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THE
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THE
MONTREAL MEDICAL JOURNAL.

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No. 1.

Original Communications.

ON THE ETIOLOGY AND SYMPTOMATOLOGY OF GOITRE.*

BY

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The persistent and recognisable enlargements of the thyroid gland which we classify under the name of Goitre or Bronchocele, are from almost every aspect a pain to the pathologist, even if like so many human ills to so many patients, an interesting pain. He knows not their cause: when he comes to study them histologically, the changes they present are bewildering in their manifoldness: his medical and surgical colleagues have provided him—perhaps it would be more courteous, if not more correct, to say, can provide him—with singularly few data whereby to recognise different forms of disease associated with different anatomical lesions, and so to establish a useful classification; while when symptoms are present the explanations he can offer as to the mode of development of the same, are such that he has found it hard even

* The following address has had a somewhat checkered career, nor do I feel that I can well publish it in these pages without a word or two of explanation. In its first form it began to develop itself as one of the opening addresses in the discussion upon "Goitre," held by the Montreal Medico-Chirurgical Society upon June 12th, 1899. At that period I felt so uncertain about the conclusions I had reached that the latter half of the address was not committed to paper save in the form of rough notes, simply because it would not work itself out to my satisfaction. In this incomplete form I had an excuse for not publishing it in this JOURNAL, but when during the autumn the clamour of the Editor became so persistent that I had to take up the address for publication along with the other proceedings of the Society in question, then upon settling down to the matter I had to all intents and purposes to rewrite the first portion of the address, and then also I came to conclusions with regard to the second portion much in advance of those given at the Medico-Chirurgical Society. Thus in its totally revised form I delivered the address as a "clinical lecture" at the Cook County Hospital, Chicago, Nov. 30th, 1899. Under the circumstances, as this originated in an address given before our Society, Mr. Malcolm Morris, Editor of the *Practitioner*, has very kindly consented that it should appear in this JOURNAL coincidentally with its appearance in his

to convince himself that they are correct. If he ascribes them directly to the local enlargement of the organ, he can in the majority of cases find no absolute relationship between the size of the goitre and the extent of the symptoms, if to aberrant or excessive action of the gland, then again he can make out no sure relationship of the size and rate of growth of the goitre to the extent of the symptoms; while, if he looks beyond the gland to some constitutional disturbance leading at the same time to the goitrous enlargement and to these other symptoms, he finds himself in the *impasse* of not being able to state with any certainty what that constitutional disturbance can be.

Yet this very fact that he is so painfully ignorant about the subject does, it must be confessed, stimulate curiosity. Indeed, an obscure disease is to the pathologist what a virgin peak is to the mountaineer, and medical men will continue to attempt to solve the problem of the causation of such obscure diseases with untiring zest until the labours of many lead to some one finding the solution. To-day we shall not scale the peak: I can but point out to you what would seem the right path to take in order to reach the summit, and, cutting a few steps at the bottom of the ascent, may make that ascent a little more possible, a little less toilsome.

Here in connection with the *causation* of goitre the theories that have been suggested are legion: merely to enumerate them would far more than take up all the time at my disposal this morning. In Switzerland and England it used to be popular to explain goitre as due to some subtle influence brought about by life in mountainous regions, but our Island of Montreal can scarcely be spoken of as anything but a rich alluvial plain with one old volcano very much the worse for wear cropping out of one small portion thereof. And yet the district is so goitrous that in some of the French-Canadian villages but a few miles from Montreal, scarce a family is to be found that has not one or more goitrous members. Then, too, the carrying of loads upon the head has been called a cause, but rural Montrealers do not carry loads on their heads, nor do animals do this—horses and dogs; yet they are found similarly affected.

Again, the geographical conformation of the country has been regarded by many as explaining the relative frequency of the condition. Bircher has especially upheld this geological theory, if I may so term it, of goitre. In Switzerland, for example, he has pointed out that goitre is almost limited to Silurian and Devonian formations and to the Carboniferous and Permian deposits; Johannessen has reached practically the same conclusion in Norway. In England Berry finds goitre only where there are chalk and sandstones of Triassic develop-

ment, while it is absent where there are eruptive rocks. Bircher comes to the conclusion that goitre only occurs where there are deposits, more especially marine deposits, of the palæozoic age; whereas where the rocks have been modified by internal heat and where the various deposits are of fresh water origin, there is absence of the condition.

There is a wide field for more thorough study of the geological incidence of goitre upon this continent. It is certainly remarkable, looking at a geological map of Canada, to see how the main goitre areas conform to the Silurian and Devonian deposits. From the peninsula of Ontario right down to Quebec the St. Lawrence valley on either side is mainly Silurian, the limestone deposits being only broken at the Thousand Islands, where a band of older Laurentian rock cuts across.

Further information is required as to whether goitre occurs in the Laurentians to the north (which, while of fresh water origin, are greatly modified by heat). In discussing with Dr. Adams, our Professor in Geology, and pointing out to him that according to my colleague, Dr. Springle, cases of goitre are occasionally met with occurring along the north bank of the St. Lawrence, even as far as Labrador,* he called my attention to the fact that occasional deposits of limestone were to be found here and there throughout that extensive Laurentian area, from Quebec onward towards the sea, and that notoriously wherever the limestone is present the districts are more fertile and there especially people tend to settle. Hence, if we do come across occasional goitre in the Laurentian area, very careful study has to be made of the deposits before it can be definitely stated that the disease occurs in areas purely Laurentian or over these later rocks. Thus there is an interesting opening for individual or collective investigation with regard to the distribution of the disease upon this continent, special attention being given to the geological formations over which the condition is frequent. Certainly with regard to Bircher's work, Kocher has brought forward evidence to show that his results are not wholly correct.

That the water habitually drunk has to do with the development of goitre is generally accepted, but *what* it has to do is still a matter of very considerable, nay, absolute, doubt. Certain wells, so-called goitre wells, appear especially to afford water, which, when drunk leads to enlargement of the thyroid and typical goitre. To the existence of these wells the Swiss more especially have called attention, and Kocher is a strong adherent of this connection between the water drunk and the development of the condition. Bircher gives an example of a village in the Aarau, Switzerland, which was at one time markedly goitrous, and which in 1884 put in waterworks, obtaining its water from a goitre-free region

* Vide Dr. Springle's article in the last number of this JOURNAL, p. 909.

on the other side of the river Aar. As a result, the percentage of cases of goitre among the school children in the village, diminished as follows:

In 1885, 58% affected ; In 1886, 44% affected

In 1889, 25% affected In 1895, 11% affected

Other examples almost as strong as this can be collected showing the relationship between the drinking water and endemic goitre.

As to what in the water leads to the disease, observations have so far led to negative results. The presence of chalk and magnesia has often been suggested, but numerous wells and waters rich in chalk and magnesia are found unassociated with goitre, and some of these, indeed, are found when drunk to be beneficial and to be associated with diminution in the size of the enlargement. Several notorious goitre wells are completely free from these substances. The same is true with regard to waters containing sulphate of iron and copper, while feeding animals with various salts and metals has never been found to lead to the development of the condition. Of minerals, iodine has more especially of late years been suggested as associated with the condition, for Baumann's observations have shown the remarkable iodine-containing body present normally in the colloid substance of the thyroid. But even with iodine, there are several valleys and regions where the water is rich in it and yet goitre does not occur, and contrariwise iodine free springs are more common throughout the world than those containing iodine, and the majority of such springs are unassociated with the development of goitre. In fact, every individual chemical constituent of the water would seem to have been at one time or another studied and suggested as of possible etiological moment in this disease, and every one in turn upon further study has been found to have no relationship. This being the case, we are thrown back upon the possible existence in the water of some living organism.

Can we regard ordinary goitre as being of infective origin? In favor of such a theory not a few facts have been brought forward. Notably there is in addition to its curiously endemic nature, the infrequent but well-established occurrence of a sudden development of the condition in an epidemic form in large bodies of men, troops, etc. Thus Valentin recorded an instance in an infantry regiment which had for 5 years been established at Caen, and then went to Nancy. Here goitre had never been endemic and sporadic cases were rare. The regiment was for some little time at Besançon, and there only had come into contact with goitrous individuals. Within a few months no less than 38 members of the regiment showed goitre. During the next four years the number increased, 205 in 1784, 425 in 1785, and so on until altogether 1,009 soldiers of the regiment were affected, while the other troops in garrison there, with the exception of an occasional case in

one cavalry regiment, showed no cases. It is remarkable that here the officers who were in the same barracks and who drank the same water, were not affected. Similarly at Belfort, in 1877, out of a garrison of 5,300 men, there were no less than 900 acute cases of the disease. At Silberberg in Silesia, Haneke recorded, in 1820, the appearance of goitre in the garrison, and in the course of one year in a newly recruited battalion of 380 men, 310 presented the disease. Hirsch, A. von Humboldt and Virchow, all careful and thoughtful observers, years ago held that something of a miasmatic nature must lead to the development of the condition.

Some of the most remarkable observations upon this infectiousness of water were carried out by Lustig and Carle, who selected a horse and some dogs from a goitre-free region, kept them in another goitre-free region and gave them exclusively water from a "goitre well" to drink. The horse after some weeks showed definite enlargement of one lobe of the thyroid, and when this was extirpated, the other lobe enlarged, the enlargement diminishing when other water was supplied. So also with the dogs: 10 were given filtered and boiled goitre well water and remained free from goitre; 13 were given unfiltered water, and one at least showed a well-marked enlargement of the gland. Further, a goitrous dog taken from a goitre region, part of whose thyroid was extirpated and showed characteristic changes, presented a marked reduction of its goitre to normal size when given filtered goitre well water to drink.

These experiments can at most be said to be suggestive; the number is insufficient for us to regard them as at all absolute. Nor when we come to examine the numerous records of bacteriological examination of these goitre waters do we arrive at anything but what is most unsatisfactory. Lustig and Carle, it is true, indicate a bacillus which liquefies gelatin and which has been constantly present in the goitre waters examined by them. Kocher points out that the goitre waters are distinguishable from the non-goitrous in Switzerland by the relative abundance of bacteria in them. Klebs found certain infusoria; Bircher a diatom together with polymorphous bacteria; while Waters recently has suggested that certain amebæ are present therein, upholding a theory somewhat similar to the present rather popular sporozoon theory of cancer and malignant growths.

This mere recapitulation of unconfirmed observations shows that this bacterial or miasmatic theory remains to-day as it was 30 years ago—still a theory, without any positive fact whereby to establish it. The most that we can say is that there is obviously some relationship between the water drunk and the development of the disease and that a microbic causation is well within the bounds of possibility. But even if we grant

that there is this possibility, it presupposes either that we are dealing with the entrance into the system of some toxic substance, produced by microbes in the alimentary canal and especially acting upon the thyroid tissue, or with infection proper. If there be infection, then it must be rather a remarkable character, for in the first place, the condition only shows itself in the majority of cases from the age of 8 years onwards, and in the second place if the individual be removed from a goitrous region sufficiently soon after the development of the disease and before chronic and cystic changes have ensued in the gland, then the tendency is for the enlargement to disappear. In other words, the infection if present must depend largely upon local conditions and does not tend to be progressive or self-propagating. We have, that is to say, to recognise a novel form of latent infection, if I may so term it; we have to suppose that so long as the individual remains in a goitrous region infection continues, and that the goitre is an indication of an imperfect neutralisation of the germs and their products: once the individual leaves the region, there being no longer infection, the destruction of the germ is complete and the thyroid eventually returns to a condition of equilibrium. Such latent or subinfection is possible, but in the absence of any positive evidence of the existence of any specific microbe, we have no right to base any theory upon its possibility.

Of more real and practical interest at the present moment is the *symptomatology* of goitre. Only recently is this becoming at all carefully studied, and the study, it has to be confessed, shows what at first sight appears to be a most contradictory series of disturbances. For on the one hand we not infrequently come across in the post mortem room, small goitrous enlargements of the thyroid, unrecognisable during life, and judging from the clinical history, absolutely unassociated with any symptoms, and the same is true of nodular goitres of fair size and causing a definite disfigurement in the neck. On the other hand, there may be very various symptoms present, and the puzzle is that at times symptoms referable to excessive production of thyroid secretion occur simultaneously with others which it is certain we should attribute to defective discharge of this secretion. Let me here attempt to recount and classify the main symptoms which have been observed:—

There are certain definite symptoms which may with certainty be ascribed to *Pressure*. From its position the thyroid when enlarged is liable to disturb the function of several important organs: the trachea, the œsophagus, the arteries and veins of the neck, and several nerves, as for example, the superior laryngeal (rarely), the inferior laryngeal, the posterior auricular, the vagus, the sympathetic, the cardiac roots of the sympathetic, the accessorius, the cervical plexus, facial nerve, and

the brachial plexus. Without taking into consideration the possible results of pressure upon all of these, we know with certainty that there may be grave pressure upon the trachea leading to dyspnoea and other respiratory disturbances; this pressure is generally lateral, but may be also from in front.

Even relatively small goitrous enlargements, if projecting backwards, may cause severe dyspnoea, and apart from mere dyspnoea, we frequently find distinct alteration in the voice, a rawness and want of tone. This may in part be due to compression upon the trachea, but Wölfler found more or less paralysis of the vocal cords in 10 per cent. of the cases he examined; Krönlein out of 191 subjects found 62 having a history of paroxysmal dyspnoea and 49 showing a definite disturbance of the voice; 7 of these 49, whom alone he was able to examine laryngoscopically, showed unilateral paralysis of the cords. Such paralysis is evidently due to direct pressure upon the recurrent laryngeal.

Pain behind the ear, which not infrequently occurs, has been ascribed to pressure upon the posterior auricular nerve; cramp in the neck muscles would seem to be due to pressure upon the accessorius; the compression of the large veins leads to congestion of the same and a certain amount of swelling of the neck and cyanosis of the face, while occasionally, though not as frequently as might be expected, there is a certain amount of dysphagia; where this is the case there is not infrequently enlargement of accessory lobes between the trachea and the œsophagus.

All these symptoms mentioned so far may with safety be ascribed to pressure and to pressure alone, but they far from exhaust the symptoms which may be noted. Frequently there are psychical disturbances. My own experience—and here I speak under correction—is that those having large and generalised goitres are in general dull, torpid, of low mental powers, not to say tending towards mental failure, and in addition they often show a rather special physiognomy, heavy, expressionless, and recalling strongly the appearances met with in those suffering from myxœdema. In this connection it may be called to mind that whereas sporadic cretinism is in general associated with atrophy and absence of the thyroid, where cretinism is endemic, over 50 per cent. of the cretins are goitrous—and cretinism is infantile myxœdema.

But, on the other hand, we have another series of cases in which the psychical disturbances, contrariwise, are those of mental irritation: at patients are highly nervous, sleepless, possessing a fear of impending trouble and unable to settle down to sustained work—symptoms, in short, closely resembling those found in exophthalmic goitre, and what is more interesting, when nodular goitrous masses are removed, as Dr. Shepherd* has noted, the symptoms rapidly disappear. They seem, in

* Vide his address in last month's number of this JOURNAL.

short, to be allied to what one finds in hyperthyroidism and in exophthalmic goitre or Graves' disease.

It is now some years since Dr. Shepherd called my attention to the existence of nervous and psychic disturbances which he had observed in several of the goitrous patients who had come under him for operation. It was impossible from his description to fail to recognise that these were of the same nature as those manifested in Graves' disease. Nor has this similarity escaped attention abroad. In France, Joffroy and Achard (*Arch. d. Med. Exper.* 5, p. 824, 1893) were among the first to call attention to this relationship, and have gone so far as to state that from an anatomical point of view there is nothing by which one can distinguish a simple goitre from the goitre of Graves' disease. (Though here I disagree with them.) They call attention to the frequency with which one sees the symptoms of Graves' disease developing in subjects who show a goitre of more or less old standing and of endemic origin. Clinical examination, on the one hand, does not permit the establishment of a radical separation between these so-called false exophthalmic goitres and the classic Graves' disease. Nor, again, therapeutically can any distinction be made, inasmuch as certain cases of Graves' disease are like ordinary goitre, aided by operative treatment. With Möbius they include the false exophthalmic goitre, so-called, along with true Graves' disease: for in Germany Möbius had already called attention to this relationship, and in a later article in Nothnagel's *Specielle Pathologie*, 1896, he dwells very strongly upon this same point. He divides the cases of exophthalmic goitre into, *primary*, in which the goitre and other symptoms of disease appear together; and *secondary*, in which the symptoms supervene upon an old ordinary goitre, and these secondary he regards as the more common, only differing otherwise from the primary in being usually of a more chronic nature and incomplete in the number of the symptoms shown. In these secondary cases we have everything from the mere simple case of goitre accompanied by palpitation and paroxysmal tachycardia, to goitre with palpitation and tremors, and to fully developed Graves' disease with persistent tachycardia, tremors, exophthalmos, Stellwag's sign, pigmentation, etc. More often in these secondary cases, from the large size of the goitre, there may occur definite symptoms which can only be referred to pressure, symptoms not necessarily present in the primary form.

