of suspended mucus.

Renal Calculi.—DR. BELL also exhibited six small calculi removed from the kidney of a woman. The patient is doing well.

Photographs of Lepers.—DR. WESLEY MILLS exhibited two photographs of Chinese, from the leper colony near Victoria, British Columbia. One showed the tubercular form with the anæsthetic areas distinguished by the light patches on the skin; it also showed well marked flattening of the side of the face. Dr. Mills remarked that leprosy is now generally admitted to be due to a bacillus, which is characterized by being present in greater numbers in the affected parts than any other micro-organism. The disease is characterized by great hypertrophy, nodules and anæsthetic areas of the skin, and the lengthened period of latency, which often extends over years. The onset is marked by great languor of both mind and body. Whether the flatness of the face seen in one of the photographs was due to paralysis or atrophy of the muscles it was impossible to say.

DR. JAS. BELL also exhibited a number of photographs of lepers in the colony of Honolulu. They had been presented to him by Dr. John Brody of Honolulu, and were duplicates of photographs presented by Dr. Brody to Prof. Arning of Hamburg, who had spent some years in the study of leprosy in the Sandwich Islands.

DR. SHEPHERD said that leprosy is on all hands admitted to be of bacillary origin. The different forms are but different stages of the disease. Inoculation has been performed with

success on criminals in Honolulu. He had met with three cases in Montreal, all being from the West Indies.

DR. FOLEY said that it was essentially a germ disease and not of nervous origin. Though the germs have been found in the tissues, they have not as yet been found in the blood.

DR. MCCONNELL said that lowered nervous vitality favoured the production of all infectious diseases. The slow progress of the onset may account for it not being looked upon generally as infectious.

Discussion on Appendicitis.—DR. ARMSTRONG brought before the Society a man on whom he had operated for recurrent appendicitis. In 1883 the patient had an acute attack, from which he recovered in a fortnight. He was well for six months, when another attack occurred, and a third in another six months; then they occurred every two or three months, becoming more and more frequent until latterly he had one every three weeks. Each attack consisted of pain and vomiting, and kept him in the house three or four days. Two years ago, assisted by Drs. Roddick and Bell, Dr. Armstrong removed the appendix, which was whole and surrounded by numerous adhesions. The recovery was rapid, and the man has been perfectly well ever since. Speaking on the subject of appendicitis, Dr. Armstrong said that as a cause of mortality it is far greater than is generally believed. He had obtained the Canadian Government mortality tables and found that for months there would be no record of a death from this cause, but from his experience he believed it to be a very common disease. It is now generally conceded that if attacks recur with such severity as to incapacitate the patient for business, an operation is necessary, and should be performed a few days after an attack. It is often a difficult question to decide whether it is right to operate or to wait. He had searched the literature on the subject and found the advice so varied and so different, that he deemed it the wisest plan for each one to follow the course his own experience indicated. The medical or catarrhal cases have not been so frequently met with by him as the severe forms which end fatally. The symptoms usually are distinct pain, which may be general or may be referred to the

region of the umbilicus, with distinct tenderness over McBurney's point, rigidity of the muscles, vomiting, increasing rapidity of the pulse, and an elevated temperature. If these symptoms are still on the increase at the end of twenty-four or thirty-six hours, he advised operation, and on no account to look upon this procedure as a *dernier ressort*. Mikulicz of Königsberg has divided the peritonitis following this condition into general and progressive. In the latter form the peritonitis is localized, with a wall of inflammatory tissue about it. Every twenty-four or thirty-six hours a new area is invaded; if operation is performed early it prevents this local condition from becoming general. He (Dr. Armstrong) greatly deprecated the use of purgatives, for if there is rupture and escape of septic matter, the active peristalsis will prevent the peritonitis from becoming localized, and tend to diffuse the septic matter throughout the cavity and set up a general peritonitis. He had met with two cases in which, at the autopsy, purulent matter could be traced up the portal vein, with abscesses in the spleen and liver. In another case there was a septic thrombus in the lung. So from his experience of cases that are severe, he thought that a thoroughly aseptic operation is much less dangerous than to allow the trouble to go on.

DR. SHEPHERD related a case upon whom he had operated in the interval between the attacks. The operation had been performed some weeks ago on a gentleman who, during the past eighteen months, had had nearly a dozen attacks of appendicitis. Some of these were very severe, being accompanied by chills, fever and vomiting, and also severe pain in the right iliac fossa. Latterly the attacks have been coming on about every six weeks; he could not attend to his business, and dared not leave town for a day for fear of having an attack out of reach of skilled surgical assistance. So he decided, on the advice of Dr. Geo. Ross and the speaker, to have the appendix removed. The operation was performed on March 28th, and the appendix found without difficulty. Strange to say, there was scarcely any evidence of inflammation about it; it floated quite free, but was rather larger than normal, and tense and fluctuating. It

was tied off near the cæcum and removed, the cut end being cauterized before being returned into the abdominal cavity. The wound was closed with silkworm gut sutures, a small drain being left at lower end. This tube was removed at the end of forty-eight hours. Convalescence was uninterrupted, and patient left for home at end of three weeks. The appendix, on examination, appeared full of muco-pus, but no infective bacilli were found in it. Dr. Shepherd stated that he believed that this was a case of catarrhal appendicitis, and would probably have ultimately ended in perforation and abscess. He remarked that he now felt much more inclined to operate in the interval in cases of recurrent appendicitis than formerly.

DR. JAS. BELL related the history of a somewhat similar case. A young man, aged 21, was first seized in the early part of December last with the ordinary symptoms—pain, vomiting, fever, localized tenderness, and a mass to be felt in the fossa. He never got well enough to resume his work, though he twice attempted to do so, but was only able to work for about half an hour. It was an almost continuous attack, but with remissions. At the operation Dr. Bell found the appendix large, very adherent, and constricted about three-quarters of an inch from the cæcum. It was full of muco-pus, the exact counterpart of that found in Dr. Shepherd's case. Since the operation his patient has done well. Dr. Bell also mentioned a case under the care of Dr. Roddick, and operated upon about the same time, which was of another type,—rapid, acute symptoms, with more or less evidence of general peritonitis. At the operation there was found pus or sero-pus about the appendix, which was not walled off from the general peritoneal cavity, and the patient died. And still another type existed of which he had recently had three cases, two of which were operated on; they were old cases with frequent recurring attacks, with indefinite symptoms in the intervals, and were finally stricken with an attack distinctly septicæmic, and in which, at the operation or autopsy, burrowing abscesses were found, generally in the pelvis. The simplest type of the disease is that in which the inflammatory area is cut off from the general peritoneal cavity by adhesions between the

neighbouring coils of small intestines, and such cases should always do well after operation. From these cases he felt disposed to recognize at least four distinct types of appendicitis.

DR. SHEPHERD related the history of a case, under the care of Dr. Blackader, upon whom he had operated after the fourth attack, and the patient died of pulmonary embolism. Here there had been no septic condition, no peritonitis, normal pulse and temperature, so that, as far as he could see, the cause of the thrombus was not septic. Another fatal case was in a young man of 18, on whom the operation was performed forty-eight hours after the commencement of the attack. A remarkable feature of the case was the size of the appendix, which was over seven inches long; it was gangrenous and bound down by firm adhesions. There was also a gangrenous patch on the lower end of the cæcum, but not a drop of pus was seen. The operation did not relieve the patient, who was already profoundly septic, as evidenced by the incessant bloody vomit. Now in this case, if operation had been performed in the interval, the patient's life would no doubt have been saved. The conditions are in most cases more favourable for operation than during an acute inflammatory attack.