It has been the custom to regard ordinary goitre and exophthalmic goitre or Graves' disease as two absolutely distinct and widely separate conditions. The symptoms of the former, when they have approximated to the latter, have been mainly ascribed to local pressure in the neck and have been disregarded by the majority of medical men. The

extreme care with which the symptomatology of exophthalmic goitre has been studied in England, France and Germany, as again on this continent, and the remarkable concatenation of diverse symptoms that has been made out:—tachycardia, exophthalmos, Stellwag's sign, von Graefe's sign, Möbius symptom (insufficiency of convergence), tremors, pigmentation of skin, paroxysmal diarrhoea, sleeplessness, mental irritability and other psychical disturbances, have almost inevitably led to this condition being regarded as a disease apart. Here I do not wish to indicate that the causation of the two conditions is identical, for my opinion is that the causation is absolutely different, but I do wish to emphasise the fact that the sharp limitation which is usually held to obtain between ordinary and exophthalmic goitre, is often non-existent, and that the one condition not infrequently is accompanied to a greater or less extent, by symptoms of the other.

What, then, are these symptoms which are allied to those seen in exophthalmic goitre? As already stated, there are the psychical disturbances—nervousness, fearfulness, inability to take up sustained work and sleeplessness. Tremors, it is true, have rarely been noted, but this is possibly because no one has made the same careful search for them that Marie did for the existence of tremors in Graves' disease. Another very characteristic and not infrequent disturbance is paroxysmal dyspnoea, which is easily mistaken for asthma. These paroxysms have in general been ascribed to the catarrhal condition of the mucosa secondary to the pressure. Two sessions ago I brought before our Medico-Chirurgical Society in Montreal, a thyroid from a case in which the main feature was this history of paroxysmal dyspnoea mistaken for asthma. It was a case in which we found at post mortem enlargement purely of the middle lobe of the organ, scarcely recognisable in the stout neck, and which, while undoubtedly pressing upon the trachea, had not caused sufficient narrowing to satisfactorily explain the dyspnoic condition. At that time I suggested that the sudden vascular enlargement of this highly vascular lobe might give the adequate explanation. Dr. Shepherd has verbally reported to me a recent case of his in which operation upon a patient suffering from extreme dyspnoea of sudden onset revealed similarly an enlarged very vascular middle lobe, in which hæmorrhage had occurred, and had caused the same symptoms. But further study has convinced me that this explanation does not suffice for all cases. Some, like Lücke, doubt as to whether there is not here some central nervous disturbance also present. Something beyond mere pressure appears to cause the attacks—a something either of nervous or toxic origin. For these attacks frequently manifest themselves in the middle of the night and under conditions in which it is difficult to imagine any cause for the sudden enlargement.

It has to be kept in mind that just as in exophthalmic goitre, so here there may be characteristic heart troubles. We owe to Kraus the most recent study of the goitre heart. While he denies the relationship between the ordinary and exophthalmic goitre, he nevertheless points out very clearly that in the cardio-vascular disturbance of ordinary goitre, tachycardia is the most important symptom. According to him, the symptoms have two stages of intensity: 1st, increased action, more rapid pulse, with or without palpitation, the rate varying between 90 and 120, and occasionally becoming as rapid as 140 per minute. With this increase there is also a stronger beat of the heart, a heaving apex beat, a visible pulse, particularly in the carotids; in the radials this is large and rather soft and of a dirotic character. The second group of cases of greater intensity occurs in long standing conditions or after repeated exacerbations, and now one has every evidence of dilatation of the heart, especially of the left side. Such cases at post mortem show sometimes no special hypertrophy of the organ, but in others there is a true hypertrophy. This, according to Kraus, is relatively frequent, and has associated with it a degeneration of the myocardium. Kraus' observations are based upon a long continued study of 15 cases of the disease; he calls attention to certain observations of Cyon, which show that removal of the thyroid gland leads to conditions in the organism which stimulate directly the nerve system and especially affect the sympathetic ganglia and the accelerator fibres of the heart. On the other hand, iodothyryn stimulates more the regulator or inhibitory apparatus of the heart and vessels. In the goitre heart, according to Kraus, one notices both these occurrences, namely, increased rapidity of the pulse and strengthening of the heart beat, and he concludes that in goitrous patients there is, through some disturbance of the gland, the simultaneous increased stimulation both of the accelerator and of the inhibitory nerve fibres of the heart, and that mere increase in thyroid secretion will not explain these.

But clearly the tachycardia and other vascular disturbances generally absent, or when present transient and of a moderate degree, seen in cases of ordinary goitre, are not merely those of pressure, and herein they correspond with the similar though more extensive changes seen in exophthalmic goitre.

Further, it has to be kept in mind that there may be a certain amount of exophthalmos in a case of ordinary goitre. Sometimes it is unilateral, and this unilateral development is perhaps best explicable by presupposing some pressure upon the sympathetic on that side. It is, however, doubtful whether exophthalmos is to be ascribed merely to irritation of the sympathetic nerves. Indeed, Askanazy's most inter-

esting study upon the condition of the muscular system in Graves' disease shows the development of marked degeneration of the muscles during its course,—fatty degeneration and fatty infiltration—which explain the tremors, the imperfect expansion of the chest (Bryson's sign), the imperfect convergence of the eyes (Möbius' symptom), and to a large extent, the exophthalmos.*

The above recital shows remarkably the very suggestive relationship between ordinary goitre and exophthalmic goitre; indeed, the one may pass imperceptibly into the other.

Yet before we can proceed to attempt to draw any conclusions with regard to the relationship between ordinary and exophthalmic goitre, there is yet another class of cases that is to be considered—that class which French writers have referred to as "*Formes Frustes*"—incomplete forms. On this continent it is Dr. W. H. Thomson, of New York, who has most persistently drawn attention to the existence of this class of cases, a class characterised by presenting to a greater or less degree the remarkable symptom-complex of exophthalmic goitre, without however any primary evidence of enlarged thyroid,—exophthalmic goitre without exophthalmos, and without goitre. These cases show the tremors, the wandering pains in the extremities, behind the ear and in the muscles and elsewhere, accompanied by more or less hyperæmia, often noted in exophthalmic goitre; they have most characteristically a condition of persistent tachycardia, the pulse varying from 90 to 120, while a further prominent symptom, equally a feature of exophthalmic goitre, is the occurrence of paroxysmal diarrhœa, diarrhœa coming on suddenly with no apparent cause, and disappearing with equal suddenness. Indeed, in most cases the first symptoms recognised are in association with the digestive tract. But these patients have neither goitre nor exophthalmos at first, although with the persistence of this condition for some weeks or months enlargement of the thyroid tends to supervene and sooner or later a definite condition of exophthalmos with von Graefe and Stellwag's signs tends to show itself. I have come across one such case. The symptom-complex is so remarkable, the pains present features differentiating them from muscular rheumatism on the one hand and from the ordinary neuroses on the other, so that the cases stand out as a very distinct group, the nearest approach to anything like them being met with in certain conditions of enteroptosis and wandering kidney, in which, again, the abdominal region of the disturbance is a prominent feature; and yet, as I say, it is only relatively late on in the condition that we obtain evidence of hypertrophy or other enlargement of the thyroid. That the thyroid has

* Vide extract in this JOURNAL in May, 1899, p. 357.

some relationship or is affected in this condition is shown by the fact that it is peculiarly liable eventually to undergo enlargement. The condition, in short, tends to develop into unmistakable exophthalmic goitre, and that being the case, I cannot but agree with Dr. Thomson that we have to include this series of cases in any consideration of the etiology of Graves' disease. But doing this, it is obvious that we are forced to see that thyroid enlargement is not to be considered as the essential primary feature in the latter condition. The more we consider the matter, the more obvious it is that no organ in the body, unless it be the seat of aberrant new formation, causelessly undergoes enlargement. Even when there is such aberrant new formation we are now more and more recognising that some stimulus must be there to induce the hyperplasia. There is something behind the hyperactivity and hyperplasia of the gland causing their development, and we have to look beyond the thyroid for the cause of exophthalmic goitre, a cause by no means necessarily the same as that of ordinary goitre.

Before proceeding to this search it will be well to sum up the main conclusions reached thus far: these would seem to be :—

1. That the causation of ordinary endemic simple goitre is directly associated with the water habitually drunk by the subjects of the condition.

2. That no single constituent or contamination has so far, despite extensive search, been found common to the waters of goitrous districts.

3. That the peculiar epidemics at times recorded, coupled with this lack of discovery of chemical or toxic cause, appears to indicate miasmatic, *i.e.*, microbial causation.

4. That if it exists, the microbial agent is yet to be discovered.

5. A long series of forms can be made out from, on the one hand, those showing well marked goitres with dulling of intellect and bodily habit approaching to the myxedematous type, through goitres presenting no generalised disturbance, save occasionally such as may be attributed merely to pressure upon the surrounding organs, to other forms of ordinary goitre showing symptoms of the same order as those seen in exophthalmic goitre, to cases of true exophthalmic goitre, and finally, to cases showing no enlargement of the thyroid but certain of the general symptoms which are peculiar to Graves' disease.

It has to be confessed that so far these conclusions do not appear to hang very closely together, nor have we gained any thoroughly comprehensive view of the nature of goitre or of its relationship to Graves' disease—at most we recognise some obscure relationship between them, but at the same time we are forced to acknowledge that certain essential members of the Graves' symptom-complex can show themselves without any sign of thyroid enlargement.

Can we gain any further and surer basis for comprehending the relationship by a study of the anatomical changes found in these different conditions? I think we can, and in this study we find the key, if not to the whole problem, at least the key to the connection between these different forms of disease. It is now common knowledge that in myxœdema and cretinism we have conditions characterised by, nay, following upon, complete atrophy or loss of function of the thyroid, while, on the other hand, in typical Graves' disease, as Möbius suggested and Greenfield has clearly demonstrated, we have anatomical indication of the reverse, of hyperplasia of the thyroid tissue coupled with increased secretory activity. But the significance of the essential anatomical feature of the common goitre has not, I think, as yet been grasped. This common parenchymatous or colloid goitre is characterised by localised and lobular or by generalised distension of the follicles with dense colloid material. The individual follicles are greatly enlarged, so that the first impression given is one of actual overgrowth of the gland tissue. I will not say that such hyperplasia is not at times present, for I believe that it is, but this I will say, that in the main it is factitious and only apparent, the enlargement being due to a heaping-up of colloid material in the individual follicles,—a heaping-up so extensive that in enlarged glands we come across abundant evidence of a condition identical in nature to that observed in the emphysematous lung, namely, atrophy and absorption of the walls of adjacent follicles, so that large compound follicular cavities are developed. At the same time, the epithelium, instead of being cubical, or indeed of the lowly columnar type, as in the healthy gland, is flattened or even reduced to little beyond a string of nuclei, just as we find it in retention cysts. The histological appearance is not that of excessive activity of the glandular tissue, but, on the contrary, of obstructed function. In short, these goitres present every sign of retention and inspissation of the follicular contents.

We know further, by the observations of Hürthle and others, repeatedly confirmed of late years, that normally the contents of the vesicles find their way into the rich network of lymphatics surrounding the individual follicles, and it may be under certain conditions, into the almost as abundant network of the venous capillaries. For the thyroid is an organ rich both in blood vessels and lymphatics and, as pointed out long ago by Wölfler, these stand in especial relationship to the follicles. Now, just as in the emphysematous lung, the distension of the air sacs leads to flattening of the capillaries and their walls, diminution in the lumen of these capillaries, increased friction and resistance to the blood flow, and as a consequence to continuing atrophy of the walls of the air sacs, accompanied by imperfect respiratory function, so in the thyroid, distension of the follicles must tend to obstruction of the surrounding

lymph and blood vessels, and so must arrest the discharge of the colloid material. Or, to sum up, anatomically we have every indication that the *common colloid goitre is pre-eminently a condition not so much of hyperplasia and overgrowth of the specific thyroid tissue as of retention of the glandular secretion*. If this be the case, and the more I study material from such goitres, and the more I recall the appearances observed in material studied during the last few years, the more convinced I become of the correctness of this view, then it becomes possible to recognise the relationship between the different states already referred to. Briefly, we recognise the possible development of the following series of conditions :—

1. Disturbance of the thyroid so extensive as to lead to atrophy of the gland tissue, with the complete symptoms of *cretinism* (when occurring in the young), and of *myxædema* (in the adult).

2. Disturbances (whether directly affecting the functional gland tissue or the paths by which the secretion of the same enters the general circulation) insufficient to cause destruction of the gland tissue, but leading to arrest of discharge of the specific secretion from the follicles and heaping up of the same throughout the whole organ :—*generalised colloid goitre with myxædematous or cretinoid symptoms*.

3. Localised disturbance of the above nature, the remaining portions of the gland continuing to perform their functions normally :—*Nodular goitre with absence of general symptoms, but with possible symptoms due to pressure of the enlarged portions of the gland upon the surrounding organs*.

That a relative small portion of healthy thyroid can, after destruction of the rest of the gland, subserve the needs of the body, has been abundantly demonstrated by the observations of Halsted and others.

4. Localised disturbance leading to the heaping up and retention of colloid material in certain lobules of the thyroid, but with, in addition, the occasional occurrence of nervous stimulation or altered vascularity of the gland whereby increased absorption or discharge of the retained material into the circulation is favored: *Ordinary nodular goitre* with paroxysmal dyspnoea, paroxysmal tachycardia and other transient symptoms of hyperthyroidism or of Graves' disease.

If we are prepared to admit that the symptoms of exophthalmic goitre are largely due to increased discharge of thyroid secretion into the general circulation, then these symptoms manifesting themselves now and again in the course of ordinary goitre are best to be explained by this supposition that the retained secretion by some one or other agency, undergoes transient liberation causing thus a temporary excessive discharge of the secretory substance into the general circulation.

5. Supervention of increased discharge of thyroid secretion into the

economy in a gland which is already the seat of ordinary retention goitre : *Secondary Graves' Disease*, i.e., persistent tachycardia and other classical symptoms of Graves' disease following upon an ordinary goitre. As already stated, we are forced to recognise the frequency of this transition from ordinary to exophthalmic goitre. The occurrence, however does not imply that both conditions are due to one common cause. As a matter of fact, in regions where goitre is endemic, it is noticeable that we rarely come across well-marked examples of Graves' disease, so that we have almost a paradox that whereas so frequently in exophthalmic goitre we meet with the pre-existence of a nodular goitre, where goitre is endemic Graves' disease is relatively rare or not more common than elsewhere.

I have been not a little struck by the observation made to me by Dr. Springle, an observation which may possibly explain this apparent paradox. He has pointed out to me that whereas goitre is common immediately outside Montreal, in Montreal itself and in large towns and cities generally we rarely come across a fully developed goitre. Very possibly the water supply may be an explanation of this infrequency in Montreal itself. On the other hand, we do meet with cases of Graves' disease in this and other cities.

A case brought to my notice by Dr. Kinghorn, of Saranac Lake, N.Y., during this last winter appears to me rather suggestive. It was that of a young woman of 22, who since the age of 9 had had a recognisable goitre. Her mother was the subject of goitre from her early childhood, the goitre had become of great size after the birth of her second child, though later it had subsided until now all that is left is a mass the size of a hen's egg in the middle of the neck. One sister had been the subject of goitre at the age of 14, but it had subsided, and now it is not recognisable.

Until the age of 9 the goitre gave the patient no trouble; she noticed occasionally that it had increased in size, as do all goitres. At 19 she came in from the country, where she had previously lived in a very quiet place upon Lake Champlain, and became a waitress at a boarding-house in the little town of Saranac Lake.

The work was new to her, and, as she states, she was very nervous over it and very soon the goitre became large and nervousness more marked. She herself ascribed the nervousness and the goitrous enlargement to the change in her work. After a time she gave up working and returned home, when the goitre and all the symptoms subsided. Last winter she again came to Saranac Lake and went to help at her brother-in-law's store. This store is one of the largest in the little town, and further, had just been completely altered, so that she was

very actively employed. Now again the goitre rapidly enlarged and palpitation came on, and when seen by Dr. Kinghorn she had definite symptoms of Graves' disease, tachycardia, exophthalmos, Stellwag and von Graefe's signs, palpitation and dyspnoea on exertion. The right lobe and the isthmus of the thyroid were principally enlarged. In addition, she had been liable to vomit, the vomiting coming on suddenly after each meal.

May not the more active life of the dweller in a city in part prevent the development of ordinary goitre, and, on the other hand, may not increased nervous irritation, telling upon an organ which is already somewhat disturbed in its functions, favor the development of the abnormal activity of that organ and the development of Graves' disease?

What is very remarkable in the ordinary colloid goitre is that the specific thyroid tissue even in the most advanced colloid goitre still persists and is recognisable, despite the distension of the follicles; the glandular tissue appears arrested in its function, but not destroyed. It is thus, anatomically speaking, within the bounds of possibility that such glandular substance should under altered conditions, take on active or over-active functions, and as a matter of fact, clinically, goitres with myxœdematous symptoms have been seen to develop into secondary Graves' disease.

6. Increased activity of the thyroid gland with hyperplasia and enlargement of the gland:—*Primary Graves' Disease* with accompanying enlargement without retention, and exophthalmos.

7. Relative or absolute increased activity of the thyroid gland without at first any recognisable enlargement of the organ:—*Formes Frustes of Graves' Disease*.