DR. ENGLAND had seen two virulent cases; both were recognized early, and in one case operation was performed on the third day by Dr. Roddick, but terminated fatally on the fourth. In the first case the onset was insidious, the patient suffering from wandering pains in the abdomen for two days before seeking advice. When first seen he had a pulse of 84, temperature 100°, and localized tenderness over the cæcum; the next day there was beginning a general peritonitis. Dr. Armstrong was called in consultation and advised immediate operation; the condition then being good. No decision was arrived at by the patient until the afternoon, when another consultant was asked for, who thought it would be well to wait and treat the patient medicinally; this was done, but on the seventh day of the attack the patient was seized with collapse and died. Towards the end operation was solicited, but it was then deemed too late. These two cases are of the virulent type. Both patients were in ex-

cellent health beforehand, and operation seemed to have been their only chance. It is very difficult to tell at the onset whether a case is going to be of a mild or virulent character.

DR. WILKINS related the history of a fatal case. A young man of 17 complained slightly of pains over the region of the cæcum. Four grains of opium for the twenty-four hours were ordered, which relieved the pain, and for the next few days he was quite free from it. On the first day his temperature had been 102° , and on the second 98° . He remained well until the sixth day, when he was seized with sudden pain accompanied by slight tenderness. Dr. Wilkins advised calling a surgeon in consultation, but the parents objected, so he temporized, giving two grains of opium in two days; during this time the temperature had been 98° , but the pulse began to run up. On the eighth day there was a rapid pulse, vomiting, and a condition approaching that of collapse. Drs. Ross and Roddick then saw the patient, but thought that it was too late to operate. An important point was the absence of all serious symptoms up to twelve hours before death, when probably some adhesions had given way. From his experience in this case, Dr. Wilkins doubted the advisability of giving way to parents and postponing consultation. About the same time he had under his care a young man of 28, who had had four attacks within the space of three years. Early in the last attack operation was advised, but both parents and friends objected, and palliative measures were used. During five or six weeks there were symptoms pointing to the absorption of pus, but the patient recovered, though the symptoms were much more severe than in the first case. These cases indicate the great difficulty in knowing the exact course the disease will take. At present there is in the hospital a girl, aged 21, who has a history of symptoms which point clinically to appendicitis; there had been well marked pain in the region of the umbilicus, with swelling and tenderness of the abdomen. She had had rigors, sweating, and rapid pulse, all of which symptoms are now disappearing, and recovery is almost certain to take place. If he saw a case beginning suddenly, and with no history of a previous attack, he would give full doses

of opium for the first twenty-four hours ; it keeps the bowels at rest, but after that time obscures the symptoms.

DR. BELL supplemented Dr. Wilkins' hospital case by a few remarks. When he saw her she had undoubted general peritonitis. She had a large quantity of albumen in her urine, and over the left hypochondriac region certain frictions due to peristalsis of the bowel could be heard. As there was no evidence of a localized course, and as there was a strong tubercular history, he thought it might be tubercular, and advised waiting, but in a few days found the swelling and advised her removal to the surgical ward so that he could watch her and be prepared beforehand for any emergency, but this was not done.

DR. MCCONNELL remembered three cases in which, if he had acted promptly, the patients might have lived. The first, an athlete, sick three days ; autopsy showed perforated appendix and general peritonitis. This case occurred before the time that this operation was performed. The second case was a child in whom, at the autopsy, a localized collection of pus was found, and he thought that operation would have saved it. The third case occurred three months ago. A man, aged 31, had an attack six weeks before, from which he recovered and went to work ; a second attack occurred ; Dr. McConnell was sent for and found fever and a hard localized mass, in which fluctuation was detected four or five days later. It was well lined off, and seemed to be pointing. Dr. Perrigo operated and found the appendix at the bottom of the cavity ; the temperature fell and remained down for eight days, and the cavity was closing ; on that day, about ten minutes after leaving him, Dr. McConnell was summoned by telephone, and on his arrival found the patient gasping, and in ten minutes was dead. Dr. Perrigo had suggested an embolus, and at the autopsy there was found a localized peritonitis and in the right iliac vein a freshly formed thrombus. During the evening he had been complaining of numbness of the right leg, and it was while the nurse was applying light massage to the leg that the onset of the fatal symptoms occurred.

DR. MILLS thought that from the discussion this was a disease

of the young, and asked if any one had experience in cases beyond middle life.

DR. SHEPHERD referred to the two cases already reported by him occurring between the ages of 50 and 60.

The PRESIDENT said that as far back as 1870-71, while he was attending Virchow's autopsy class, there was hardly a week that there was not an autopsy on a case of this disease, and its occurrence was by no means in young people only.

DR. GEO. ROSS said that this disease presents a large number of interesting problems, and cases have been cited which bear more or less on all of them. In referring to the diagnosis, he did not know how anyone could, at the onset, distinguish a case which is going to be fatal from one in which there will be only a small localized inflammatory condition. A case occurred to him during the summer. A young girl had an attack at the seaside lasting two or three days; when he saw her he found her the subject of a violent attack, so violent that he thought operation was called for and that very soon; he sent at once for a surgeon, and it was thought advisable to wait for twenty-four hours; at the end of that time the symptoms had not increased in severity, and a second delay was agreed upon, when the condition was slightly improved. This improvement in the general state showed that there was no profound constitutional poisoning and no operation was performed, and the child got well, but she got well after a very great risk and after a large discharge of pus from the rectum. There were symptoms of general peritonitis, but he did not think that this condition existed, for he had seen this general pain, when on operation only a localized inflammation was found. The operation in the interval is a most interesting field for surgical practice, and he believed it is going to be the operation of the future. When allowed to go on the disease presents dangers so real and so rapidly fatal, while, on the other hand, everything can be arranged for an operation in a thoroughly aseptic manner. The operation sometimes presents difficulties such as finding the appendix. Can you judge what kind of operation you are going to meet with? In one of the cases related by Dr. Shepherd it was thought beforehand that the

operation would be difficult from firm adhesions about the appendix. But what did he find? The appendix was very easily found and easily removed.

DR. SHEPHERD thought that in Dr. Ross's case the appendix had sloughed off. It was an illustration of nature's method of cure. He thought this was a good rule to go by: viz., when in doubt, operate.

DR. SPENDLOVE had observed several cases, and one fact he had noticed was that they all occurred in persons of a rheumatic temperament; this led him to think that diet might have some influence on the disease. A man, aged 35, came to him from the country, who, during the last fifteen months, had seven attacks—at first at intervals of four months, then three, two, one, and finally every two weeks. The man indulged in habits decidedly rheumatic; he was a high liver, using meat thrice daily. A radical change in diet was suggested, and he was told to avoid all animal food and to adopt a vegetable diet, with large quantities of water. These instructions were given in September, and in January he came to town and said that he had followed the instructions, and as a result had no attack, had no return of the pain, and had gained 20 lbs. in weight. May not diet, by keeping the amount of uric acid low, have some effect on these cases?

DR. McCONNELL said that the rheumatic diathesis depends more upon lactic acid than upon uric acid, both depending on deficient metabolism of nitrogenous food; and if it be so, vegetable and sweet diet should be prohibited in order to permit of more perfect oxidation of proteids.