With reference to this part played by the relative or absolute increased secretion of the gland, I would refer to my previous paper upon the Internal Secretions which I gave at Washington in 1897.* I may here note that only recently my colleague, Dr. Armstrong, operated in the Montreal General Hospital upon a case which all recognised as one of definite Graves' disease, but when the thyroid gland was exposed, while it was of fair size, it certainly did not exceed in its dimensions what may be regarded as normal.

The above table, it will be seen, recognises that the essential cause of Graves' disease is something apart from the essential cause of ordinary goitre, and that Graves' in itself primarily depends upon some nervous or other stimulus acting upon the thyroid gland and leading to increased activity and increased secretion. The sudden liberation of

* Transactions of the Congress of American Physicians and Surgeons. Vol. IV., 897, p. 103 and this JOURNAL, Vol. XXV., p. 856, 1897.

some of the retained secretion is best calculated to explain the paroxysmal disturbance of the "Graves'" type often met with in the course of ordinary simple goitre, as again does sudden increased discharge or absorption explain the disturbances seen in the course of Graves' disease itself, as well as the dangerous and sometimes fatal results following the operative handling of the diseased gland.

In the course of this short address I am unable fully to discuss the extraordinary variation which we come across in the histology of the goitrous thyroid—the degenerative and interstitial changes, the development of cysts (which in my laboratory at Montreal has been more especially studied by Dr. Bradley,*) the apparent and at times real hyperplasia of the gland, or again the development of actual malignant growth, whether carcinomatous or sarcomatous.

Nor again have I time to take up the vascular forms of goitre to which Virchow was the first to call prominent attention. These essentially vascular forms I have not come across; I have only noticed that in ordinary goitre there may be accompanying great vascularity. I can only suggest that the remarkable dilatation and enlargement of the arteries in the thyroid which Virchow so frequently met with, may in itself be an evidence of the obstruction to the perifollicular circulation brought about by the distention of the follicles. With regard to the cystic formation so frequently met with, I would point out that cysts in the thyroid having fluid contents are always of degenerative nature, and in the majority of cases follow localised hæmorrhage; as such they do not in themselves induce any of the generalised disturbances above mentioned, at most they cause pressure symptoms. This has been very clearly pointed out by Dr. Shepherd.

Despite all the work that has been done of late years, the very multiplicity of the changes which occur makes it impossible to enter into a discussion as to the relative frequency of occurrence, and again as to the meaning of these various changes, nor again are we prepared to comprehend all of them. This much, however, may be said, that by far the commonest, in fact the common type, of ordinary goitre, is the colloid or parenchymatous. This form indeed must be taken as the type, and taking this as type, we can, if we regard it as essentially the result of obstruction and retention, gain some comprehension of the symptomatology of the condition.

* Journal of Experimental Medicine, Vol. I., p. 401.

ELECTRICAL BURNS.*

BY

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My attention has been directed to this subject by two cases of severe burns, from contact with a "live wire," which I had in my Wards at the General Hospital during the past summer. These burns differed so much in their behaviour from other burns of an apparently similar degree of severity, that I looked up the literature of the subject as carefully as I could, and thought that a communication on the subject might prove of interest to the members of this Society. Electricity is now in such general use that the general medical practitioner must be prepared to treat intelligently any accident, due to it, which may befall any of his patients ; and I was somewhat astonished to find very little on the subject in such surgical literature as I had access to.

The "Year Book" for 1899, directed my attention to an article on the subject of this paper, published in the Philadelphia Medical Journal, January 29th, 1898, by Dr. Sharpe, of St. Louis, Mo., in which the author, who was surgeon to several large Electrical Companies, gives an excellent summary of the chief clinical features of Electrical Burns. Dr. Sharpe's remarks coincide, in the main, with my own observations in the cases I shall cite, and therefore, with your permission I shall quote Dr. Sharpe's conclusions, adding, as I go along, any differences I may have noticed.

1. *As to appearance.*—"The burn is at first dried and crisp, (even charred in many cases), the site being excavated and bloodless, with a surrounding zone of pallor. Within 36 to 48 hours, this picture will completely change ; oozing will replace the dryness and the pallid zone will become hyperæmic." In other words, I would remark, all the symptoms of moist gangrene will set in, followed by rapid formation of slough with a peculiarly fetid odor. Much the same sort of picture, at first, as we are familiar with in severe frost-bites.

2. *Pain.*—"Is as a rule very moderate, in some cases practically absent ; from 24 to 48 hours after contact it is usually present."

From this view of Dr. Sharpe's I am forced to dissent. It may be true in very slight burns, as I have no experience of these, both of my cases having been severe ; but both my patients suffered very greatly, all through the prolonged period of sloughing, needing opiates constantly to enable them to get even a little rest.

* Read before the Montreal Medico-Chirurgical Society, Nov. 3, 1899.

3. *Shock*.—"Electric burns differ from other burns, in that the systematic shock is from the contact—the shock from the burn, *per se*, being nil." My experience differs here again. I found that in electrical burns, as in others, the shock was considerable, depending on the amount of tissue involved, and further, that the shock continued for a much longer period, due, no doubt, to the prolonged sloughing of adjacent tissues.

4. *Prognosis*.—"In regard to time, electric burns average $1\frac{1}{2}$ to 3 times as long in recovery as do other burns. In severe cases, even 5 times as long. Prognosis of result is as uncertain as time-prognosis ; . . . usually, both mild and severe cases are tedious and prolonged." With these views I heartily agree. The tissue lost is in the prolonged sloughing, which no treatment serves to hasten—not even amputation—and one must wait patiently until healthy granulations replace the fetid sloughs before any prognosis as to time, or as to result, should be given ; after that, as I shall show you, we may reduce the time very much by skin grafting.

5. *Subsequent manifestations*.—Dr. Sharpe says, "the rule of the electric burn, is, that it changes within 36 hours from contact, to a serum-saturated area, with disintegrating walls and floor, progressing to profuse purulent secretion, with continued tissue degeneration. This degeneration will frequently involve nerve, muscle, tendon, joint capsule, ligaments, articular surfaces, periosteum and bone itself; exuberant granulations springing up, the entire plain bathed in pus, completing a picture alike distressing to patient and surgeon." So far as I have been able to observe the sloughing affected mostly the muscles and blood-vessels. The bones, other than those actually charred, not being markedly affected, and I saw no evidence of osteo-myelitis higher up. The nerves, too, appeared acutely sensitive, but the great sloughing suggested some great interference with the trophic fibres to a considerable distance from the point of contact. As regards the blood-vessels, the walls appeared to be affected for a considerable distance up the limb; and during the period of sloughing, one must constantly guard against secondary hæmorrhage. This untoward accident is also favored by the fact, that the *blood showed no tendency to clot* in these burns; and this, I understood from Dr. Wyatt Johnston, is a well marked post-mortem feature of the blood of those who have been killed by electricity.

In one of my cases, while dressing the wound, an artery spurted very freely in a granulation at some distance up the limb from the point where I had amputated some weeks previously.

My experiences, then, would lead me to conclude, that the ascending degeneration following on severe burns by electricity, affects chiefly the

striped muscle tissue; and that the original area of injury gave one very little idea as to how far the process would ultimately extend.

And now *as to treatment*:—I quite agree with the author quoted when he says, "it is very unsatisfactory." I pursued the plan of keeping the parts immersed in a warm carbolic bath of 1-100 strength. Even then the disagreeable odor was most marked, and I know of no class of cases, except crancrum oris, so difficult to disinfect. The bath was carefully watched for any indication of hæmorrhage, as the necrotic process went on; an Esmarch was left at the head of the bed, with instructions to apply it at once, if bleeding began. I mention this because I had hæmorrhage in both cases, and, as the patients were both greatly reduced in strength by the sloughing, with its consequent fever and pain, I believe that the prompt application of the Esmarch by the attendant turned the scale in the patient's favor; and enabled both to withstand the shock of the subsequent amputations. Next, when forced to do so by secondary hæmorrhage, or by a well marked line of demarcation having formed between the necrotic and the apparently sound tissue, it is our duty to remove the sloughing tissue even if it means an amputation. And here I wish to emphasize this point, that the amputation should not be done as in ordinary cases of burns or injuries requiring operative interference. Ordinarily, if we form our flaps well above the line of demarcation, we may sew them up and expect primary union. But not so here; we must expect sloughing in the stump; not perhaps of the skin itself, but of the muscles even as high as their attachments. We should simply excise the necrosed portions along the line of demarcation, and then leave the wound open, to be dressed by moist antiseptic dressings. In both of my cases of amputation through the forearm, I did a simple circular amputation, made no attempt to form flaps, and the stump had to be left to granulate, and subsequently was skin-grafted. I am convinced from a former experience that any attempt to sew up the wound, in the ordinary way, would have resulted disastrously to the patient; as after the amputations whole muscles come away and large areas of skin above the point of amputation sloughed. There is altered nutrition—a local atrophy—due to the influence of electricity on the tissues, and one, therefore, cannot count upon the vitality of the flaps. Not uncommonly, owing to the retraction of the soft parts resulting from sloughing, it is necessary to resect the bone before skin-grafting.

The result of those excised where no skin-grafting was resorted to, was similar to that obtained in other largely denuded areas; and the skin-grafting gave good results.

There are several very interesting side issues arising from a study of these two cases, and I shall only refer to them briefly, in the hope that

some member who is better versed in the study of electricity than I am may throw some light on what is, to me, a still unsolved problem.

1. Why does the burn take place at the points of entrance and exit of the electrical fluid (if one may use the analogy of a bullet), and the intervening tissues—many of them vital—not be affected to any appreciable extent?

2. Why does the application of an electrical current, of say 600 volts, prove fatal in some instances, while in others, e. g. case II. above, a current of many times that strength simply inflicts severe burns, but does not produce any serious or prolonged direct vital effect? And why, again, in many of the fatal cases, should there be almost no mark, or other sign of burn, while in cases such as I have cited here, there should be such extensive burning as to necessitate amputation? These are questions which I am still studying, as they are of great interest, not only theoretically, but practically.

To this subject I hope at some future time to return, but at present I have nothing positive to offer, and moreover, I doubt if such information could be classed under the heading of Electrical Burns.

CASE I.—[Notes by Dr. R. M. Patterson, House-Surgeon, Montreal General Hospital.]

H. S., age 15. Patient was brought to the hospital June 22, 1899, and gave the following account of his injury:—

He had been astride a steel rod on the roof of his house and had reached up and grasped the main wire carrying current for the electric lighting of the streets. He thus short-circuited the current and got the full force of the discharge—2200 volts—then on the wire. He was unconscious for from three to five minutes until he could be moved from his perilous position.

Examination.—The patient is very pale, fine perspiration on the forehead, extremities cold, pulse small and rapid, pupils both semidilated. The symptoms are those of severe shock.

Nature of injuries.—(1) Right hand completely charred with all the soft parts shrivelled up and all the joints opened; the digits turned back in position of over-extension. From hand up to a point within one and a-half inches of the elbow joint, the burning varies from fourth to first degree. (2) Left hand has two deep, fourth degree burns, one on the thenar and other on the hypothenar eminence. (3) Whole of the penis and scrotum are cedematous and burnt in many places quite deeply (4th degree). The inner and anterior aspect of the left thigh in its upper third is also severely burnt. It will thus be seen that the most severe burn was at the point of entrance of the electrical fluid (the hand) and again very extensive but not quite so severe at the point of exit or neutralization.

Treatment.—Patient was given frequent hypodermics of morphine alternating at times with strichnine, and this had to be kept up for a very long time. He had to be frequently catheterized for retention, due doubtless to the mechanical blocking up of the meatus urinarius by the burning and swelling. The arm was immersed in one per cent. solution of warm carbolic lotion and fomentations of the same applied to the perineum. Later, this was changed to formalin, 1-1000, with a view if possible to lessen the extremely offensive odour of the sloughs. The formalin soon caused such pain that a solution of hydrargyrum perchloridum, 1-10,000, was substituted. The diet was liquid, as nutritious as possible, and food was given every two hours.

The areas surrounding the burns were soon covered with large moist bullæ and these were soon succeeded by a very offensive, moist gangrene, with formation of very extensive sloughs. There was also present a severe cystitis on the fifth day after admission. On the tenth day after admission there was a profuse hæmorrhage into the bath in which the injured right arm had been kept immersed. An Esmarch bandage checked this and the limb was removed from the bath, bandaged and elevated. A special nurse was detailed to watch for any recurrence. The pain was very great and patient was very weak and blanched. Amputation was decided on, and forthwith carried out. A simple circular amputation was performed one and one-half inches below the elbow, so as to save the insertion of the biceps. Some of the muscles left in the stump could be seen to be infiltrated, and these afterwards sloughed as high as their insertions to the internal and external condyles of the humerus. No effort was made to close the wound which was dressed with a one per cent. carbolic dressing. The whole stump was finally covered with healthy granulations and the patient finally had good use of his elbow joint. The temperature never rose above 101°F. at any time, and rarely above 100°F.

In the meantime the perineal wounds were progressing favourably, healthy granulations replacing the sloughs which had separated; the testicles were almost bare and a nipple like process with the urethral orifice at the summit was all there was to represent the penis. On August 7th, in the absence of Dr. Eider, skin-grafting of the granulating areas of the stump, the arm, and the perineum and thigh was performed by Dr. J. Anderson Springle, following Thiersch's method, and the result was in every way satisfactory, the patient being able to leave the hospital on August 23rd. He is now quite well, has no difficulty in urinating, and the stump of the arm gives good motion at the elbow to a false forearm and hand.

CASE II. [Notes by Dr. W. L. Barlow, House-Surgeon, Montreal General Hospital.]

T. V., aged 25, was brought to the Montreal General Hospital by the ambulance on August 30, 1899, suffering from severe electrical burns. The history of the accident is as follows:—

While walking down one of the passages in the power house of the Montreal Street Railway, the patient's foot slipped and in the attempt to save himself from falling he put out his right hand, which came in contact with a terminal from the main line at Chambly. Patient states that at the time the indicators registered 60 amperes at 10,000 volts. The shock he received rendered him unconscious for about two minutes, and when he recovered consciousness he was lying about six feet from the terminal. On attempting to get up he found that his right arm was powerless and that his fore-arm and right hand were in a position of extreme flexion, and were found so on admission to the hospital. Loss of power was also present in the lower extremities. When brought to the hospital, he was in a well-marked condition of shock.

The fingers of the right hand, as well as the hand itself, were charred, while from the level of the wrist joint to about half way up the fore-arm there was a purplish red discolouration. This became less marked as it reached the upper portion of the fore-arm and had an ill-defined irregular outline. On the inner surface of the right arm, about the level of the insertion of the deltoid, there was a deep burn through skin and subcutaneous tissue exposing the deep fascia. (See Fig. I.) The toes of the left foot were blanched and cold, while three inner toes of the right foot were in a similar condition. The dorsal surfaces of the feet were also involved, but here there was only an erythema, as of a burn of the first degree, save for about one inch above the metatarsal phalangeal articulations, where there was the same purplish-red discolouration as on the fore-arm of the left upper extremity. Scattered over these areas of discolouration, vesicles had already appeared, which later coalesced and formed large bullæ. (See Figs. II. and III.) There was marked swelling of the left fore-arm and of the feet.

Treatment and Course of the Case.

On admission, strichnine $\frac{1}{30}$ gr., and morphine $\frac{1}{6}$ gr. were given hypodermically. Half an ounce of whisky was given every three hours and the hand and arm immersed in a hot carbolic bath, 1-100, and the feet wrapped in hot carbolic fomentations, changed every two hours. There was retention of urine. During the first 24 hours the pain was very severe and morphine, gr. $\frac{1}{2}$, hypodermically, with also phenacetin gr. v, and caffeine gr. iiss, chloral hydrate, gr. xx, and potassium bromide, gr. xxx, were given at different times to secure rest.