DR. SPENDLOVE said that he had ordered those vegetable foods that contained much nitrogen, with instructions to avoid those containing starch.

Stated Meeting, April, 29th, 1892.

F. BULLER, M.D., PRESIDENT, IN THE CHAIR.

Excision of the Wrist.—DR. JAS. BELL brought before the meeting a boy, aged 14, in whom he had excised the right wrist for tubercular disease of seven or eight months standing. He

had removed all the carpal bones (with the exception of the pisiform bone), the styloid process of the ulna, the articular surface of the radius, and the heads of all the metacarpal bones. The result has been very satisfactory. The boy has good movement of the distal and fair movement of the proximal phalanges. Dr. Bell remarked that of all the joints subject to tuberculosis which are excised, the wrist is the least promising. No matter how slight the disease may be, a partial excision is almost impossible, and when the disease is extensive the inflammatory condition about the sheaths of the tendons renders the hand useless unless very great care has been taken to exercise the hand. From all appearances, this case promises to be the best result he has yet obtained after this operation.

The PRESIDENT asked Dr. Bell if he apprehended any return of the disease in the joint.

DR. BELL did not think that it would return; but no matter how thoroughly the disease has been eradicated, there is a strong tendency towards its recurrence in some other part of the body.

Nine Cases of Severe Dysmenorrhœa Cured by the Intra-uterine Application of the Negative Pole of the Galvanic Current.—DR. A. LAPHORN SMITH read the following paper:—

On looking over the last six hundred cases in my note-books at the Montreal Dispensary, and my last four hundred cases in private practice, of diseases of women, and excluding all the women who have borne children, I find that the principal symptom for which I have been consulted by the remainder—that is, by all the non-parous single and the sterile married women—was dysmenorrhœa. Dysmenorrhœa is, of course, a symptom and not a disease, and used formerly to be divided by classical authors into five kinds, according to the cause on which it depended, namely—(1) neuralgic or sympathetic, (2) congestive or inflammatory, (3) mechanical or constructive, (4) membranous, and (5) ovarian. In Pozzi's new work, however, the author, very wisely I think, reduced this classification to two groups; according to whether the pains occur during the ovarian and tubal period (ripening of the follicles), or during the uterine period (expulsion of the menstrual blood). In other words, the pain is

either due to the appendages or to the uterus. Under the first class may be mentioned ovarian, congestion from whatever cause, varicocele of the pampiniform plexus, which is generally accompanied by chronic ovaritis, followed by atrophy of the ovaries, just as varicocele in the male is followed by atrophy of the testicle, also inflammation of the tubes and of the pelvic peritoneum covering the appendages, always followed by more or less exudation, which becomes organized and binds the tubes and ovaries down in abnormal positions, so that the tubes have to make spasmodic efforts in order to reach the ripe egg and to pass it down to the uterus. In other words, the peristalsis of the tubes is interfered with.

Under the heading of dysmenorrhœa of uterine origin we may put down everything which offer a mechanical obstruction to the expulsion of the blood, whether this be an organic or functional stricture, or whether it be due to an anterior or posterior flexion or to the blocking up of the canal by a polypus, a fibro-myoma, or merely by the mucous membrane of the uterus thickened by inflammation (endometritis). A recent writer, whose name for the moment I forget, states that out of one thousand cases of dysmenorrhœa, in over nine hundred there was undoubted endometritis. My own experience, although much more limited, fully bears out the correctness of this statement. In nearly all of my cases which required examination I found the uterus sensitive to the touch, there was backache, very often trouble with the bladder and rectum, a uterine leucorrhœa diagnosed by means of a dry tampon of sublimate cotton left for twenty-four hours against the os, and in a great many there were reflex disturbances, through the great sympathetic, of such distant organs as the stomach, heart and eyes. On passing the sound I have invariably found that as soon as its extremity reached the level of the internal os severe pain was caused, which these patients invariably stated was exactly similar to that which they suffered every month. On the other hand, I have seen so many cases of acute flexions without endometritis, in which there was no dysmenorrhœa, that the opinion has been gradually growing in my mind that it is only when the above-mentioned conditions are

associated with endometritis that they cause dysmenorrhœa. Moreover, my experience in the matter of treatment has been that in the majority of cases the most satisfactory results have followed the use of such measures as have been found to be most effective in curing endometritis, such as curing habitual constipation, removing other obstructions to the pelvic circulation, improving the circulation generally, improving the circulation in the pelvis by very hot douches and boro-glyceride tampons, rapid dilatation, curetting, with and without the intra-uterine tampon and with and without an intra-uterine stem, the external application of the galvanic current, the application of the same current with one pole in the vagina, against the uterus, and the other on the abdomen or on the sacrum as a tonic to the vasomotor plexus of the pelvis, and last, but most important of all, by the application of a mild galvanic current to the inside of the uterus by means of the ordinary uterine sound insulated to within two and a half inches of its end, and to the handle of which the negative pole of the battery is attached.

I have given a fair trial to all these methods in succession, with many cures and some failures, and I have come to the conclusion that the negative galvanic pole will cure endometritis and dysmenorrhœa when any and all of the above valuable measures have failed. It requires very little argument to prove that dysmenorrhœa is a symptom well worth curing; we all know that a great many of the unhappy inmates of the asylums are women who became opium eaters by the prescription of the physician who attended them for dysmenorrhœa, so that I only mention that form of treatment to condemn it. On the other hand, the condition is one which is exceedingly difficult to cure. Hear what Winkel says in his last work: "Dilatation of the uterine cavity, discision of the cervical canal, cauterization of the uterine mucous membrane with nitrate of silver, tannin, tincture of iodine and carbolic acid, curetting the uterus, scarifying its mucous membrane, and the application of leeches to the vaginal portion have all been recommended and used by the author. I have also had under my care the patients of colleagues who had likewise employed all these remedies, but also without avail. I have never seen a cure result from the sole use of these means."

In fact, the treatment of dysmenorrhœa has been hitherto so unsatisfactory that a great many sufferers have become convinced that it is incurable, also that their pain must be endured. In the majority of cases the physician is not sent for during the period, but if consulted at all, it is generally when the period is over, so that he has no means of estimating the amount of the pain in severe cases. From the independent description of it by a great number of women, I should judge that in many cases the pain is really terrible. In some cases which I have seen, the suffering seemed to be much greater than that caused by the first stage of labour, the young girl tossing wildly about on her bed and screaming with agony. I believe, as a rule, we underestimate what we call the physiological pains which women have to bear, but which are now no longer physiological but pathological. In the opinion of many gynæcologists and several general practitioners who have a natural tendency to "have at their patients with the knife," dysmenorrhœa is considered as a symptom quite severe enough to warrant them in performing a mutilating operation which is not always unattended with risk to life. Although the operation puts a stop to the periodical exacerbations of pain, it does not always cure the endometritis on which the dysmenorrhœa depended, so that the patient still has her backache and headache and other reflex nervous symptoms which she had before.