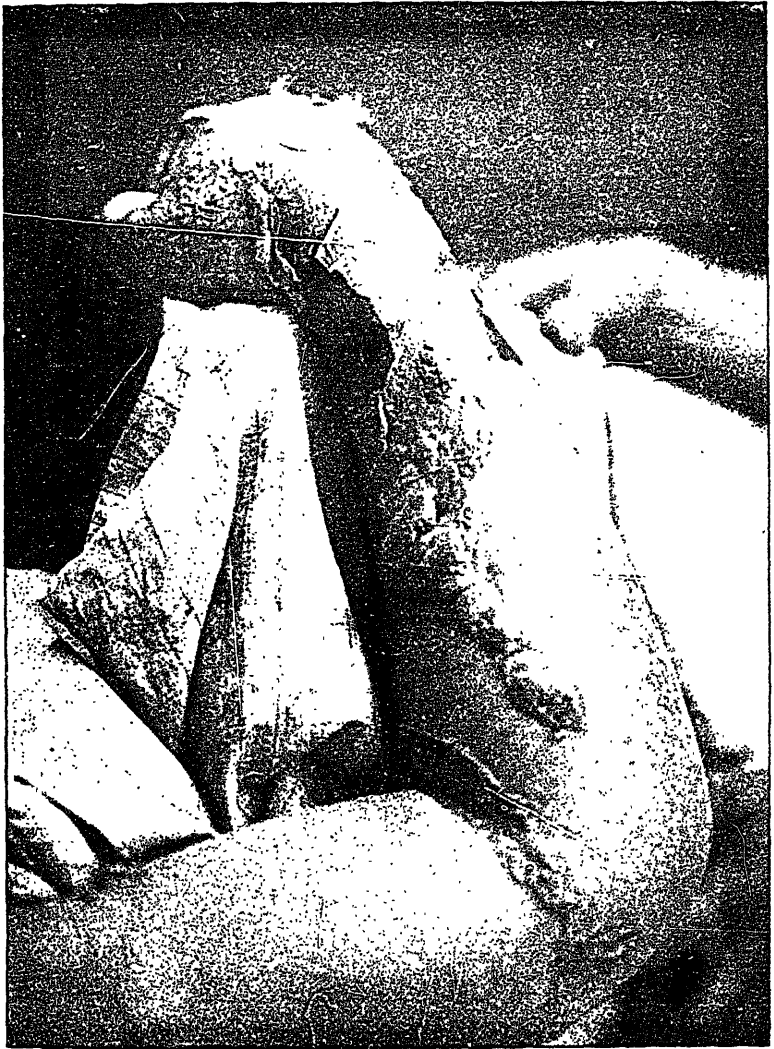
On September 4th, a sharp hæmorrhage took place into the bath from the radial artery of the right arm. The sloughs were very fetid

in both the arm and feet, and it was seen that he would evidently lose his fore-arm and all the toes of both feet. As the bullæ burst or were punctured, deep sloughing areas were exposed. The sloughing was most marked where the discolouration had been most pronounced and had involved the muscles. There was never any definite line of demarcation.

On September 5th, six days after admission, his right fore-arm was amputated at the junction of the upper and middle thirds. As much tissue as possible was saved, the wound being left open for complete drainage and to allow all necrotic tissue to be removed at each subsequent dressing. As there was no definite line of demarcation and no guide as to the probable extent of sloughing, it was thought advisable to pay no regard to flaps, but after all the sloughs had separated and granulation taken place, to skin-graft the stumps.

The integument, superficial vessels (which were thrombosed), and most of the muscular part of the biceps just above the antecubital space, were destroyed, presenting a sloughing area which was thoroughly scraped and swabbed with carbolic, 1-40, and afterwards with normal saline. The sloughing area on the inner surface of the arm at the insertion of the deltoid was treated in the same way. The great, second and third toes of the right foot were amputated at the metatarsal phalangeal articulations and the heads of the corresponding metatarsal bones snipped off. All the toes of the left foot were amputated in the same way and about half of the metatarsal area exposed on the dorsum of the foot. Dressings of hot carbolic fomentations were ordered to be repeated every four hours, for 24 hours.

After a prolonged period of sloughing, affecting chiefly the muscles and associated with a tendency to secondary hæmorrhage in the stump of the arm, healthy granulations at last appeared. Skin-grafting of the stump of the arm was done by Dr. J. Alex. Hutchison, 36 days after the amputation or 42 days after admission. The skin-grafts of the arm have taken very well indeed and the right foot has healed by the usual method of granulation and cicatrization. The dorsum of the left foot, however, Dr. Hutchison tells me, will need to be grafted. The patient, at the time of writing, is well and hopes to be soon discharged from the hospital.



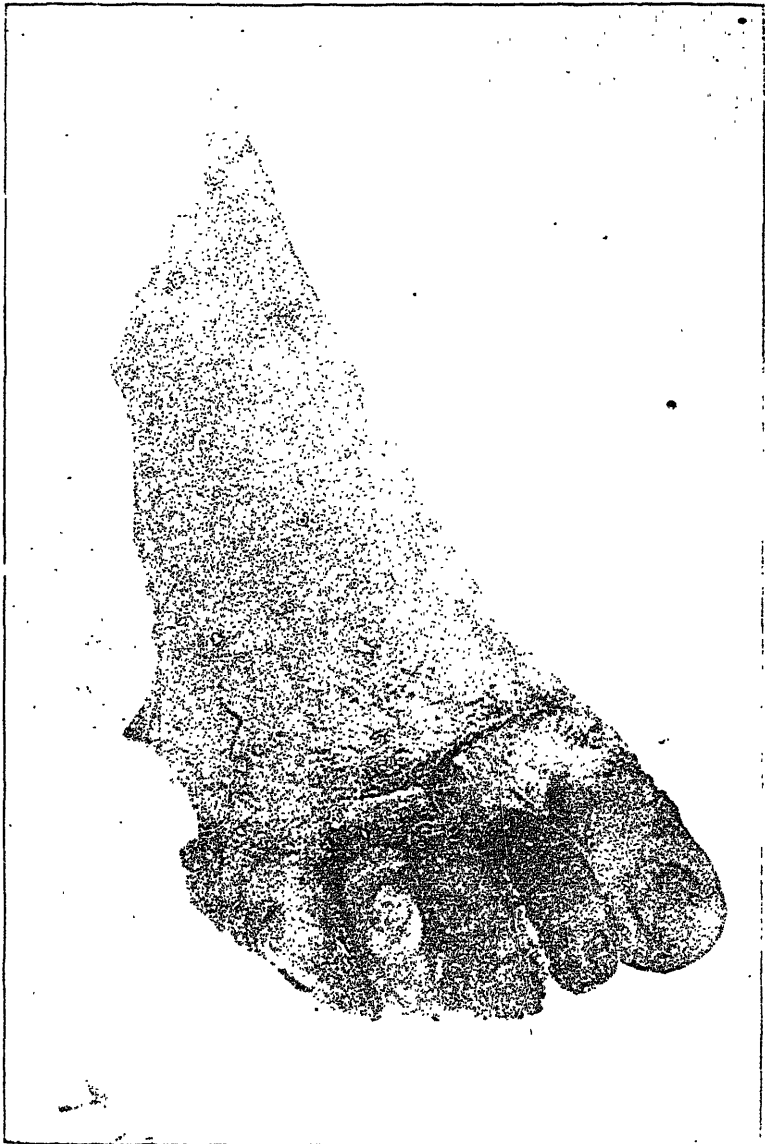
ELECTRICAL BURNS.

FIG. I.—T.V., Right Arm, 4th day after injury.



ELECTRICAL BURNS.

FIG. II. T.V., Left Foot, 4th day after injury.



ELECTRICAL BURNS.

FIG. III. T.V., Right Foot, 1th day after-injury.

WEST AFRICAN MEDICINE.

BY

CHARLES G. L. WOLF, M.D.

The West Coast of Africa is probably unique in containing the elements of civilization lying more closely to those of utter barbarism than any other part of the world at present, and in the course of a recent trip along the coast I had, accordingly, good opportunities for studying both native and European medicine as practised there.

Among the white population the disease which far and away overshadows all others is malaria, and the man who visits the coast in a medical capacity will probably find that in the course of a few months he will acquire a more extended acquaintance with this disease than he would in years in any of the more malarious districts of Europe or America. It is safe to say that no one who has lived on the coast for more than a year has escaped infection. It is curious, too, in how many ways patients are affected. It is not an uncommon thing to find a new comer attacked in the course of his first few weeks there, and this attack may be of varying severity, causing death in not a few instances, and in other cases simply confining the patient to bed for a night.

Very often one escapes for periods ranging from six months to a year, and while congratulating oneself on one's immunity, an attack will suddenly come on in the midst of what is apparently the best of health. It can also be said that the attacks which are delayed are usually of a more severe character than those which take place shortly after coming. Whether this is due to a generally low condition incident to living in a climate of the character of the West Coast or to an accumulation of the malarial infection it is impossible to say.

There are two grades of fever, which are very distinctly separated by African medical men.

The first corresponds clearly to what is known as malarial fever in this country. It sets in with general malaise, which is so well recognised from any previous attacks that the patient will at once take precautionary measures long before the initial chill sets in.

This is followed some hours or even days after by a sharp rigor, during which the temperature and pulse will rise, even with the outside temperature over 100° F. The patient will find hot drinks, heavy blankets and hot water bottles insufficient to cause sweating. When diaphoresis does take place it is usually of a most profuse character, and it is not uncommon to have a woollen covering completely saturated with perspiration. If quinine has been administered at the onset

in divided doses aggregating thirty grains in the twenty-four hours, it will usually be found that the succeeding chill will be much less pronounced or often be absent. The pyrexia, however, continues for some days, causing as a rule but little inconvenience. This is the course of an ordinary attack which may, as has been said, confine the patient to bed for a couple of days and in many cases is hardly heeded by those who have been long on the coast.

The treatment is scarcely varied, and consists in the administration of a preliminary dose of almost unlimited quantities of hot spirits and a preliminary dose of fifteen grains of quinine with perhaps antipyrin or phenacetin. It seems to be a very much disputed point among the West Coasters whether the administration of the latter is helpful or the reverse. Personally, I found that although the antipyretic had no effect on the course of attack, the headache and muscular pains which invariably accompany it are very much relieved.

The opinions as to the amount of quinine to be given during an attack seem to be as diverse as those concerning the use of an antipyretic, and I am told that among the Zambesi on the East Coast it is no uncommon thing for a man to take the enormous amount of 360 grains per day. That this is not only unnecessary but absolutely courting disaster seems to be the general opinion of the more advanced medical practitioners who have had much experience in this sort of thing.

The most dreaded type of malaria to be found on the coast is known as black water fever, and is now being investigated by Fenton of Old Calabar. This sets in as an ordinary fever, but is soon recognised by the severity of pain in the lumbar region and by abnormal hyperpyrexia. The urine soon shows signs of clouding, and passes from dark yellow through wine colour to absolute blackness. The temperature is not uncommonly above 106° F., and has been known to reach 111° F. Death almost certainly follows collapse. The examination of the urine seems to point almost exclusively to a hæmoglobinuria, as very few of the organized constituents of the blood are to be found.

The treatment of severe cases of malaria has been found to be practically identical with that of Brand, and the percentage of deaths has diminished remarkably with the use of cold water either in the form of baths or as packing. In most places the temperature of the drinking water is never below 75° F., but even here it is found that a bath at this temperature is most effective in bringing down the pyrexia and in calming the patient generally.

The statement made by Kock, that quinine is the direct cause of black water fever, seems to have been made on insufficient grounds, and it is unlikely, that for some time at least, that any medicinal agent, synthetical or otherwise, will supplant it.

One of the most interesting diseases which has afflicted the white population is known as "craw-craw." This is a very intractable form of eczema which seems to follow bathing in rivers not too far inland to be unaffected by the sea. It is probably of an infective character and seems more particularly to affect the thighs and genitalia. It is not at all confined to the white population, for some of the most distressing cases I have seen were among natives. Here, where no measures were taken to check the disease, the whole of the body and face was patched with areas of infection, the eyes nearly closed with scabs which form on the upper and lower lids. As in ordinary eczema, all remedies tried have but little effect, except that by careful watching the disease is to a great extent checked, but when once it has started it seems to be one of the most difficult things in the world to effect a cure.

All along the coast, but also in the interior, the chief factor in native medicine seems to be the Ju-Ju or medicine man, who holds a position in the tribe perfectly similar to that of the medicine man of the North American Indian. To him are brought all cases of sickness of whatever sort, and he also prepares the thousand and one fetishes which are supposed to bring good luck or otherwise on the bearer. Added to this somewhat wide sphere of action he combines under the king the function of priest and hence is the prime mover in all religious ceremonies. What his real knowledge of medicine is seems to be very difficult to get at.

I had a number of opportunities of meeting some of them and of inquiring of medical men who had been many years on the coast in official positions, and were therefore in the best position to get the desired information, but none of these were able to afford very much of a definite nature on the subject. Naturally, anything which is so much shrouded in mystery as their art purposely is, is difficult to get at, especially by foreigners, who are always to a greater or less extent objects of mistrust. Whatever may be said of the simplicity of his medical armamentarium does not describe his knowledge of toxicology, and it is safe to say that nowhere in the world has poisoning been brought to a finer point than on the West Coast.

The negro is by nature of a revengeful disposition and, when once started, does not stop at half measures to achieve his end. By far the most frequently used toxic agent on the Coast has been, until very recently, the Calabar bean. This grows wild in many places, and hence is within the reach of all. By making a decoction of the bean the native is in possession of an almost immediate poison which is used with great success. To such an extent was this in demand that in the open market of Sierra Leone the beans were sold for a small price. These were used not only for the purpose of human poisoning, but also

it is said for destroying horses. It is a strange fact that it is practically impossible to keep a horse in Sierra Leone, for the natives so fear their introduction and the consequent loss to themselves in the work of carrying, that every horse which has been brought there has come to a speedy end.

The only antidote to eserine poisoning which has proved in any way successful has been the hypodermic injection of apomorphine which was practiced first, so I was given to understand, by Dr. Allman, P.M.O., Niger Coast Protectorate of Old Calabar. At present any native found with the bean in his possession is sentenced to a long term of imprisonment.

Of the other infusions which are used to bring about death the next two most commonly employed are those of sass wood and the strychnos bean.

Sass water is used principally in cases of ordeal, and should one native have a grudge against another of such a nature that he believes one or other must die, his method is to ask his foe to "drink sass water." This takes place with appropriate ceremonies and usually ends by both succumbing. Should the sass water induce vomiting, as it sometimes does, the participant recovers, not, however, without suffering for some days from the effects. The poison is a general paralyzant and the victim dies from cardiac paralysis.

Two other methods deserve notice, both for their ingenuity and also by reason of their being little known. The first is used on the Gold Coast to a greater extent than elsewhere and with very eminent success. It has the merit of being hard to detect and harder still to treat. Here the assassin uses small quantities of pounded glass with food, which is administered for periods ranging from a week to a month. This produces a most intractable form of enteritis which in the end usually kills.

The second method is the introduction of mud from mangrove swamps mixed with some finely-powdered gritty substance into shoes or boots. Mangrove mud seems to contain large numbers of tetanus bacilli which eventually cause symptoms of tetanus poisoning with invariably fatal results. This method is used in the Protectorate more than in the other colonies, and, from what I could learn, seemed to be a very great favourite with the natives there.

Of the diseases from which the natives suffer much could be said and, as far as I have been able to find, no book, as yet, has been written on the subject.

The average West African negro is not very long lived, and although from seventeen to thirty is as a rule a magnificent specimen of manhood, rapidly degenerates from that age upwards, so that it is rare to find one who has reached the age of fifty, most of them dying before

forty-five. Specific disease is rampant amongst them and pulmonary complaints, induced no doubt by the constant exposure in a hot humid climate, and any of the native hospitals is sure to contain a goodly proportion of patients in various stages of pulmonary tuberculosis.

The last feature which deserves notice is the evident crudity of native obstetrical methods, as is shown by the large percentage of umbilical herniæ; and one is sure to find among a crowd of boat boys examples of this condition showing protrusion from the size of an egg to that of a hard hat. These herniæ do not seem to incommode their lifting power in the least.

Among the natives the influence of natural medicine is rapidly losing its power and the out-patient clinics of any of the hospitals is crowded with patients eager to try the influence of the "white man's Ju-Ju" against their own; and it is safe to say that before the next fifty years have elapsed native medical treatment in the European towns along the coast will have become nothing more than a tradition.

THE PLACE OF PHYSICAL TRAINING IN A SCHOOL SYSTEM.

BY

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The last twenty years have seen many great changes in our ideas of School Education in Canada, and among the most notable has been the endeavor to meet the new conditions of school life that have arisen, due to the rapid growth of our cities and towns.

This might not seem to have much direct bearing on school life, at first sight, but new series of problems arise as soon as many people have to live in a confined space, and that specialization or division of labor appears which is forced upon the dwellers in cities. Such questions as drainage, water supply, ventilation, fresh air and exercise then assume an importance that is almost incomprehensible to those whose lives are spent in the freedom and physical activity of country life, and it is little wonder that we find a certain hesitancy, to use a mild term, in attacking such questions, and that we are met so often by the remark, that has done duty so long and so often, that what was good enough for our fathers and ourselves is good enough for the present generation of children.

Our cities and towns are of such recent growth, that this attitude must be expected, but with a wise holding on to that which was good in former days there should always be linked broad liberality and alert aggressiveness in the meeting of these new questions which naturally did not appeal with the same force to the educationalists of fifty years ago.

We find, then, but few scattered notes on the subject of physical education in looking over Canadian School Journals and Reports of former years. The boisterous out-door games of the play ground, or the village common with its saw-dust ring, a relic of the travelling circus, the long tramp to and from school, the evening hours at the wood pile or the garden or harvest field made up the day's work to the great majority of children with Saturdays in the woods, on the river or in the swimming pool, and the open sky and the broad fields were the only limit of the gymnasium that had to counteract the effects of the hours of confinement to ill-ventilated and badly-heated buildings.

That these disease-producing conditions were the rule, I find strongly brought out by an essay on school buildings, happened on in looking over a Provincial School Report for the year 1878.

* Read before the Provincial Association of Protestant Teachers, Oct. 14th, 1899.

I quote from it a paragraph in the writer's own words. He says :—

“ One might suppose from the shattered condition and ill-accommodation of many school-houses, that they were erected as pounds to confine unruly boys, to punish them by way of freezing them and smoking them, so that the master can do little more than regulate the ceremonies of the hearth.”

Thanks to the march of Sanitary Science and improved methods of ventilation and heating this could not now be said with truth about very many of our school houses, although my own school days recall buildings that answered to the essayist's description in more than one particular.

The present day brings the city child under totally different conditions, his home is on a built-up street, his play ground is the sidewalk and the roadway with the luxury of an occasional vacant lot. The various duties of the house that fall to the country boy, “ the chores,” are abolished or done by servants. The wood comes to the house sawn and chopped or comes in the shape of coal. The telephone runs the messages—and even the policeman strives to suppress the outward evidences of the boy's animal spirits that may threaten to interfere with the peace of the community, however valuable their display may be to the boy, from a developmental standpoint.

The Y.M.C.A.'s are trying to supply this want of exercise by their boys' classes, and are doing good service, but should not this work be provided for in every well-organized system of school education ?

The growth of the body must be completed in less than twenty-five years, and the years of most rapid growth are those of school life, between 8 and 17. It is in these years that the nervous system is trained to co-ordination, that the senses receive their strongest and most lasting impressions. It is in this time that the ossification of the bones goes on with greatest rapidity and that the muscles are trained to do the work that becomes automatic in the adult. This period takes the child through the changes of puberty when the body takes on the characteristics of manhood and womanhood.

At this period of life the greatest care must be exercised over the health lest the permanent stamp of disease, deformity or neglect be left on the grown man. The paramount questions must be those of good feeding, healthy surroundings and abundant bodily exercise, avoiding the dangers of overstrain, both physical and mental. Forcing and overwork in the growing child of 14 will certainly be visited upon the defective or enfeebled man of 40.

If physical training is neglected or deferred at this critical time its influence can never be replaced, no matter how hard we strive later on. The opportunity is gone beyond recall. Let us examine the conditions under which the child passes these years when the body like a cast is

hardening in the mould, acquiring the fixed form it is to have throughout life.

He sits, from 3 to 5 hours daily, on a seat more or less well-fitting, at a desk which is often too high or too low for his needs. This fixed position must be retained with but few intermissions.

In the natural condition a child, like all young animals, is in constant motion, and any prolonged fixity of position causes fatigue out of all proportion to the cause, as it appears to the grown man. This vital necessity for almost constant movement, is part of the process by which he grows, and anything that interferes with it, interferes with his complete growth and development.

Hence we find that the weaker ligaments and growing, plastic bones soon tire under the strain, the back curves forward, the shoulders round and the condition of "skewed back" is seen with flattening of the chest and cramping of the thorax.

If kept standing still for long periods of time the chest sinks, the abdomen protrudes, the chin drops forward and the weight is transferred from one leg to the other until the habit of resting on one becomes confirmed and a resultant lowering of one shoulder and distortion of the figure takes place. Not less profound though more difficult of measurement is the influence of this cramping on the heart, lungs and nervous system, and general health of pupils.

That a complete system of physical training can greatly improve this condition of school life will be generally admitted, and the constant strain of discipline caused by the attempt to keep children quiet and orderly should be greatly relieved by enough periodical exercise to engross that restless energy, which in the normal child is an index of his vitality.

The question is rather to outline a system of training suited to our conditions that would get the best results if generally applied in our public and high schools.

Such a system would be somewhat upon the following lines. At the end of every quarter of an hour's work at the desk, about 5 minutes should be devoted to free extension movements in the schoolroom with windows opened for ventilation when possible.

These movements should be designed to relieve the muscles and ligaments that have been on the strain and to correct the collapsed posture that results from the fatigue of sitting still.

Once a day there should be a change of clothing and at least half an hour's brisk exercise, hard enough to produce free perspiration, bringing into vigorous action the heart, lungs and skin, for no exercise has reached its maximum of good until this has been attained; this should

be followed by a tepid bath to cleanse the skin or even a cold bath if the child stands it well.

A large and well-ventilated hall should be used for this purpose, or in fine weather the open air.

In addition to this routine, out-door games should be encouraged in their season and made systematic for all who are able to take part in them. There will always be some whose physique or condition of health debars them from such rough games as football or hockey, but most of whom could take light exercise with great benefit. In other pupils special care is demanded requiring exercises that vary with the particular case, for the danger of overstrain and injury may be greatly increased by the kind of exercise employed.

For all such provision should be made that the pupil may graduate in better condition than when he entered instead of reversing the process.

At the very outset four questions must be settled before such a course can become part of the school system. They are time, teaching, equipment and medical supervision.

I. Where is the time ?

In all our schools and colleges there is a constant struggle for time to outflank the host of subjects that threaten to overwhelm both pupil and teacher alike, and the introduction of any new subject is not likely to be received with acclaim by teachers who look upon it as another demand on their already overtaxed energies.

II. How are teachers to be trained sufficiently in physical work to be able to give the exercises in the school room and how can we provide for a special teacher of gymnastics to conduct the regular work ?

III. How are we to provide a large well-ventilated room in which we could be sure of light and heat and the ordinary equipment of apparatus that goes with a modern well-regulated gymnasium, with dressing-rooms and lockers attached and with good hot and cold tub and shower baths, and if possible a swimming tank, for it is not to be forgotten that swimming is one of the best exercises we have for all-round development and is besides an accomplishment with which every person, male and female, should be familiar.

The ever present objection "Expense" comes up, but it is not fair in facing this question to say at once, because we cannot reach a certain standard of excellence forthwith, that therefore the standard is not worth striving for.

IV. What should be the proper extent and uses of medical supervision in the physical training of school children ?

There are always, in a class a certain number of pupils who are not up to the normal physically, and in allowing them to take part in severe exercise irreparable damage might be done which might impair their

usefulness or shorten their lives. Hence the necessity of having some medical supervision wherever exercise is used, that the instructor may know when certain pupils require to be treated with care or excused from any but the lightest forms of physical exercise.

The time occupied by exercise is so well employed that its introduction into the school curriculum should need no defense, and the hour in the gymnasium, preferably after the school work is over, should be the most attractive part of the day to the average boy or girl.

The training of the teachers would have to be done at the Normal schools, and a course could be taken there sufficient for the giving of such simple exercises as could be done in the school room. Of such exercises many manuals have been written, but I will refer only to the A. B. C. of Swedish Educational Gymnastics by Hartwig Nissen, instructor in physical training in the Boston Public Schools, and one of the most enthusiastic exponents of the Swedish system of school gymnastics; and to "School Gymnastics," by Jessie H. Bancroft, director of physical training in the public schools of Brooklyn.

The Swedish free movements depend for their individuality on two vital points, exercise by command and not with music, and the "Day's Order," by which the exercises are so grouped that a definite sequence is always followed.

The groups of movements are as follows :—

1. Order movements, to form the class ready to begin the real exercises and bring them to attention in correct position.
2. Leg movements, to exercise the legs and draw the blood from the brain.
3. Arch movements, to expand and raise the chest.
4. Arm movements, to elevate chest and strengthen the spine.
5. Balance movements, for equilibrium and posture.
6. Back movements, for shoulders and back.
7. Front movements, for abdominal walls.
8. Side movements, for muscles of waist and internal abdominal organs.
9. Jumping movements, for general development.
10. Slow leg movements, to prepare the body for rest.
11. Respiratory movements, to bring the respiration and circulation back to normal and prepare the body for rest.

By varying the number and severity of the exercises in each group, the character of the day's exercise may be much changed, while the day's order is retained. The advantages are many, a universal nomenclature and the training to ready obedience not being the least.

Its chief disadvantages are the uninteresting nature of many of the

movements which are analysed or dissected till the life has gone out of them. The strain on attention is not to be commended for over-worked children, and it is very doubtful if many of the exercises given have any of the results attributed to them.

Nearly all systems of school gymnastics, however, owe a great deal to the work done by the Swedes.

Miss Bancroft makes a selection of exercises from many sources, to which she adds others found to be good in her own experience. The result is a complete graded set of schoolroom exercises that are most complete and interesting.

For out-door or gymnasium work, however, the Swedish gymnastics are not so serviceable. Here dumb-bell, bar-bell and club drills to music are valuable and interesting; work on the parallel bars, horizontal and rings, gymnastic games and marches; and for girls fancy steps, marching and games. The importance of music can hardly be over-estimated. It relieves the strain of attention, the rhythm of a waltz or march makes the exercise almost automatic and has a distinctly soothing influence on the nerves, tired and irritable from the work of the day. To do the exercises in good time becomes a pleasure instead of a strain, and the music invigorates the gymnast almost as much as the exercise. It goes so far to make the work attractive that the increased enjoyment is enough to offset the trouble it may be to get it.

To direct this work we need more training than can be expected in the Normal school, and special teachers are required who have studied the higher branches of physical training in one of the Normal schools of gymnastics, such as the excellent ones at Harvard and Chautauqua, where all departments are taught both in theory and practice. One instructor could act for more than one school, and so divide the expense.

Military drill is sometimes employed in schools, but it seems to me totally unfit for the purposes of an all-round physical training. It was not designed for that purpose, and the constrained positions and long waits, a heavy rifle dragging on the muscles of the shoulder, are not likely to improve the figure of the growing lad. Individuality and freedom of movement have to be sacrificed to the good of the Company whose unit is four, and whose integrity depends on the self-effacement of its component parts.

The question of equipment must always be a serious one, but it need not be insurmountable. The main thing is a room large and well ventilated and well heated in winter. The apparatus can come little by little, but the space is essential. Open air gymnasiums would be of value and can now be easily fitted up by special apparatus made for the purpose. Why should not the drill halls that are found in almost every

town be used as gymnasiums for the school children? They are unoccupied during the day as a rule, and could not be better employed.

The medical supervision should be such that a record could be kept of pupils throughout their course.

In the Montreal High School for boys the Rector has succeeded in introducing a partial system which has been in use for the last three years, and is now working very well. A medical examiner attends at certain hours and makes an examination of the heart, lungs and general muscular system of the boys, noting any physical peculiarity or defect. He then gives a certificate of fitness to take part in games or gymnastics, on which is marked the kind of work specially needed by the pupil. This is taken to the gymnasium director, who is thus enabled to apply the exercises that the boy most needs.

In many cases boys have been directed on the right track, who would have undoubtedly been injured by indiscriminate and undirected exercise; defects in development have been discovered that would have gone on to permanent deformity without timely advice and warning.

Among such conditions found have been palpitation, weak, irregular pulse, organic heart disease, headaches from eye defects, chronic cough and bronchitis, backache, scoliosis and flat foot, uneven shoulders, hernia and joint inflammations. In many cases the condition was unknown to the parents.

The certificate of the family physician is accepted, but as it is desired to keep a record of all such examinations, a special form is used, to be filed and kept in the High School building.

Some such system could be introduced into all schools with benefit to both teachers and pupils, but I would extend the duties of the medical supervisor to the inspection of the rooms to see that the desks and seats fit, and all other matters of school hygiene. He should be on hand for advice to teachers in cases where a pupil's dulness might depend on some defect of the senses, and the pupil referred to the family doctor for treatment.

REPORT OF A CASE OF COLLES' FRACTURE WHICH LED TO
A SUIT FOR MALPRACTICE AND PROLONGED LITIGATION.

BY

J. M. CONERTY, M.D., of Smith's Falls.

After a delay of somewhat more than two years I desire to report the following case, not because of any new ideas in the line of treatment but rather on account of a complication which led to unsatisfactory results and further to show how a surgeon in the faithful performance of his work may be called on to defend himself in a most unjust action.

On the 11th of September, 1896, I was summoned to the home of Mr. A—, whose boy, a strumous lad of about ten years, had fallen from a beech-nut tree. On examination I found a fracture of the lower end of the radius (right arm) and a bruised condition of the thenar eminence corresponding to a point marking the junction of the middle with the inner third of the outer head of the flexor brevis pollicis muscle, also some scratches which had been bleeding on the dorsal surface of the hand.

After administering an anæsthetic I washed the hand and arm in a bichloride solution, 1 to 2000, and proceeded to reduce the fracture. The dressing used to retain the fragments in proper position was two splints, anterior and posterior, well padded, measuring about two and one-half inches in width and extending from near the elbow to the metacarpo-phalangeal articulation.

A pad consisting of a roll of bandage one inch in diameter wrapped in absorbent cotton was placed in the palm of the hand on which rested the distal end of the anterior splint and an antiseptic pledget of gauze was placed over the bruised area.

The splints were held in position (in the absence of adhesive plaster) by two "ties" of bandage placed one at the wrist and the other near the elbow. A bandage was then applied over the splints and the arm placed in a sling. Directions were given to keep the boy at rest and the hand elevated.

I saw the boy on September 12th and 17th, and found everything satisfactory. The boy did not complain. He was playing about two days after the accident. I did not see the boy again until October 4th, when I called at his home. On this date I removed the splints and found the dressings and hand in a very dirty condition. So far as the

bone was concerned, I found union good, with no deformity. After bathing the hand in tepid water I discovered an indurated patch of skin over the seat of bruise which was showing signs of separation from the healthy tissue. I considered it the remains of the bruised tissue which nature had not been able to take care of. It was superficial. Before going I dressed the hand antiseptically.

Three days after, on October 7th, I again called and on examining the hand, found signs of separation of this patch more marked. Again dressed it as on previous day, giving instructions to have the boy brought to my office the next day to have his hand dressed.

He did not come as directed and I afterwards concluded that his hand was all right. On Nov. 14th, Mrs. A—, who was about to be confined, called to consult me regarding her condition. On leaving my office she mentioned that the "sore" on the boy's hand had not healed yet. I reminded her of my instructions to bring the boy to my office to have his hand dressed and told her to have the boy brought to my office at once.

On Nov. 16th, Mrs. A— brought the boy and on removing a dirty rag which served as a bandage, I found a deep sloughing sore the size of a twenty-five cent piece. The indurated patch of skin referred to before was still hanging to the surface of the sore by some fibrous shreds.

The wound had become infected with pus germs which had burrowed deeply. The thumb was held in an adducted and semi-flexed position in order to relieve any tension on the ulcerating surface.

On inquiring why the boy had not been brought to me as I had directed, Mrs. A— replied that she thought that the hand would heal all right. She tried everything on it to heal it. Spoke of some salve she had obtained from a neighbour woman, the healing properties of which were unsurpassed, and concluded by saying that "she didn't know what kind of a young one he was for if he got the slightest scratch it seemed never to heal."

On this occasion I got the sore cleaned up as well as possible, applied a proper dressing and instructed the boy to come to my office every day until his hand was all right. He came irregularly and it was almost the middle of December before the sore had completely healed.

As there was loss of integument and subadjacent tissue there was contraction in the process of healing which was much favored by the position in which the boy held his thumb—hence we had a slight deformity consisting of an adduction of the first metacarpal bone causing the thumb to be drawn toward the median line to such an extent that it interfered with the complete flexure of the index finger.

Owing to the youth of the patient and being deterred from doing a plastic operation owing to the unsanitary and septic conditions existing in the boy's home, I determined to try massage, promising good results if I had the co-operation of the boy and his parents. I encouraged the boy to come to my office every day for treatment and I explained to his parents how to rub and manipulate the boy's thumb in order to restore its position.

The boy came five times during the month of January. After this I did not see anything of him until the first of June when he appeared accompanied by his father, who for six months previous had been threatening to bring an action against me for malpractice and boastfully claiming that he would get \$5000.00 if he did so.

On this occasion I charged the father and son with neglect and pointed out to them where my directions had not been followed. I informed the father that I had not seen the boy for more than three months. The only excuse elicited from Mr. A— for his negligence in not executing my orders was that he thought the treatment I was giving the boy was not doing any good. He further stated that he had consulted other doctors who said that "the hand would have to be split up."

I discouraged any operative procedure at this time and told Mr. A— that I would not operate without giving massage a fair trial; that massage properly and persistently applied would in my opinion restore the functions of the thumb.

After again showing him how I wanted the hand treated, I requested Mr. A— to so treat it for ten minutes every night and to advise the boy's mother to do likewise every forenoon. The boy was also to come to my office every afternoon at five o'clock. He came only four or five times when I again lost all trace of him and have not had an opportunity to do anything for him since.

In answer to inquiries as to home treatment the boy told me that his mother had not had time to treat his hand and he was always in bed when his father came in at night, consequently there was no home treatment.

During this latter treatment I procured a plaster cast of another boy's hand, and after padding it carefully, would place the patient's hand in the cast with the thumb in an extended position. The hand was kept in the cast by a bandage, this I afterwards learned was taken off as soon as the boy would go home.

On the 5th day of January, 1898, I received a letter from Mr. A—'s solicitors asking for damages for alleged malpractice, and threatening that unless they heard from me, a writ would be issued within a week's time. The latter also stated that Mr. A— would consider any offer

of settlement. There was no offer of settlement, consequently, at the expiration of a week the promised writ was issued asking for \$6000 damages.

The case came down for trial at the Spring Assizes in Perth, but owing to the inability of the plaintiffs to secure medical testimony, they asked for a postponement. We thought the case would end here, but during the summer the counsel for the plaintiffs succeeded in securing the services of other medical men to give evidence on their behalf.

Consequently at the Fall Assizes the case went to trial and after a fight lasting two days we succeeded in getting a non-suit with judgment for costs.