The treatment which I am advocating does not mutilate the patient, is absolutely without danger, requiring no anæsthetic, because it is absolutely painless if carefully carried out, and not only cures the periodical suffering, but at the same time improves the general condition, producing a feeling of well-being from the first or second application. As compared with other methods of treatment, I have found it immeasurably superior to them all. As I have already said, the treatment by narcotics should be out of the questions; we are all pretty well agreed that there is only one chronic disease which we are justified in treating with opium, namely, cancer. Treatment by extirpation of tubes and ovaries in which there is no organic disease is or should be also out of the question. Dilatation by tents and discission should also be

discarded, as they have been proven, even in the hands of the most careful, to be fraught with more danger than laparotomy. The only method of treatment which can at all compare with the treatment by galvanism is rapid dilatation with subsequent application of a mild caustic to the interior of the uterus, and drainage either with iodoform gauze or with a vulcanite or glass stem or tube so arranged as to remain for some time and to allow perfect drainage of the uterus. But even this comparatively safe method sometimes fails, and has therefore to be repeated. As will be seen by the report of one of my cases, I have performed this operation twice without affording more than temporary relief, namely, for only one period each time. Some of the New York gynæcologists recommend repeating the operation many times. This may be practicable with patients who have unlimited time and money, but is out of the question with the average patient here, even if the dread of operations did not offer a barrier to all further treatment after one or two failures. The treatment by negative galvanism does not require any but the mildest currents which can barely be felt, but which cause no pain. This is very different from its use in arresting the growth of fibroids, where the result is very much in proportion to the strength of the current and where galvanic punctures are employed by many. On the contrary, this treatment is actually less painful than the mere passing of the sound, as will appear from the following brief description of the method which I employ. After a careful bimanual examination for the purpose of excluding pregnancy and of ascertaining the position and condition of the pelvic organs, the vagina is disinfected by a douche if this has not already been done at the patient's home. An ordinary Simpson's uterine sound of large size is then bent to the ascertained curve of the uterine canal, passed through the flame of the spirit lamp, cooled and insulated with a clean piece of rubber tubing to within two and a half inches of its extremity, or less if we have reason to think that the uterus is undeveloped. In the handle of the sound a hole has been bored just large enough to hold the tip of the conducting cord from the negative pole or last zinc of the battery. The sound is then guided into the os

uteri on the tip of the finger until it meets with some obstruction, when a current strength of ten milliamperes is turned on. In a minute or two the obstruction will seem to melt away and the sound will glide into the cavity of the uterus. The current is now gradually raised until the patient says she can feel it in the uterus, generally between twenty and fifty milliamperes, being at once lowered on the slightest complaint of pain. At the end of five minutes the current is gradually turned off again, when the sound will be found to drop out of its own accord almost, and very much easier than it entered. This may complete the seance, or as an adjuvant and safeguard, a boro-glyceride tampon may be inserted. The patient may return home on foot and resume her duties forthwith, as such mild applications do not require any precautions in the way of resting, etc. The positive pole of the battery is attached to the ordinary clay abdominal electrode.

With these few preliminary remarks I will now report a few cases of dysmenorrhoea cured by this method.

Case 1.—Miss W. was sent to me 3rd June, 1888, by Dr. Reddy, with a uterine fibroid and enormous hypertrophy of the cervix. Her sufferings every month were unendurable. She had been employed as cook in a private family, but had to give up her situation, as during menstruation she was totally incapacitated. She described her pain as agonizing, her screams being heard all over the house. I gave her two applications a week from then till the 28th July of the same year, less than two months, when she reported that she had had a period absolutely free from pain. I continued to treat her for another month, but she has never had a painful period since, and was still menstruating regularly up to a few months ago, when I saw her last, in perfect health and doing all the catering and cooking for a large boarding house.

Case 2.—Mrs. D., a nullipara, 46 years of age, was brought to me in June, 1888, by Dr. Jeanotte. Menstruation was always painful, but became much more so since her marriage, growing worse and worse until for the last ten years she had to be kept under the influence of a hypodermic injection of morphine

night and morning for eight days every month. This had completely broken down her general health. The cervical canal was so blocked and tortuous that I was unable, after six sittings, to introduce the sound further than one and a half inches. I then turned on the current, when to my surprise the sound slipped in a distance of five inches. This was the first time I had observed what had been known already for a long time, that the negative current had a marked dilating influence on a stenosed canal. After sixty-five applications she was discharged cured of her fibroid and her dysmenorrhœa, and six months later Dr. Jeanotte reported to me that menstruation was regular like a healthy girl's and absolutely free from pain, never having had a dose of morphine since commencing the treatment. I have since heard that she has remained well ever since.

Case 3.—Miss B. Endometritis, menorrhagia and dysmenorrhœa cured by eight applications of the positive pole, which I employed in this case on account of the hemorrhage.

Case 4.—Failure with rapid dilatation repeated twice; cured by seven applications of negative galvanism. Mrs. T., aged 25, began to menstruate at the age of 12, was regular every four weeks, and lasted three days, but has always been from the very beginning terribly painful. She has been married two years, but has never been pregnant. I performed rapid dilatation a year ago according to Goodell's method, gradually extending the blades of his instrument during twenty minutes until they registered a distance of an inch and a half at the end of the blades in the uterus. The next period was even more painful, so before the next one I again dilated the uterus to the full extent of the instrument and endeavoured to introduce a glass stem pessary, but owing to the rapid and powerful contraction of the internal os I was unable to do so. In January of this year she returned worse than ever, and I therefore gave her an application of negative galvanism, with the result that the next period, which came on in a few days, was only half as painful and was the easiest she had ever had. After this period was over I gave her six more between this and the next one, with the result that her flow came on without her knowing it, and continued so for three days, absolutely without pain.

Case 5.—Mrs. G., aged 27, married five years, no children ; never pregnant. First curretted her early in March of this year. Menstruation had began at the age of 13, and had always been very painful, but has been much worse since her marriage. Uterus small and sharply flexed forwards and to the right. After five applications of about 25 milliamperes negative galvanism, next period came on without her knowing it. Uterine and peri-uterine tenderness greatly diminished, and she feels better generally than she has done for years. Still under treatment.

Case 6.—Mrs. O. While writing the history of the previous case a lady walked into my office to engage me to attend her in her confinement. I recognized her as an old patient, and on hunting her up in my old case-books I found her name and the following history. She came under my care in March, 1888, and was then 26 years of age, six years married, and never pregnant. She had been under the care of a surgeon for some time for dysmenorrhœa without benefit, but she only left him because he urged her strongly to have her ovaries out, and this she was reluctant to do, because it was the great ambition of her life to have a child. She had always suffered from dysmenorrhœa ever since puberty, but the suffering had become almost unendurable since her marriage, while locomotion and coitus were exceedingly painful. On examination, I found the left ovary enlarged, prolapsed and very tender, the uterus inflamed, and the cervical canal small and blocked with catarrhal secretion. Her periods were lasting eight to ten days. I applied fine wire faradism to the vagina with the bipolar electrode on the 19th, 22nd and 29th of March. Her next period only lasted two days, and the pain only lasted four hours instead of several days. On the 16th of April she had her first intra-uterine application of negative galvanism, the sound entering with great difficulty, but coming out very easily. The next menstrual period was almost free from pain, but I gave her negative galvanism again on the 2nd and 9th of May, 1888, after which I lost sight of her for two or three years, when I saw her on the stairs of the Woman's Hospital for a few minutes as she was on her way to visit a sick friend, when she informed me that she had not returned because

her periods had been absolutely painless ever since. I did not see her again until this afternoon, 20th April, 1892, when, as already stated, she came to engage me for her confinement, stating that she had had no pain with her periods or at any other time ever since. She is now five months pregnant, and says she never felt better in her life. She attributes her having become pregnant, ten years after marriage, for the first time, to the effects of the electricity—of course, combined with the effects of natural causes,—and although even if this be denied, this case is one more to add to over a hundred others published of women conceiving after having gone through Apostoli's treatment, contrary to the preposterous claim of Danien and others that Apostoli's method condemns the patient to sterility.

Case 7.—Miss X., a most charming young lady of 26, and a great society favourite, came under my care a year ago, when, at the request of her physician, I performed rapid dilatation. The following is a brief outline of her case. She began to menstruate at the age of 16, and though not regular the first year, became so after that, the flow generally lasting eight days. For the last four years her periods have been terrible during four days out of the eight in every month, so much so that she has had to remain in bed the whole of that time, and she hardly recovered from the prostration caused by one period before the next one was due. At the operation I found the uterus very long and anteflexed; I took half an hour to dilate it up to one and a quarter inches, and painted the canal with iodized phenol. At the first period after the operation the pain only lasted three hours instead of four days, but at the second period the pain lasted two whole days; the third period was entirely free from pain; the fourth and fifth were almost painless, but the November, December and January periods were so painful that she had to go to bed for two whole days. I ordered dioviburnia for the three days preceding the February period, during which she only had one whole day of pain. As she was becoming discouraged I decided to try the negative galvanic pole in the uterus, so between this and the next period I gave her four applications of 30 milliamperes without causing any pain except

for a moment while the sound was passing over the internal os. The result was that the March period caused her only two half hours of pain. Between this and the next period she had four more applications, the April period coming on without her knowing it, while she was at a party. The flow this time was steady and not in gushes, and was not dark and clotted as before. I think she is cured, but I intend to give her one more application a few days before the next period is due.

Case 8.—Mrs. G., a lady from Three Rivers, 27 years of age, married seven years, but never pregnant, consulted me on 3rd February, 1892. She had first menstruated at 13, always normally until after her marriage, since when the periods have become prolonged to eight days, scanty and exceedingly painful, and accompanied with the expulsion of pieces of skin after strong bearing down cramps. I at once commenced treatment by galvanism, and gave her in all eight applications between the 3rd of Feb. and the 18th of March, with the result that there was very slight pain with the February period, and absolutely none whatever with the March one. Neither were any membranes passed with the latter.

Case 9.—Mrs. B., aged 28, married six years, never pregnant, consulted me on the 22nd January of this year for dysmenorrhoea. Menstruation had begun at the age of 13, and had only been painful occasionally, always regular, and lasting three days. Since marriage it has always been very painful, and she has suffered from dyspareunia. On examination, the uterus was found sharply anteflexed and very sensitive to touch. Previous to connecting the battery to it the sound could not be passed owing to the exquisite pain and spasmodic contraction of the internal os. But on connecting the negative pole to it and turning on 15 milliamperes it easily glided in a distance of two and a half inches. From the 22nd to the 29th January inclusive she received four applications, 25 to 40 milliamperes negative, with the result that she told me on the 29th Jan. that she was now able to sleep all night, and that the pain in the pelvis was about half as bad as before. On the 2nd February she informed me that she had had a period with half the usual amount of pain.

During February she received five applications, with the result that her March period was absolutely free from pain, although she had a heavy feeling in the pelvis which warned her that it was coming. During March she only received two applications, but her April period came on without her knowing it, or being prepared for it, while she was out walking. She stated that it was absolutely free from pain or even discomfort. I gave her two more applications and discharged her cured.

I shall not try your patience with any more cases at present, although I could give a great many more, several of them followed by pregnancy. I could also report several other cases in which rapid dilatation failed at first, but succeeded after a second dilatation combined with the introduction of a glass or rubber tube. But enough has been said to convince you, I trust, that this is the easiest, safest and most satisfactory method of treating dysmenorrhœa we have ever possessed. At any rate, I maintain that the treatment by mild intra-uterine negative galvanism should be tried before and not after other means, as in that case the latter would seldom or never be required. Please take notice that some of these cases were treated nearly four years ago, and have remained well ever since.

Discussion.—DR. F. W. CAMPBELL thought that the paper was of much interest. He recently had some experience in the use of vibernum. In one case, a lady, who suffered much from dysmenorrhœa, had, after a short time, experienced most marked relief from this remedy. He knew that great benefit was to be derived from the electrical treatment, and if Dr. Smith's claims are true, it should always be tried.

The PRESIDENT had found that the negative pole, instead of acting as a sedative, was a powerful irritant, and asked what battery and galvanometer Dr. Smith used.

DR. J. E. MOLSON asked if dysmenorrhœa was due to endometritis, would Dr. Smith attempt to cure the endometritis by electricity or by some other method, using the galvanism only if the dysmenorrhœa continued?

DR. SMITH replied that the battery he had been using consisted of sixty cells of Laclanché's pattern, and were changed

every few months ; recently he had put in sixty Law telephone cells. The current from all the cells passes through a water rheostat, by which the strength is regulated. The galvanometer he used was of Gaiffe's make, as he considered that it was the only one to be relied upon. As to the negative pole being an irritant, he thought that it all depended upon the size of the electrode, that used by Dr. Buller being a very point, while the one he used was the large clay electrode suggested by Apostoli, and under such conditions he considered the negative pole sedative. Many gynæcologists treat endometritis by the galvanic current, and think it immeasurably superior to any other form of treatment.

Stated Meeting, May 13th, 1892.

F. BULLER, M.D., PRESIDENT, IN THE CHAIR.

Gunshot Fracture of the Skull. — DR. JOHNSTON exhibited two extensively fractured skulls, — the first from a man who had been found dead a few weeks before under suspicious circumstances, there being a gunshot wound of the left orbit, the course of the shot being upwards and outwards to the vertex. A partial autopsy had been performed by a physician, who thought that the fracture of the skull had been produced by external violence in addition to the gunshot injury. Dr. Johnston had been called upon to make a second examination, and came to the conclusion that the gunshot was quite sufficient to produce the fracture. He had searched the records of gunshot injuries, but had found no mention of such an injury under exactly similar circumstances, for though the skull was very extensively fractured there was no scalp-wound. He was able to produce a like condition experimentally. A dissecting-room subject was selected, and the gun found beside the deceased was used, the charge of powder and shot being measured by the measure in the flask found on the body. The gun had been fired into the left orbit from a distance of about three feet, and the fracture produced imitated closely in nature and extent the original case, though much more severe owing to the differ-

ence in the thickness of the skulls. A peculiarity in both cases is the tendency to separation of the sutures, that of the sagittal and coronal being most marked. There is a branched fracture extending anteriorly through the frontal bone, and one through the parietal bone on the right side. A most interesting feature was the absence of any tendency for the fracture to spread through the base. A blow on the vertex will usually produce a fracture of the base, but in both the cases, with the exception of a fracture through the ethmoid and lesser wing of the sphenoid, the base was entire; this is readily explained by the direction of the force of the blow, which was from below upwards. The distribution of the fractures was so similar that he had no doubt that a shot fired from the deceased's gun at a distance of two and a half or three feet was quite capable of producing such an injury without inflicting other signs of violence. The grains of shot had been much scattered through the brain, extending over an area of eight square inches, but none penetrated the bone.

Microscopical Sections.—DR. McCONNELL exhibited sections of sarcoma of the skin removed from the forehead of a man aged 65. The tumour had been growing for some years, and was not painful; there had been no change in colour, but vessels were seen coursing over it. It was so very soft that Dr. McConnell thought at first that it was a lipoma, but on microscopic examination it proved to be a round-celled sarcoma. There was little or no connective tissue between the cells, and very little pigmentation.