The plaintiffs at once appealed to the Divisional Court asking for a new trial on the grounds that "on the evidence the case should not have been taken from the jury."

After waiting almost a year the Divisional Court, I am sorry to say, gave judgment against me, ordering a new trial and saddling all the costs on me. Mr. B. B. Osler, my counsel, at once appealed from this judgment of the Divisional Court to the Court of Appeal, where the case now stands for argument. We expect a decision from this Court before the end of the year as the case is on the list for argument during the present session, and let us hope the decision may be favorable.

Notes—The contention of the plaintiffs is that the sore on the boy's arm was produced by a splint.

We know the cause as stated, the fall, causing devitalization of tissue and subsequently, infection, and further, we declare that owing to the location of the "sore" it is impossible to produce such by means of a splint.

The deformity which is slight, is due to cicatricial contraction rather than to any peculiar art in bandaging as alleged by the plaintiffs. There would never have been any contraction had there not been neglect on the part of the plaintiffs (from Oct. 7 to Nov. 16) allowing the sore to become deeply infected by pus organisms, with consequent loss of tissue.

The plaintiff is a worthless fellow who at the time he began the action was under an order of commitment to jail for debt. No matter therefore, under an order of commitment to jail for debt. No matter therefore, how successful we may be in defending, we must pay the costs of defence.

Just a word about settlement.—During the first days of the proceedings we offered (rather than spend money in litigation) to take the boy and place him in a hospital, public or private, and operate on his hand, or otherwise treat it in order to restore its usefulness, provided we could

have absolute control of him while under treatment. They would not accept this unless we gave them a guarantee. We of course, could not guarantee anything.

I presume at this time \$200 would have settled the case but I considered that such a course would not only be unjust to the profession, but particularly so to myself.

While it would have been much better for me financially to have settled, yet in doing so, I would only be encouraging a class of unprincipled and irresponsible fellows who are after plunder rather than the benefit of our earnest efforts in their behalf.

It is true, and I have experienced the force of it, that when confronted by all the annoyance of protracted litigation, the enormous expense, which so many of us can ill afford, besides the injury to our professional standing, etc., the first suggestion which is apt to come, is to get the matter settled as quickly and consequently with as little publicity as possible. And we ask the question, would it not be better to pay something at once and get out of the difficulty? My answer is no! A thousand times no! so long as we feel that we have done our duty and are therefore morally not responsible.

It is the duty and ought to be the desire of each member of the profession to suppress by every possible means all such actions, which are so fraught with injustice, not only to the individual, but also to the profession as a whole.

Just so soon as a certain class of the public and those who advocate their claims in court, understand that we do not listen to their "bluff." That they in order to gain anything must fight every inch of the ground against a united profession, then, and not till then, will the members of our profession be relieved largely if, not entirely, of a most painful annoyance, as well as to many of us a severe financial loss.

SOME RETINAL COMPLICATIONS IN CHLOROSIS.

BY

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The following cases of chlorosis are of interest because of the retinal condition. It is recognized that optic neuritis occasionally occurs in chlorotic girls. Sir William Gowers recorded two undoubted instances in the *British Medical Journal* of 1881 (Vol. i, 793). In each case the anæmia was very great, the hæmoglobin being reduced out of proportion to the corpuscles, in one to 30, and in the other to 38 per cent. The first case suffered from a relapse of neuritis on a recurrence of anæmia. In each case the improvement was most rapid under the influence of iron.

Another case of neuro-retinitis in a chlorotic girl is recorded by R. Williams in the *British Medical Journal* of 1884; (i, 10.) in which rapid recovery also took place under the administration of iron. It is interesting to note that these cases presented a slight degree of hypermetropia. "It is generally admitted that this condition is capable of causing slight congestion of the disc and, if so, it is possible that in these cases of chlorotic neuritis the hypermetropia may help in setting up the changes in the papilla which in the special blood state progresses to a much more intense degree than they would otherwise attain." (Gowers.)

Optic neuritis in chlorosis was first noticed by Hirschberg, and an instance in a girl of sixteen quickly cured by iron has been recorded by Bitsch in *Klin. Monatsblatt* April, 1879, pp. 144. Saundby and Eales published a paper in the *Ophthalmic Review*, Vol. i, 303, on the changes found in the fundus oculi in anæmia, based on the examination of fifty cases. Arterial pulsation was not observed in any of the cases, and venous pulsation not more frequently than in healthy individuals. Slight blurring of the disc mostly with hypermetropia occurred in five of the cases (10 per cent.). In four of the cases there were whitish or yellowish patches of exudation near the disc or scattered at the periphery. In one case there were two hæmorrhages near the disc, and in several there were small white spots or small spots of pigment presumably left by hæmorrhages. Arterial pulsation was observed by Schmall in 20 out of 55 cases of chlorosis (*Ophthalmic Review*, 1882, pp. 268.)

Two of my cases presented optic neuritis with retinal hæmorrhages, the third, retinal hæmorrhages.

CASE I. Optic Neuritis with Retinal Hæmorrhages.

May H., 22 years, waitress, was admitted to the Montreal General Hospital on November 24, 1894, under Dr. J. J. Gardner, complaining of loss of vision in the left eye. The trouble began two weeks before her entrance to the hospital. She had come in from the cold and was sitting before the fire when pain, accompanied by profuse lachrymation, began in the outer part of the left eye. The pain was not constant but was present when she would turn the head quickly and absent if she remained quiet. It was sharp in character and was felt in the outer part of the eye and in both lids. When she would turn her head, the sight in the left eye would be absent for a moment and a mist would come over the eye. The pain continued for three days and the mist then became constant. The only cause to which she could attribute the trouble was exposure to a draught.

On admission to the hospital, her appearance was that of a well nourished girl of 22 years, of fair complexion and good colour. There was no pain in the eye. There was almost complete loss of sight in the eye. There was a well marked optic neuritis with numerous retinal hæmorrhages between the disc and the macula. The veins were engorged but no pulsation was noticed either in the veins or in the arteries. Careful inquiry and search were made for syphilis, but no evidence was obtained nor was there any history of specific disease. This is of interest as the neuritis was considered to be due to specific disease when the girl entered the hospital. I may say that Dr. Gardner and I felt quite sure of the absence of syphilis. Menstruation occurred every three weeks, lasted two days, and the flow was scanty and painful. Her eye trouble began one week prior to the menstrual period. The heart and lungs were normal, the hæmoglobin was 37 per cent., and as no cause other than the blood condition could be found to account for her trouble, she was placed upon Bland's pills and mercurial inunctions. By December 31st, the disc had become much clearer and she could see down the ward with the affected eye. Examination by test letters gave $20/30$ without the aid of glasses and slight improvement with glasses. She left the hospital on January 5th, 1895, about six weeks after admission, feeling and looking exceedingly well. The hæmoglobin had increased to 70 per cent., the disc was white and the retinal hæmorrhages had disappeared. She could see well and read ordinary type.

CASE II. Optic Neuritis with Retinal Hæmorrhages.

Miss Fanny T., aged 17 years, school girl, consulted me on March 27, 1899, for headache and loss of sight in the right eye. The eye trouble began about six weeks before I saw her with sudden blindness

which was not attended by pain or lachrymation, and occurred while she was in school. Sight gradually returned, but three weeks later, while she was playing the piano and singing, sudden absolute loss of sight again occurred in the same eye.

When I first saw her, six weeks after the first loss of sight, the pupils were equal and of fair size and reacted well to light and accommodation. She could see only shadows with the right eye and there was marked diminution in the field of vision. There was a well marked neuro-retinitis with hæmorrhages. This condition was confirmed by Dr. J. J. Gardner, who found also a slight degree of hypermetropic astigmatism, axis 90°. The retina of the left eye was normal. The trouble to which the eye condition was due began one and a half years before with general weakness and headaches. When first seen by me, her appearance was that of a well nourished brunette of seventeen years. The mucous membranes were anæmic. She slept poorly and had frequent headaches situated in the temples and over the forehead. They were caused by excitement and reading. The heart and lungs were normal but she had dyspnœa and palpitation on even the slightest exertion. The sensations of heat and cold and pain were diminished over the entire right side. The deep reflexes were normal and the muscular power was similar on both sides. The only digestive disturbance was extreme constipation. The menses were irregular, scanty and painful. There was no leucorrhœa. There were no evidences and no history of syphilis. The hæmoglobin was 42 per cent., red cells 3,612,500, and there was well marked poikilocytosis. The urine was clear, acid, and was free from albumin and sugar. She was given Bland's pills and potassium iodide, and by June 1st, that is, about nine weeks after I first saw her, the hæmoglobin had risen to 73 per cent., the red cells to 5,241,000, and there was no poikilocytosis. There were no signs of hæmorrhage and the disc, except for a little obscuring at the top, was almost clear. Her general health was excellent and she was free from headache, palpitation and dyspnœa. On June 13th, the hæmoglobin had risen to 90 per cent. She felt in perfect health. Her sight was good enough to read ordinary print, though not acute enough to distinguish people across the street. The disc was pale and at the upper margin a little obscure. There was still diminished sensation to pain and heat and cold over the entire right side. The Bland's pills were discontinued and she took small doses of the potassium iodide for some time longer. On Dec. 15th, 1899, she felt in perfect health. The right disc was clear but rather pale. Vision, right eye, nearly $\frac{20}{40}$ without glasses and $\frac{20}{30}$ with glasses; left eye, $\frac{20}{30}$ without glasses, and $\frac{20}{20}$ with glasses.

CASE III. Retinal Hæmorrhage.

Mary Ann F., aged 22 years, was admitted to the Montreal General Hospital on January 22, 1894, under the care of Dr. J. J. Gardner, complaining of dimness of vision in the left eye and general weakness. Her trouble began two weeks previous to admission. She had been sweeping, and while stooping to pick up the dust pan, felt a sudden pain in the left eye. It was very sharp, lasted acutely about half an hour, and was accompanied by profuse lachrymation. She felt very faint. In about half an hour there was a smoke over the eye, and objects looked smoky. She could see from the corners of the eye but not directly in front. The pain was pricking in character, was worse at night, and lasted about two weeks. After that it was present only when she read or when a bright light was placed in front of her. Her sight gradually improved. The general symptoms which she complained of, such as weakness, breathlessness, palpitation, leucorrhœa, irregular and scanty menses, and headaches, had been developing for about two years. She had had measles in childhood, diphtheria at sixteen, and grippe two years previous to the eye trouble. There was no history of rheumatism.

On admission to the hospital, her condition was that of a well nourished young woman of 22 years with a fair complexion. The skin had a well marked green colour. The conjunctivæ and lips were very pale, the hands white and the nails bloodless. There was a hæmorrhage over the centre of the disc and another, about the size of the disc, situated at its upper and temporal side. The temperature was 98.8° F., and the pulse 88 in the afternoon. The heart impulse was slightly outside the nipple line. Dimness began at the upper border of the fourth rib and at the left margin of the sternum, and extended slightly outside the nipple line. A localized systolic murmur was heard at the apex and also a localised systolic murmur at the third left costal cartilage. She had slight cough without expectoration. There were palpitation and dyspnœa on exertion. The urine was 1020, acid, and did not contain albumin or sugar. The hæmoglobin was only 25 per cent. She was put to bed and given Blaud's pills and strychnine. On February 23rd, that is about four weeks after admission, she left the hospital. The hæmoglobin had increased to 60 per cent., the hæmorrhage over the disc had disappeared, and the hæmorrhage to the side of the disc had diminished one-half.

In conclusion there are a few points to which I wish to direct attention:—

- (1) Only one eye was affected.
- (2) In all three cases the onset was sudden.

(3) The rapid improvement under iron.

(4) The neuro-retinitis and hæmorrhages occurred well on in the course of the disease.

(5) Hypermetropia was present in both the cases with neuro-retinitis. I omitted to look for it in the other case.

(6) I take the liberty of quoting from Gower's *Medical Ophthalmoscopy*, pp. 101 and 102, to explain why iodide of potassium and mercury were given. "Optic neuritis is so frequently associated with syphilitic disease of the brain and its membranes that the administration of iodide of potassium should be a rule in all cases in which the age of the patient is such that acquired syphilis is possible. Iodide in large doses secures a more prompt improvement than mercury and does no harm if the disease is not syphilitic in nature. Additional benefit may, however, result from the subsequent use of mercury. The completeness of the recovery depends upon the promptness with which the progress of the disease can be checked. Even in syphilitic cases it must be remembered that the intra-ocular neuritis, being probably not syphilitic in nature although the consequence of syphilitic brain disease, the remedy employed does not influence the inflammatory products in the papilla as it does the disease in the brain."

Hughlings Jackson believes that iodide of potassium is sometimes useful when there is no syphilis.

SURGICAL GLEANINGS FROM ABROAD.*

BY

L. COYTEUX PREVOST, M.D., of Ottawa.

The surgeon's mission is to relieve the sufferings of those who confide their health to his care and to save their lives when he can. So noble is this mission that we willingly lend to it a sacerdotal character, because, after all, life is a blessing; it is better to be than not to be, and next to existence, health is the most desirable thing we, mortals, could wish for. We lose both, owing to systematic disorders, the true nature of which is all the more obscure that the phenomena take place in the interior of organs full of mystery, inaccessible to our best means of investigation. The explanation of the physiological functions of the body has always been the aim of predilection of those engaged in the study of medical sciences. The field is infinite. Whatever may be the depth that science has reached, and at the very moment where we are preparing to congratulate ourselves for having, as we think, at last, discovered the explanation most eagerly looked for, our hopes are suddenly crushed by the unforeseen appearance of labyrinths strewn with new problems. And very often these recent discoveries shed a new light upon the route we have just travelled over, showing us with striking evidence the falsity of the ideas of the day, and compelling us to destroy what our poor human mind had erected at the expense of such great labor and the solidity of which we were so proud. We must commence all over again. Bitterly taught by experience, we go to work with less pride but more wisdom. Gathering from the acquisitions of the past, the few shreds of truth rescued from the disaster, as that could not perish, we religiously collect them, as primers of hope for the future. Wiser, we shall hereafter multiply our means in the research of the unknown, scrutinizing the validity of conclusions too hastily deducted from delusive theories. Above all, we shall ask, every one engaged in the study of medical science, to make known to us the results of their own researches. The synthesis of all these intellectual endeavours shall, hereafter, constitute the base of all individual work, which is doomed to remain sterile if it is isolated. In a word, the knowledge of all that is done around us, joined to our personal experience, is the *sine qua non* condition of all serious progress in surgery as well as in medicine. But medical literature in spite of, or, perhaps, owing to its richness, is unable to supply us with such momentous knowledge; we must go ourselves and see hear and learn what is

said and done elsewhere. Unfortunately, exigencies of a large clientele and thousands of other obligations usually paralyse the liberty of the general practitioner. On the other hand, others, owing to the special nature of their occupations, enjoy more leisure. It belongs therefore to the latter to go and hunt up information and it is, besides, their duty to share the knowledge obtained with those who, in this respect, have not the same good fortune.

All this preamble, gentlemen, is merely and simply to tell you that I am here to-night, begging the favor of communicating to you some of the interesting facts I came across during the several excursions I have made amongst surgeons everywhere, but especially abroad.

The general impression I brought back from my trips, gentlemen, is the willingness with which nowadays the majority of surgeons resort to the knife in cases which were formerly relegated to the domain of timid temporisation or amenable to the general means of surgical therapeutics. The marvellous results obtained by the means of asepsis and antisepsis seem to justify the greatest daring. The peritoneal cavity has ceased to be the mysterious sanctuary which we always approached in trembling. We no longer wait until the stomach is the seat of a malignant affection to perform the resection of this viscus, and the success achieved by gastro-enterostomy in simple stricture of the pylorus has justified this courageous boldness. And Scudder goes still further: he has removed the whole stomach itself, suturing afterwards the œsophagus to the duodenum. The patient lived, and what is more astonishing, the digestion was not only very little disturbed, but nitrogenous food itself did not seem to be aware of the fact that the organ entrusted with its metamorphosis existed no more. And, again, what would Durande say to-day, with his sovereign remedy for gall stone, could he witness with what facility we reach, knife in hand, the gall-bladder to cut open and extract the foreign body that it contains? The kidney, the spleen, nowadays, when they are in the way, we remove them, that is all. The intestine, we resect it by the yard as it were, the two ends are united, and the patient continues to live. And in gynæcology, what have we done within the last twenty years? And merely to determine the diagnosis, we do not hesitate to open the abdomen, an operation which, in spite of all that is said, we must still look upon as a defiance to the numerous and concealed enemies with which we are surrounded.

With regard to external surgical diseases, we do not inconvenience ourselves either. In anthrax, crucial incision had long ago taken the place of the classical poultice; to-day a great many surgeons, even at the onset of the disease, trace a parenthesis on each side of the evil and

remove it as they would do a simple tumor; and why not? Glands-gorged with lymph in lymphadenitis, we scoop them out, it is more radical and more expeditious than to resort to hot fomentations or tincture of iodine. Inflamed joints which formerly we dared not approach but with the utmost respect, we tap them, incise them to-day, we cauterize their interior and the patients get well. In goitre, no more display of ointment or revulsive, we remove the gland. The enlarged prostate also is taken away after perhaps previous recourse to castration, while waiting to perform the radical operation.