Dr. McConnell also exhibited a section from a tumour of the breast removed by Dr. Reddy, and which showed all the microscopic characters of schirrus. The patient was 30 years old. The whole breast was involved, but the nipple was not retracted. He also exhibited a very typical section of epithelioma removed from the hand of a patient aged 40. A wart had appeared on the back of the hand about ten years ago, and an attempt was made to destroy it; three years ago it took on rapid growth, which had spread all over the back of the hand, it having a fungoid appearance with an indurated base and everted edges. Dr. Armstrong had removed the hand.

DR. SHEPHERD thought that the first specimen was not a true sarcoma of the skin, but a sarcoma secondarily involving the skin. In cancer of the breast, retraction of the nipple is not now looked upon as such a constant feature as it was formerly, for surgeons operate earlier before the breast becomes so seriously involved as to produce this appearance.

Nephrectomy.—DR. SHEPHERD exhibited the kidney from the patient from whom he had previously removed a large branched calculus.* He, at the time, thought that he had removed all the calculus, and the patient did well for some time, but in about six weeks she began to have elevated evening temperatures and pus began to run from the wound. No blood or pus was ever found in the urine, which led him to think that the ureter was occluded and that the kidney would shrivel up. The patient gradually got worse and he decided to remove the kidney. At the operation he found a tremendous amount of inflammatory tissue, which was due to the previous operation, the hilum was imbedded in tissue two inches thick, and several supernumerary vessels had to be tied. The kidney consisted of a number of sacs, only a small amount of kidney substance remaining, and several small calculi were found. The ureter was distended to the size of the thumb, and a probe could pass down but two inches. This cavity was thoroughly scraped and packed with iodoform gauze. In his other cases of removal of the kidney Dr. Shepherd had found that at the time of the operation the other abdominal contents immediately filled up the space from which the kidney had been removed, but in this case, owing to the amount of cicatricial tissue, this did not occur. In the first report of the case Dr. Shepherd said that he had been led to prefer removing the stone and free drainage to complete removal of the kidney, but he now doubted his conversion and still adhered to his old opinion, that a very much disorganized calculous kidney should be removed.

Arterio-Sclerosis.—DR. FINLEY exhibited a fibroid heart and DR. G. T. ROSS read a paper on Arterio-Sclerosis, based upon the case from which the specimen had been taken. (See page 895.)

* Montreal Medical Journal, Feb. 1892, page 604.

Discussion.—DR. F. W. CAMPBELL had been greatly interested in the paper. Arterio-sclerosis has claimed more attention within the last few years than ever before. It is unfortunate that there are so few indications of the presence of this serious disease of the blood-vessels. He was especially struck with the remark that though the superficial vessels may show indications of the disease, yet the interior vessels may be healthy and *vice versa*; this is a most important point in connection with life insurance. A few years ago he had placed a very large sum of money on the lives of four men, and during that summer one of the four was stricken with apoplexy. A most careful examination had been made of all the superficial vessels, and they were all in a perfectly healthy condition, yet some deep vessels in the brain must have been diseased.

DR. FINLEY said that the case before the Society fully bore out Dr. Campbell's statement. No one could have rejected the man for life insurance; his peripheral vessels were quite sound, the changes seemed to have picked out the coronary arteries only in a peculiar way.

DR. G. T. ROSS said that he had not mentioned tobacco as a cause of this change, by raising the arterial tension. This patient was in the habit of smoking many strong cigars in the day.

DR. F. W. CAMPBELL thought that if tobacco was a cause, it must be in persons in whom exist the peculiar type of tissue that predisposes to the disease.

DR. JOHNSTON said that bleeding was very beneficial, and seemingly fatal attacks may be averted by it. Dr. Laflour had recently published some cases on this subject. He (Dr. Johnston) remembered having seen Dr. Bell bleed a man in the hospital, and the seeming corpse revived and spoke and lived three days. At the autopsy an extensive sclerosis of the vessels was found.

DR. McCONNELL said that he had seen it stated that all men over 30 should be careful how they over-exerted themselves, and for physicians to advise persons known to have this disease to be especially careful was a most important point in treatment.

DR. G. T. ROSS pointed out that Dr. Osler has extracted 15 to 20 ounces with marked benefit, but he thought that this should be done only in selected cases.

An Inquiry into the Causation of Local Motor Paralysis after Poisoning by Charcoal Vapour.—DR. BRUERE then read a paper on this subject, which will be found on page 905.

DR. JOHNSTON asked if these local paralyses followed other substances, as pyrogallic acid, potass. chlorat., potass. bichrom., all of which produce met.-hæmoglobin. He had administered these drugs to dogs and other animals without noting any recognizable paresis. In horses with hæmoglobinuria, paralysis of the hind legs and retention of urine has been noted. Did Dr. Bruère consider the action specific or due to deprivation of oxygen?

DR. BRUERE did not think that the paralysis was due to any specific action.

Selections.

Gunshot Wound of Abdomen. (Reported by M. Cerné of Rouen.)—A man, 19 years of age, received a bullet from a revolver in the abdomen eight hours after his last meal, and was brought two hours later to the Hotel Dieu. The house-surgeon contented himself with disinfecting the wound and closing it with flexile collodion. I did not see the patient until the following day, twelve hours after the accident, and found a wound, small and blackened, situated two fingers-breadths below the false ribs on the right side. The abdomen was not painful, but distended, the general condition good. At eight o'clock the patient had vomited; temperature 29.2 (84.6°F). I made the diagnosis of penetrating wound of the abdomen, and at once performed the operation of median laparotomy. A careful examination of the viscera disclosed a perforation of the stomach, two double perforations of the transverse colon, and two double perforations of the small intestine, which latter was also grazed. All the lesions were covered with recent false membrane (lymph). In the right flank was some reddish, suspicious-looking fluid. The wounds of the intestines and stomach were sutured with fine silk and the abdominal cavity washed out with very hot boracic

solution. The intestines were returned and the abdominal wound sutured and dressed with iodoform. The operation lasted two hours and the patient was revived with difficulty. The future course and treatment was very simple. Between the 2nd and 5th day the temperature mounted to 38.6° ($101\frac{1}{2}^{\circ}$ F.) without any signs of peritonitis. A purgative was then given. After the 6th day the temperature did not go above 37° (98.6° F.). On the 5th day the patient sat up for the first time, and left the hospital about twenty-one days after the operation. I wish to call attention to the fact that the operation was performed twelve hours after the injury was received and after peritonitis had supervened. This case shows that surgical interference may be successful although delayed. As a diagnostic sign I attribute great importance to abdominal tympanism, which nearly always indicates a perforation of the intestine. In one case of simple contusion of the abdomen, in which, in spite of tympanites, I did not operate, the patient succumbed to peritonitis from perforation.—(*La Tribune Médicale*).