Gentlemen, I have no intention of prolonging this enumeration, all I want to add is that lately, the majority of surgeons seem to have a tendency to repress the excess of this operative fever. Anyway, it is always the same thing, and history repeats itself. With the coming of the antiseptic era, there appeared an operative delirium which begins somewhat to fade away. The enthusiasm of the first days is abating, abuses are suppressed and the wisest show to us the path we must follow, narrowing, as it were, our means of action and focussing the operative indications taught by experience. I would not even be at all surprised that we would sooner or later fall into the opposite excess and that, fearing to do too much, we would remain behind the mark. This reflection comes to my mind in thinking of the passionate expression of the tendencies of those we agree to name the conservative surgeons. No doubt their aim is commendable, and moreover, we must confess that the results obtained in some cases seem to justify their ideas. But every one has not been so fortunate and very often, for instance, in presence of small uterine fibroid, has bitterly regretted having followed the advice of those who, in the name of conservation think it proper to abandon these cases to themselves. And again, for trying to be conservative, and for having neglected to remove the uterus in the course of double oöphorectomy, or else, for having simply resected an ovary instead of sacrificing it, I know of some who have experienced very keen remorse as a reward for their good intentions. But what I applaud above all with both hands, is the wise determination recently arrived at by a certain number of surgeons, and namely by Piquet and Febré, who caution us against attempting any surgical operation on hysterical or insane patients. Here, whatever may be the indication, as long as existence is not threatened, we must resist the temptation and abstain from all serious operative interference. And especially on the gynecological ground, were I allowed to invoke my personal experience and to venture on advice, I would say: with those brave women, let the genitals alone, or else, if once you begin, you will never end. The whole genital system will be sacrificed piece-meal before you obtain the suppression of the painful symptoms.

Now, gentlemen, if you will kindly accompany me, let us pay together a short visit to New York, this incomparable metropolis, with its congregation of amiable and distinguished surgeons. Going, we shall stop a moment in Montreal, and shall visit Paris coming back. This itinerary is well worth another, is it not ?

There exists in Montreal a young institution which I desire to point out to your attention. It is a new medical association formed by a group of young French-Canadian physicians, the most of whom have terminated their studies in France, and who, since their return, have conscientiously continued to work and study. I know several of them personally, and all I can assure you is that some day you will hear of them. Every Thursday night they meet in one of the halls put at their disposal by the professors of Laval University, and there, under the chairmanship of a new president chosen from amongst themselves every week, they talk medicine, surgery, obstetrics, and bacteriology. Their meetings have especially a clinical character, the interesting cases met with in their practice being related, commented and thoroughly discussed. The reports of these remarkable evenings are published in *extenso* in periodical medical reviews, and really some of them are simply masterly. At one of their recent meetings, the everlasting subject of the operative indications in appendicitis was the order of the day. The meeting, that night, was presided over by one of their old professors and one of the most eminent surgeons in Montreal. Almost all members present, especially those who were doing some surgery, were in favor of an immediate operation in the great majority of cases, claiming that it was always unwise to let the patient run the risk of the contingent danger of temporisation. On the contrary, the president held an altogether different opinion, and squarely condemned appendicectomy as an operation almost in every case useless and very often harmful to the patient. The chief argument upon which rested his proposition was ever the same: He had seen and was still every day meeting with so many cases which had done well by medical therapeutic means alone, that it was causing the patient an unjustifiable risk, in opening the abdomen to remove the appendix.

Shall we ever agree upon this question so often and for such a long time debated ? yet, the whole thing seems to me very simple ; and if the adversaries are as deeply penetrated with the force of their arguments as I am of my own, I quite easily understand that we shall always follow parallel lines without any hope of ever coming together. Apart from a few rare exceptions, in which the urgency of operative treatment is generally admitted, almost all cases of appendicitis begin the same way and with the same symptoms, the cases which will favorably termi-

nate, and those which will end fatally. It is perfectly useless to rack our minds, we have no sure signs whatever, at the onset, by which we might surmise what the future keeps in store for us. "Let us wait," some might say, "it so frequently happens that everything passes off most naturally."

To my mind this is wrong. I am afraid to venture myself across a lake in a bark canoe; I had rather, in spite of rough roads, go around driving. "But, water is calm, the sky pure and bright, and besides," you might say, "I know lots of people who have crossed that way without accident."

I am quite aware of that, and it is not those who did it safely who have rendered me prudent, it is the others who were drowned; although the conditions were entirely similar and apparently as safe when they started. You cannot tell at what time of the crossing a gale may rise or a mere imprudence upset your frail boat. And, besides, since life itself is at stake, why not choose the safest route in spite of some inconvenience? For the country practitioner, away from large centres, it is another thing; let him run the risk. He has neither the practice, nor the modern arsenal required for this kind of operation, he is therefore justified in having recourse to the medical means at his disposal. But in a city, living in the vicinity of hospitals so well equipped, and next door to trained surgeons, there should not be any hesitation; drive around the lake, do the operation or ask somebody else to do it for you, provided that the disease is at *the very onset*; and I insist upon that point. Such is, besides, the practice followed by the New York surgeons, who all believe that it is not prudent to leave a patient suffering from appendicitis, at the mercy of a mere medical treatment. They differ from one another only with regard to the variety of operative details which are as numerous as the surgeons themselves. I saw several of them at work and gathered information which is not devoid of interest. McBurney, for instance, whom I may call the father of operators for appendicitis, insists upon the necessity of making an oblique incision, in order to avoid the section of the nerves which traverse the abdomen and supply movement to the rectus muscle. Otherwise the patient will, later on, show a sort of muscular weakness on the operated side which, in the standing position, allows the abdomen to sag cut on the right of the median line.

Morris, of the *Post-Graduate*, lays a great stress upon the necessity of making the smallest incision possible, one inch and a half, for example. I saw him make even only a simple button-hole, in cutting with scissors the base of a fold made by raising the skin, instead of dividing, like others, the integuments with a knife.

Lloyd also is much in favor of small incisions when operating for appendicitis. Why, may I ask you, resort to such exaggeration?

I recollect having seen once an operator painfully labouring through one of these small openings. The operation had been long and difficult and it had proved necessary, in looking for the appendix, to pull out quite a good length of the large intestine. When it came to re-instate the bowel in the abdomen, the constriction produced by the incision had created exactly the conditions of strangulated hernia, and it was with the greatest trouble that the surgeon finally succeeded in reducing the gut, congested, bluish, enormously tumefied.

Gerster, of the Mount Sinai Hospital, on the contrary, makes an incision three or four inches long. He wants to see what he is doing, and he is right. He does not even feel the least uneasiness about the possibility or probability of future hernia, and I saw in his wards, three patients recently operated, who already during their convalescence had unmistakable hernia. "What difference does it make?" said he; "what I want, above all, is to save the life of my patients; the hernia we shall cure later on." I must add, however, that the cases I am alluding to were suppurative appendicitis which had required extensive drainage. In those cases with abscess, the majority of surgeons to-day are satisfied with evacuating the purulent collection, washing out the sac or wiping it out, filling it afterwards with large strips of iodoform gauze. They do not lose time in searching for the appendix unless the latter readily presents itself under the hand of the operator, in which case, of course, it is removed. If, compelled by circumstances, the removal of the appendix is decided, this is done only after the whole cavity has been surrounded with a real wall of iodoform gauze to protect entirely the peritoneal cavity from all contamination.

One of the most original things I saw in New York is the peculiar way that Professor Edebohls has adopted to do away with the appendix in some cases. He does not perform appendectomy, but invaginates the whole organ into the cæcum. After having looked for and found the appendix, he ligatures the meso down to the intestine and trims carefully the whole appendix from all adipose tissue which adheres to it. The assistant then grasps the cæcum between the index and the thumb of both hands on each side of the appendix. The operator, with a thumb forceps, carefully invaginates the appendix, beginning at the base and proceeding alternately on one side and then the other. Little by little, the appendix is coaxed in and finally disappears entirely. It can be felt, then, through the walls of the cæcum, but it is telescoped, as it were, serous against serous. By gradual pressure, he causes it to sink in more and more until it is entirely turned inside out like the finger of a glove, the inside of the appendix being in contact with the

intestinal mucous membrane. He finally sutures the opening left in the cæcum by the invaginated appendix. The latter, it seems, passes in the stools in eight or ten days. I need not add that this process is not applicable to perforated or gangrenous appendicitis.

I saw also Edebohls remove the appendix from behind in the course of nephrorrhaphy. You know that this distinguished surgeon believes with great conviction that salpyngitis, appendicitis, and floating kidney constitute a pathological triad which is almost always the indication for a triple surgical operation. To remove the appendix by the lumbar region is not an operation of daily occurrence. Edebohls has attempted it ten times already. Eight times he succeeded in finding the appendix and invaginated it according to the method I have just described, but twice he failed to find the appendix, which shows that it is quite a difficult operation to undertake.

Since I have the honor of speaking of Edebohls, I cannot resist the desire of giving you a description of his method of doing nephrorrhaphy, an operation which he has done alone, I believe, oftener than all the other surgeons in New York united.

The patient lies flat on her stomach, the legs flexed and the feet, heel upwards, held by the stirrups of the operating table you know. The abdomen rests on a cylindrical rubber air-cushion which Edebohls has devised especially for this kind of operation. It is about eighteen inches long and eight inches in diameter when inflated. An incision as long as possible is carried midway between the vertebral column and the lateral line of the body, from the border of the twelfth rib to the ilium. The external edge of the erector spinæ may be used as landmark. The knife progressing divides a few fibres of the latissimus dorsi, cuts a fascia and soon falls on the quadratus lumborum, which is denuded of its aponeurosis all along its internal border. The fatty capsule then is seen and the kidney may be felt already at the bottom of the wound. Between two forceps the adipose capsule is incised and the fat at once protrudes through the incision. The fibrous lamina is incised along the whole length of the convexity of the kidney, after which it is drawn out of the wound as far as it will go and the redundancy of the fat sac is cut off on either side, taking care not to open the peritoneum at the lower pole of the kidney. The kidney is before our eyes. If it is very movable, it is hooked up with the fingers and brought entirely out of the abdomen. Should we experience any difficulty, then the ingenious action of the cushion is brought into play. In pulling downwards on the legs of the patient, the cushion quits the inferior part of the abdomen where it was placed at the beginning of the operation and rolls up towards the diaphragm, and by its

pressure crowds up the viscera and causes the kidney to almost pop out of the abdominal incision.

A small puncture is then made in the capsula propria on the convexity of the organ, in the median line near the lower pole. Through this opening, the capsula propria is divided downwards and upwards, upon the director. Catching the edge of the incised capsule with a thumb-forceps, the kidney is denuded with the handle of the scalpel on either side of the incision until about one inch of the kidney substance has been exposed all along the incision. The stripped off capsula propria is not removed, but is doubled backwards upon the still adherent portion like the lapel of a coat. At the time of the operation, there is sometimes quite free bleeding, but it is of little consequence. A small curved needle, threaded with fine catgut, is thrust, beginning by the external side, through the layers of the doubled capsula propria, passes across the substance of the kidney and comes out through the double layers of the capsule on the internal side. Three such sutures are used, one inch apart, one in the middle, one above and one below. The kidney is then allowed to fall back in the abdomen, this being done by rolling back the cushion to its former place. Then one end of the suture is armed with a needle which carries the thread through the substance of the quadratus lumborum and secured with a forceps. The same needle is threaded with the other end of the suture and thrust through the muscles on the external side and a forceps again applied. The same thing is done for the three sutures. The edges of the muscles are approximated over the kidney with a continuous suture and then only, the three former sutures are tied over the united muscles. But in tying these deep sutures, care must be exercised not to draw them too tightly, as they readily cut the friable kidney substance. The skin is united by a subcuticular suture and the dressing applied.

The patient is kept upon the back for three weeks and then allowed to sit up and go about as she pleases.

I showed you, gentlemen, at the last meeting of our society, with what disregard I treated the so much dreaded caustic and escharotic properties of pure carbolic acid, as long as I had near at hand some alcohol to neutralize its effects. It is to Dr. Phelps that I owe what I have learnt upon this subject.

You all know by reputation Dr. A. M. Phelps, who occupies such an eminent position amongst American surgeons. At a meeting of the Orthopedic Association held in New York last June, Dr. Phelps read a communication upon the treatment of erysipelas and purulent arthritis by pure carbolic acid. The importance of the facts related in his paper is such that I beg the permission to bring it to your knowledge.

He stated that Dr. Seneca Powell, of the New York Post-Graduate Medical School and Hospital, had discovered that alcohol was an absolute specific against the corroding effects of carbolic acid, and that he, Dr. Powell, had for years been treating abscesses by the method which Dr. Phelps now described and followed in the treatment of purulent and tuberculous joints. He reported a large number of cases of erysipelas treated at the City Hospital and presented the temperature charts of each case, which showed that immediately following the application of carbolic acid the temperature fell within six hours in many cases to normal, and in all of them the record showed a fall of temperature of from one to three degrees at each application, and the patients were all convalescent within four days.

Taking into consideration that the class of cases treated were of the severest type, sent to the hospital from other institutions of the city, and the results in cases treated by the orthodox methods, we must concede that this plan of treatment is a valuable one and an innovation which should be adopted by the entire profession. Since the introduction of this plan of treatment at the City Hospital, there had been no deaths from erysipelas so treated, and the doctor stated that erysipelas cases, following surgical operation, were now no longer transferred from the surgical ward to the erysipelas pavilion, but were immediately treated with carbolic acid and each case had been aborted.

The method of application is to apply to a well-cleansed surface of disease with a pledget of cotton and a pair of forceps, pure carbolic acid. When the skin begins to turn white and considerable smarting is present, alcohol is freely used to neutralize and wash away all of the acid. The parts then are simply covered with absorbent cotton and a bandage. Any extension of the redness is at once treated in a similar manner. No constitutional remedies were used in any of the cases.

In regard to joints, they are freely laid open and washed out with a weak solution of carbolic acid, two per cent. Towels saturated with alcohol are placed around the area of the operation and the entire joint swabbed out and injected with pure carbolic acid. After *two minutes* the joint is freely and carefully washed out with pure alcohol, and finally with a two per cent. solution of carbolic acid.

In smaller joints a half-inch drainage tube is employed, which is usually removed at the end of one week, depending entirely upon the condition of the joints. In hip joint excision a drainage tube from one inch to one inch and a half, and in the adult even larger, of glass or pure rubber, is inserted down the acetabulum. Subsequent applications of pure carbolic acid can be made through the large tubes to diseased areas until the granulation forces the tube out. He also reported a large number of cases of hip joint disease treated by this method which

had been discharged from the hospital within three weeks from the time of operation where perforation of pelvis had occurred and the head of the bone entirely destroyed. Such cases heretofore he had excised, and they had remained in the hospital from four months to a year.

The doctor is of the opinion that alcohol either neutralized the carbolic acid, or else acts mechanically, washing it away after the desired effect has been maintained. He also believes that strong acid unites with the albuminoids of the skin or tissues, forming new compounds, which are absorbed through the lymphatics destroying germ life.

His reason for believing the last statement, is that pure carbolic acid cannot be absorbed, but after application of pure carbolic in erysipelas and in septic and tubercular processes, the lymphatics begin immediately to be painless, the tissues in the area of disease to shrink and the pathogenic process immediately subsides. This must be due to a new compound which is formed by the application of pure carbolic acid.

I wish I could also, gentlemen, show you with what assurance and what brilliancy Dr. Phelps straightens, with the osteoclast, those bow-legged children whom we used to treat so willingly, formerly, by osteotomy; but it would be necessary to exhibit, at the same time, the instrument he uses. I shall do it later on when I have the instrument at my disposal.

(To be continued)

Case Reports.

A CASE OF HÆMATOMETRA.

BY

WILLIAM GARDNER, M.D.

Professor of Gynæcology, McGill University, and Gynæcologist to the Royal Victoria Hospital, Montreal.

Accumulations of blood, pus, or other fluids in the uterus cannot be said to be of extreme rarity. Kelly proposes to consider the condition as that of the uterus as a retention cyst. There is certainly a considerable show of reason for this. The accumulations in question can of course exist only when secretion continues and the openings leading to and from the uterus are occluded. The commonest cases are without doubt those in which cancerous disease has occluded the cervix. When the pain of uterine cancer is exceptionally severe and the uterine body enlarged, this condition—easily relievable so far as an important element in the cause of pain is concerned—should be suspected.

The case now to be related presents certain features of interest, especially perhaps from the point of view of the cause and diagnosis. The patient, æt. 51, was referred to me by Dr. Mowat, of Williamstown, Ont., for operation for an abdominal tumour. She had been married 18 years, and had had two full term births and one miscarriage; the last child was born 11 years ago; menstruation had been absent two years. She had suffered from falling of the womb for several years, and for this she had worn a cup and stem pessary with abdominal belt supporter.

When I saw her, the complaints were of abdominal enlargement and occasional pain; of the pain she had, however, not much to say. I first saw her on the 14th of September last. She had had the most pain during last winter and spring, whereas the abdominal enlargement had first attracted her notice in June.