The Translucency of Solid Tumours.—

Dr. Poncet (*Bulletin de l'Académie de Médecine*) has recently called attention to the fact that translucency is not a characteristic of fluid tumours only, but that this property is shared by certain solid formations. Thus he had noticed translucency in four cases of lipomata of the hand, forearm and axilla, in chondromata of the bones and soft parts, in fungous synovitis, in dermoid cysts with solid contents, etc. It follows from these observations that the mere translucency of a tumour is no positive indication of its fluid character, and can therefore be regarded as only of comparative diagnostic value. But even in cases where there is no doubt as to the presence of a fluid accumulation, the fact that it is translucent does not throw much light upon its nature. The contents may be more or less turbid or more or less admixed with blood, without arresting the passage of the rays of light. Dr. Poncet has observed this several times in cases of hydro-hæmatocele and other cysts with bloody contents, and in a case of hæmatoma of the ear upon which he

operated the tumour was entirely translucent. He thinks, therefore, that the translucency of a tumour depends chiefly upon its size and especially upon its thickness.

—G. Frank Lydston, M.D., in a clinical lecture reported in the *Medical and Surgical Reporter* of Philadelphia, mentions a case of syphilis which is important from a legal standpoint. He says: "The patient, a woman of about 40 years of age, who, as you see, is a stout, healthy-looking individual, was referred to me by a prominent physician as a case of syphilitic infection, probably due to unclean instruments in the hands of a respectable physician of this city. The history of this patient is as follows. Six weeks ago she consulted her doctor for treatment for sore throat, which had then lasted for a week. The doctor, she said, told her that she had pharyngitis and enlarged tonsils, and made some applications to her throat, using, as she expressed it, 'an old brass thing' which hurt her tongue and made it sore for several days. One week later she says she noticed an eruption on her body. She denies any local trouble and declines any examination." The patient had a typical syphilitic eruption on the skin, and also mucous patches in the mouth and throat. The short time (one week) between the examination by the physician and the appearance of the rash exonerates the physician completely. This case illustrates the necessity of carefully fixing the dates of infection and eruption before giving an opinion as to the cause of infection.

THE
Montreal Medical Journal.

VOL. XX.

JUNE, 1892.

No. 12.

THE MEDICAL ASPECT OF THE CORONER'S
OFFICE.

The memorial recently presented to the Quebec Government by the Medico-Chirurgical Society of Montreal deserves careful consideration from the medical profession throughout Canada, as the state of affairs now complained of in Montreal probably exists to a greater or less extent in other parts of the Dominion. A recent amendment to the Quebec statute, which, with a view to economy, limits the coroner to the investigation of those cases where a sworn deposition of foul play, etc., has been made, can scarcely be said to improve matters. If the coroner is constantly made to feel that he is more likely to be blamed for holding an inquest, than for allowing a suspicious death to pass unchallenged because those in possession of the facts, (who may possibly know more than they care to admit) do not come forward with sworn evidence, the whole object of the coroner's court is defeated. That a Crown officer in the regular performance of his duty should have to choose between being censured by the Department for extravagance or criticised by the public for neglect of duty, is a state of affairs which can scarcely be said to conduce to that calm or judicial frame of mind which we have a right to look for in an officer charged with such responsible duties.

In Montreal, there is no complaint of too many inquests having been made, but a striking feature of the average coroner's inquest has been the totally inadequate nature of the medical evidence adduced. This is less the fault of individuals

than the natural result of a bad system. It is not every physician who can perform a medico-legal autopsy properly, and even a skilled pathologist could hardly feel himself competent to undertake a difficult case if he had not an extensive experience in medico-legal work. No one can predict which cases will be easy and which difficult, and the plan of allowing the coroners to select at random physicians who may or may not have any special fitness for the work is likely to defeat the ends of justice. The evil results of this off-hand selection of a physician are two-fold. First, coroner's autopsies are done by those who had better have left them alone; and, second, those who might with practice become experts do not get opportunities to acquire special skill.

The idea that by appointing a physician to the post of coroner he would be able to save the expense of autopsies in many cases is a fallacious one. A coroner cannot legally perform his own autopsies, and if he could, it would distract his attention from the judicial side of his duties. There is no more need of medical coroners than there is of medical judges or medical magistrates. The coroner has to decide, not on the *medical*, but on the *forensic* aspect of the medical evidence, and the plan of encouraging coroners to dabble in medical matters proper is most undesirable. That the coroner should be part doctor and part lawyer is impossible in practice, however fine it may seem in theory, as no one man could have a thorough grasp of the details of both medical and legal work. If he were a good lawyer he would probably be a poor physician, and *vice versa*. The recommendation made by the Medico Chirurgical Society of Montreal seems to be the best way out of the difficulty in the case of large cities, and by ensuring that the medical work in coroners' inquests is carefully done in all cases, the duties of the coroner would be purely judicial.

The autopsy forms the most urgent part of a coroner's inquest, and should not be omitted in any case where there exist grounds for holding an inquest at all. The practice of endeavouring to induce physicians to make positive statements as to the cause of death when no autopsy has been performed is the cause of at

least three-fourths of those absurd and inconsistent deductions on this head which so often make the findings of coroners' juries the laughing-stock of the public. The practice of allowing juries to decide that an autopsy is unnecessary is most injudicious, as, later on, facts may come to light which give a new aspect to the case, and unless an autopsy is made a few hours after death the results obtained are usually unreliable and worthless. The Department should clearly understand that a jury is not in a position to decide that an autopsy is unnecessary, and it is far wiser to make ten autopsies which might be dispensed with than to omit one which should have been done.

By employing a specially qualified expert as coroner's physician, as recommended in the memorial of the Medico-Chirurgical Society, the Government would be adopting a practice which has now become universal in large cities in nearly all civilized countries, particularly in France, Germany and the United States, and one which has hitherto given most satisfactory results.

A matter which is worthy of mention in this connection is that our statutes regarding the holding of inquests give no instructions as to the technique of autopsies. In France and Germany the directions on this head are made so clear and explicit that without wilful negligence it is almost impossible for an intelligent physician to make a serious error in procedure or to omit any point of great importance.

We hope that while dealing with this question the Government will prepare a statute by which the duties of the physician in doing autopsies shall be explained with the same care and precision as in France and Germany. By having an authorized system of technique to guide them, the physicians called upon to perform autopsies would be in a position to do better work.

RESOLUTION REGARDING CORONER'S PHYSICIAN.

On Wednesday, the 8th inst., a deputation representing the Medico-Chirurgical Society of Montreal waited upon the Attorney-General of the Province of Quebec and presented

the following memorial on behalf of the members of the Society:—

“At the regular meeting of the Medico-Chirurgical Society of Montreal, held on Friday, May 27th, 1892—the President (Dr. Buller) in the chair, and forty members present—the question of appointing an expert for performing autopsies ordered by the coroner was discussed. The very inefficient and unsatisfactory manner in which, with a few memorable exceptions, such coroner’s autopsies have been performed has been a subject of regret to all who desire to see this important work carried out in a satisfactory manner. It has been felt by members of the medical profession of Montreal that the ends of justice have been more than once defeated by the unsatisfactory way in which the work has been done. In most of the cities of the size of Montreal a thoroughly competent person with special training performs this work, and it is felt that the time has come when the city and district of Montreal should have the advantage of such special skill.”

The following resolution embodying these views was moved by Dr. T. G. Roddick, seconded by Dr. W. H. Hingston, and carried unanimously:—

“Whereas, the city of Montreal is without a properly qualified expert to perform autopsies for medico-legal purposes; and

“Whereas, the present system of allotting coroner’s autopsies to the physician most readily accessible at the time is such that it is impossible for any one physician to acquire the experience necessary to become an expert; and

“Whereas, the system adopted in European and most American cities allotting all medico-legal autopsies to a specially qualified coroner’s physician has proved highly satisfactory;

“Resolved,—That the Government of the Province of Quebec, and hereby is, petitioned to appoint some capable physician thoroughly skilled in post-mortem work to act as coroner’s physician for this city, and to perform all autopsies for medico-legal purposes within the city and district of Montreal.

“F. BULLER, President,

“KENNETH CAMERON, Secretary.”

ASSOCIATION OF MEDICAL OFFICERS OF THE MILITIA OF CANADA.

The first annual meeting of this Association was held in the Canadian Military Institute, Toronto, on the 3rd inst., the President (Dr. F. W. Strange) in the chair. Among those present were Drs. C. S. Ryerson (secretary), A. A. Dame, W. T. Stuart, Baldwin, Moore, Elliot, Orton, Preston, Osborne, Rennie, Leslie, Rice, McWilliam, Saunders, McCrimmon, Grasset, Warren, Raikes, King and Clark.

After the constitution and by-laws, which were submitted by the secretary, had been adopted, the President delivered his address to the Association. He said: For the past twenty-six years, during which the militia of Canada as at present organized has existed, the medical officer of a battalion has been but a regimental unit, and one of the objects of the formation of this Association was to draw these regimental units out of their retirement, and by binding them together to give them their proper position in the military history of the country, and to impart an interest and increased efficiency in the work in which they were engaged. The status and rank of the regimental medical officer also needed some consideration. The medical officer should be an officer in the ranks the same as any other officer, and length of service should be considered in his promotion as is done with the militia officers. Let us have surgeon-captains, surgeon-majors, etc., and the officers promoted according to length of service and qualification, and the injustice of chance will no longer assist the officer in obtaining his proper position in the militia. The most important object in the formation of the Association was the purely professional aspect. The reading and discussion of papers on topics relating to military medicine, surgery and hygiene has received no attention in Canada, and the contribution of papers on military matters will always be one of the main features of this Association.

Dr. Warren then read a paper on "Ambulance Work during the Franco-Prussian War," and Dr. Daniel Clark, once Inspector of Surgeons in the United States army, contributed a very interesting paper on "Some Brain Wounds, with results."

In the evening a smoking concert was held at Dr. Ryerson's

residence, to which all the officers of the Toronto Garrison were invited to meet the Association.

The ambulance drill competition was necessarily postponed owing to the heavy rain.

At 10 A.M. next day the Association again met, and after a paper had been read by the secretary for Dr. Canniff on "Experiences of a Surgeon during the American War," the Association proceeded to general business and election of officers, with the following result:

Hon. President—Surgeon-General Bergin.

President—Surgeon F. W. Strange.

Vice-Presidents—Ontario, Surgeon V. H. Moore, 41st Brockville Rifles. Quebec, Surgeon T. G. Roddick, 1st P.W.O. Rifles, Montreal. New Brunswick, Surg.-Major Connell, 67th Batt. Nova Scotia, Surgeon D. A. MacGillivray, 94th Highlanders. Prince Edward Island, Surgeon Jenkins, Garrison Artillery. Manitoba, Surgeon G. T. Orton, 90th Winnipeg Rifles. British Columbia, Surgeon Duncan, R.C.A., Victoria.

Treasurer—Surgeon Tracy, 49th Hastings Rifles.

Secretary—Surgeon G. Sterling Ryerson, R.G., Toronto.

It is likely that the Association will hold a special general meeting at Ottawa in September during the meeting of the Canadian Medical Association in that city.

Personal.

Drs. Roddick and Johnson-Alloway leave for Europe about the 1st July, and will be present at the meeting of the British Medical Association. They will be absent for two months.

We heartily congratulate our esteemed colleague, Dr. A. D. Blackader, Professor of Materia Medica and Therapeutics, McGill University, on his recent election to the distinguished position of President of the American Pediatric Society.

Dr. W. H. Hingston, Professor of Clinical Surgery, Laval University, sails by the "Parisian" on the 24th instant, to be present at the meeting of the British Medical Association at Nottingham, where he will deliver the address in Surgery. The profession in Canada cannot fail to appreciate the great

honour thus conferred on one of their number. We again congratulate our esteemed confrère on the proud position he is about to occupy.

Medical Items.

—Henry W. Berg, M.D., in *Medical Record*, No. 1125, page 604, reports a case of lateral curvature of the spine with myelitis from pressure. He also says that the atrophied and degenerated condition of the muscles on the convex, and even on the concave, side of both primary and secondary curvatures, is not the result of disuse or hyperactivity, as the case might be, but of organic affection of the trophic and motor centres of the cord.

—Dr. T. Ridgway Barker, in a paper read before the Philadelphia County Medical Society entitled "Does Organic Disease of the Heart preclude the use of Chloroform in Parturition," sums up as follows: "Chloroform by inhalation can and will, if properly administered, save the lives of parturient females, suffering from organic disease, when death seems imminent from over-stimulation of its ganglia through reflex nervous action. Organic heart disease, then, does not preclude the use of chloroform in labour, but rather is a condition calling for its careful administration."

THE USE OF VASELINE.—Dr. Novotny warns against the use of vaseline as a lubricator for sounds and other instruments introduced into the bladder, as he has twice found this insoluble vaseline serving as a nidus about which a mass of detritus had collected, and giving opportunity for the deposit of urinary sediment. In one case the quantity of detritus thus massed together upon a quantity of vaseline weighed ten grammes.—*Memorabilien*.

FOWL LANGUAGE.—The *Boston Med. and Surg. Journal* says that M. de Haudray, following the method of Prof. Garnier's studies of the Simian language, has carried his phonograph into the hen coop. He places it in one hen-house where the "family" are at home, and when the receiver has been cackled into for half an hour it is taken away, and made to repeat all the gossip in a neighbouring hen-coop. The results of the

experiments are said to be marvellous, and the Académie des Sciences is awaiting a lecture on the subject with the greatest interest.

GLYCERIN IN THE TREATMENT OF BURNS.—Grigorecu (*Répert. de Pharm.*, February, 1892) recommends the treatment of burns by means of pure glycerin. Several drops are applied to the burned part and gentle friction is employed. At first a sense of smarting is perceived, to which a sort of anesthesia succeeds. The inflammation seems thus to be averted; in addition, the desquamation of the epithelium takes place little by little, and the resulting cicatrix is less marked than otherwise. The burned part is to be constantly kept moistened by the glycerin.—*Journ. de Méd.*, 1892, No. 11.

HOT BATHING IN JAPAN.—In hygienic matters the Japanese have everywhere a habit which may have a lesson for us. In their nightly bath and morning wash the water is never cold, never warm, but always as hot as it can be borne. To foreigners this habit seems very surprising, but the most inveterate Englishman, if he stays in the country long enough, abandons his cold tub in its favour. The cold-taking, which it is suspected must follow it, is found not to occur if the water has been hot enough. This heat is maintained by a little furnace beneath the bath. In the bath the bather or bathers take a prolonged soaking, the washing proper being done on the bathroom floor; then follows a second and final soaking, drying with towel, and a lounge in bathing wrapper. This habit seems to promote softness and suppleness of the skin, and by persons inclined to rheumatism is soon found to be altogether preferable to the cold bath in every particular. The poorest of the Japanese hear of a cold bath with amazement, and would be sure the man who used it must be a barbarian. With respect to the superiority of the hot bath over the cold, I have come to find that in my own case certainly the Japanese are right.—*Dr. Benjamin Howard in the Lancet.*

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