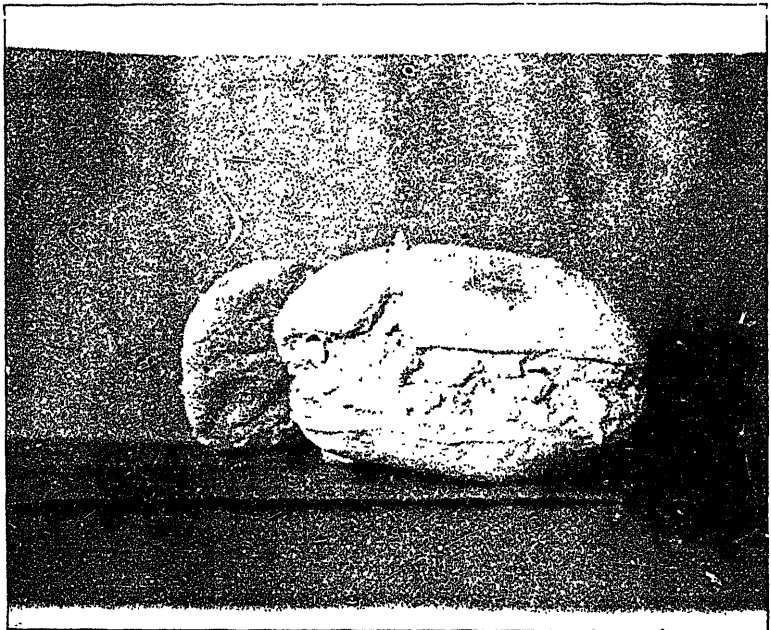
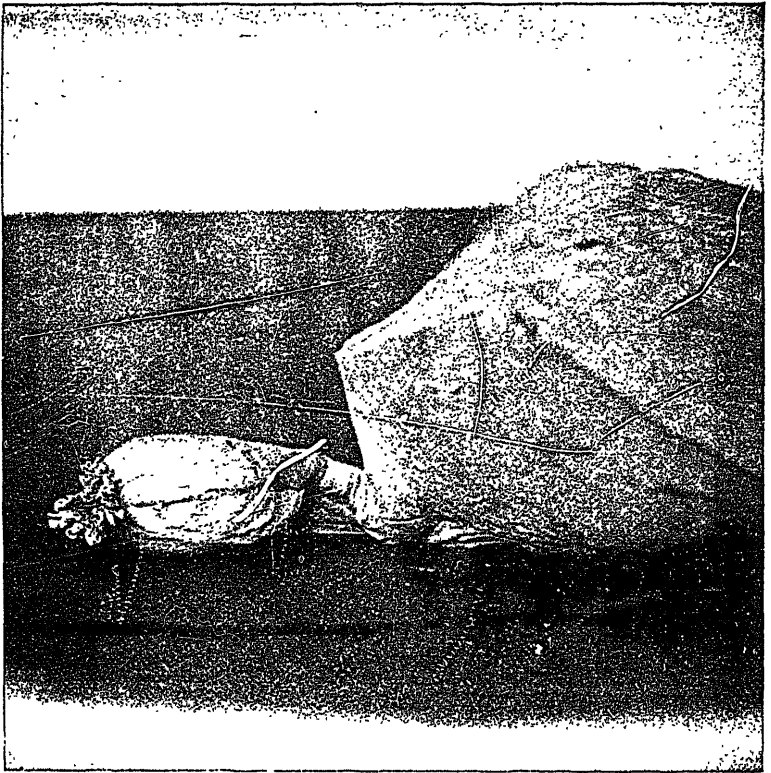
The patient was tall, spare, sallow and dark complexioned. The abdominal wall was very thin and the hypogastrium distended by a very firm, round, smooth, almost immovable, insensitive tumour; the vaginal outlet was torn partly through the sphincter, the canal much relaxed and the walls protruding. The cervix was raised to the level of the upper margin of the pubes against which it was pressed. A moderate degree of mobility existed between the cervix and the tumour. The uterus could not be defined.

The diagnosis was obscure, the physical characters of the tumour were

consistent with either uterine myoma or the much rarer solid tumour of the ovary. But the growth at so rapid a rate as described, especially after menopause, opposed the theory of uterine myoma unless it were undergoing the rare degeneration into malignancy. If the theory of ovarian tumour were entertained, the rapid growth of a solid tumour could only be consistent with malignancy.

The operation revealed a very different condition to either. The tumour, which proved to be the uterus, though not adherent, was impacted in the pelvic cavity, from which it was extracted with considerable difficulty. When raised it presented a marked depression on its posterior surface, corresponding to the promontory of the sacrum. Supravaginal amputation was done in the usual manner. I desired to leave the cervix for the sake of the integrity of the pelvic floor, if at all feasible. This, however, would not have been justifiable had the tumour been malignant. To help a decision of this question, before completing the operation, I cut into the tumour and found the walls from a half to three-quarters of an inch thick symmetrical throughout; when I reached the cavity black fluid blood spouted upwards to a distance of two feet. On laying freely open the uterine cavity, a quantity of black and partly decolorised blood clot was revealed, the quantity of fluid and clotted blood must have been over a pint, as the whole size of the entire tumour equalled an adult head. When empty the uniform smoothness of lining membrane and elastic consistency of wall seemed to exclude malignancy and the cervix was therefore allowed to remain and the operation finished in the usual way.

The recovery was ideal and complete. Microscopical examination excluded all malignant characters. The most probable explanation of the occlusion of the cervix which led to the accumulation of menstrual blood seemed to be adhesive inflammation, in the causation of which, the prolonged pressure of the cup of the prolapsus pessary, had probably most to do.







A RARE FORM OF PYOSALPINX COMPLICATING UTERINE MYOMA.

BY

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AND

MAUDE E. ABBOTT, B.A., M.D.,

Assistant Curator of the Medical Museum, McGill University.

The patient, æt. 44, had been married 13 years and a widow for nine months; never pregnant. Menstruation first appeared at the age of 14, and until marriage was scanty and painful, but during the whole of her married life profuse. In recent years there had been irregular hemorrhages. She noticed abdominal enlargement soon after marriage. Increase had been slow; there had been for years tolerably constant pelvic pain and reflex neuralgia of the head and neck.

Examination revealed a tolerably fat abdominal wall, distended by a globular, smooth, insensitive, slightly movable tumour of the size of a two-year old child's head. The vaginal orifice and whole canal were so narrowed as barely to admit the index finger; its walls were rough, apparently cicatricial, tender, and bleeding slightly from touch of the examining finger. The uterine tumour was an ordinary interstitial myoma.

The main interest of the case consists in the condition of the Fallopian tubes, as illustrated by the accompanying photographs, showing the oval-shaped expansion without any adhesion to surrounding organs or structures. The patient made a good recovery.

Of the numerous cases of diseased Fallopian tubes which have come under my notice, I remember but one of pyosalpinx without adhesions. In this case both tubes were distended with pus, and the condition was pronounced by Dr. Wyatt Johnston to be tuberculous. The association of pyosalpinx with uterine myoma is at all times rare. Statistics from the experience of Dr. A. Martin are given by Dr. Maude Abbott in the detailed description of the specimen appended.

Specimen consisting of intramural uterine myoma with double pyosalpinx.

The tumour is situated in the anterior wall of the uterus and separated from its cavity by a thin layer of muscular tissue. The uterus is much enlarged, its cavity measuring 10 cc. in depth and the posterior wall

23.5 mm. in thickness. Weight of tumour with uterus is 1230 grammes; microscopically it is a simple myoma.

The interest of the case lies in the condition of the Fallopian tubes. They are much thickened in the first part of their course and are dilated at their outer extremity into large oval tumours from the distal end of which the fimbriæ float free. On section, these tumours are seen to consist of a single thin walled cavity filled with thick greyish yellow pasty material—apparently inspissated pus—microscopically masses of granular debris, fat granules and globules, fatty and cholesterin crystals. On the right side, the tumour is much larger than on the left, and the undilated tube is thicker and shorter. The serous surfaces of both tubes are everywhere free from adhesions.

Sections from the cyst wall, from the uterine end of the tube, and from that part of it near the tumour were examined microscopically.

The wall of the cavity is thin and leathery and has a smooth inner surface. Microscopically it consists of a thin layer of muscular tissue lined by a laminated, almost homogenous matter, probably derived from the cyst contents. The mucosa and submucosa have entirely disappeared.

The uterine extremity of the tube shows catarrhal inflammation. The epithelium was almost entirely eroded and the submucosa infiltrated with small cells. Patches of small celled infiltration are scattered through the muscular coat. No giant cells or distinct evidence of tuberculosis were seen. The muscular coat was greatly hypertrophied, chiefly on the upper side of the tube, in a peculiarly centric manner, so that the lumen lies about one-fourth of the diameter above the lower surface. On staining for bacteria, none were seen, but the peculiar round bodies known as blastomycetes were apparent, staining with carbol-fuchsin. Near the mucosa the signs of inflammation were very slight; the lumen was much smaller than the uterine end, though still patent.

Interesting points in this specimen are :—

(1) The existence of pyosalpinx without any signs of inflammation of the surrounding parts, as shown by absence of adhesions, and the absence of any retraction of the fimbriæ, common in inflammatory conditions of the tube.

(2) The combination of pyosalpinx with myoma. This is rare. Martin, of Berlin, in an analysis of 287 cases of tubal disease operated on by him found it three times.

(3) A minor point is the curious excentric hypertrophy of the tube. This is said to be a fairly common consequence of tubal stenosis beyond the point of hypertrophy.

A CASE OF JANICEPS.*

BY

ANDREW MACPHAIL, M.D.,

Professor of Pathology and Bacteriology, University of Bishops College.

This specimen of janiceps or double-faced monster known as syncephalus or prosopo-thoracophagus was sent to me from Jamaica, of which place the parents are natives. The foregoing mixture of terms refers to a malformation in which the spinal columns and backs of the crania are separate, with the thoraces and faces coalescing anteriorly. In this case, as sometimes occurs, the faces are rotated at right angles with the antero-posterior plane of the spinal column, the one looking right, the other looking left, and each half of the face belonging to each body.

The face looking to the right of the larger segment of the body is fully developed and the expression not displeasing. The ears are complete, the eyeballs covered with pupillary membrane, the anterior nares perfect, the tongue slightly protruded, and the lips uncleft.

The face looking to the left is sadly deficient in development and arrangement. The eyeballs are merged together in a gaping triangular space, the nose is represented by two fleshy elevations, the mouth is deeply placed between the ears and these organs are united by the lobules.

The anterior fontanelles are properly placed in reference to the main mass of the heads. Both bodies have female genitals well developed. The four arms and four legs are well grown and the nails well formed.

The following measurements were made by Dr. Herbert:—Segment A—length, 13 inches; iliac crest to os calcis, $6\frac{3}{4}$ inches; acromion process to end of middle finger, 6 inches. Segment B—length, $11\frac{1}{2}$ inches; iliac crest to os calcis, $6\frac{1}{2}$ inches; acromion process to end of middle finger, 6 inches. Circumference of head, $12\frac{3}{4}$ inches; occiput to occiput, $4\frac{1}{2}$ inches; brow to brow, $2\frac{3}{4}$ inches.

The accompanying photograph and skiagraph will aid in the description. The skiagraph was made by Dr. Robert Wilson.

* Read before the Montreal Medico-Chirurgical Society, May 1, 1899.

RETROSPECT

OF

CURRENT LITERATURE.

Medicine.

UNDER THE CHARGE OF JAMES STEWART.

The Treatment of Insanity by Thyroid.

JAMES MIDDLEMASS, M.D., (Superintendent of Sunderland Asylum).
Journal of Mental Science, January, 1899.

During the past five years a very considerable experience has been recorded of the utility or otherwise of thyroid powder in various forms of mental disturbance. A valuable paper dealing with this subject was contributed to our columns by Dr. Burgess of the Verdun Asylum.

Dr. Middlemass gives a *resumé* of the employment of thyroid in 39 cases of insanity, chiefly cases of melancholia, in some form or other. He tabulates the results as follows:—

		Great	Slight	
	Recovered.	Improvement.	Improvement.	No change.
Males.....	8	1	0	2
Females.....	31	5	16	9
	—	—	—	—
	39	6	16	11
				6

It will be seen that in the great majority of cases a considerable change was manifest in the patient's mental state. All of those who recovered except one were suffering from melancholia. A striking feature of Middlemass' experience was the large doses that he was able to give without inducing any untoward effects. He finds that the full beneficial effects as a rule are to be obtained by giving doses of sixty grains a day for six days, though in some less is sufficient, and in others ninety grains can be tolerated without ill effects. These are quantities that it would be unsafe or even impossible to give without producing very distressing or even dangerous effects in healthy persons or in those suffering from any functional disease of the nervous system.

In every case in the above series more or less physical reaction was manifest from the thyroid powder, although its degree varied much in different individuals. In nearly every case a rise of temperature of

from 2° to 3° F. was noticed. In a few cases the temperature reached to 4° above the normal, and in only one or two cases was the rise very slight. The rate of the pulse was constantly increased while its strength and volume were both diminished. It is important to remember that the pulse continues to be accelerated during the whole period that the patient is taking thyroid, while the temperature after the first week is no longer influenced by the thyroid. The state of the pulse then, is the principal indication for the continuance or otherwise of the agent.

Not infrequently thyroid causes digestive disturbance, an accident which is to be if possible avoided, as it greatly interferes with the rapidity and permanence of the cure, especially in cases of melancholia. Dr. Middlemass recommends warm soup, beef tea or bovril, as the best vehicle for the administration of the thyroid and as helping to prevent gastric disturbance. In cases of insanity attended by marked and progressive loss of flesh, he considers it undesirable to give the thyroid in large doses. He considers doses of 15 grains per day as sufficient. The substance has a very marked effect on nutrition and in cases of progressive emaciation every influence for good may be more than counterbalanced by its tending to increase the loss of flesh and strength. Dr. Middlemass lays particular stress on the danger of giving thyroid to patients who have tuberculosis. It is well known that it acts in these cases not unlike Koch's original tuberculin. Thyroid should be used with caution in patients the subject of organic heart disease.

In regard to the mental effects induced in Dr. Middlemass' cases, it was observed that in every case some such effect was brought about, though the degree of the change varied much in different cases. In the majority of the cases there was a tendency towards the reproduction of the original mental symptoms. If, for instance, "suicidal feelings had been present at the outset of the attack, they were frequently manifested once more during a course of thyroid. Such a fact obviously indicates the necessity for attention to mental symptoms during the treatment."

A difference of opinion exists as to the probable mode of action of thyroid in insanity, some contending that its influence on the temperature, pulse, and general metabolism is the chief, if not the only, way in which it acts, comparing its results to similar ones noticed after a severe acute illness. Others maintain that it has some special influence on nervous metabolism.

James Stewart.

Surgery.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

Resection of Epididymis and Orchidotomy,

MEYER. "Resection of Epididymis and Orchidotomy." *Annals of Surgery*, Nov., 1899.

Dr. Meyer, of New York, at a recent meeting of the Surgical Society of that city, advocated the removal of the epididymis only, leaving the testicle in the scrotum, in certain cases of tuberculous disease in the scrotum. He shells out the epididymis and its attached vas deferens and removes them, inasmuch as the disease will in all likelihood be limited to these structures at the outset. He next does an orchidotomy, opening the testicles just as one would do with a kidney, and having satisfied himself that it is not diseased, he sews up the opening and leaves the gland. He would only advocate this in cases where a testicle had been previously removed for some diseased condition or was congenitally absent. His reason for leaving this isolated gland is that it may prevent the mental symptoms which may follow the removal of both testicles.

Most of the speakers who discussed the case, I am glad to say, were sufficiently sensible to disagree with Dr. Meyer. In the first place, has Dr. Meyer any proof that leaving an isolated testicle will prevent the much dreaded mental symptoms of the completely castrated man? Most of us know many cases where both testicles have been excised for disease and the patient remained afterwards as mentally active as before the operation. Conservative surgery is always to be commended, but the conservative surgery which will cut away a tuberculous epididymis from a testicle and leave a useless and probably a diseased gland has nothing to commend it. There can be little question that in all cases where a diagnosis is made of tuberculosis of the testicle, beginning of course in the epididymis as it usually does, castration is the operation to be advised. By the way, some one has lately been recommending that castration should be performed by a small opening beginning at the side of the external ring and running down over the spermatic cord as far as the top only of the scrotum. By traction on the cord the testicle and tunica vaginalis could be delivered through this opening and tied off in the usual way. We all know how difficult it is to sterilize the skin of the scrotum, and also how the action of the dartos prevents a

good suture line. It may well be that this simple plan will obviate both of these difficulties.

The Diagnosis and Treatment of Gunshot Wounds of the Abdomen.

“The Diagnosis and Treatment of Gunshot Wounds of the Abdomen.”
British Medical Journal, March 21, 1899.

A discussion on this subject took place in the Surgical Section of the British Medical Association at Portsmouth last summer. “The general consensus of opinion of those who spoke was that it was always advisable in any perforating wound of the abdomen to do an exploratory laparotomy and to do it at once. One is almost certain to find a lesion of some viscus, and that being the case, why wait until one has symptoms—in other words, peritonitis—before opening the belly? In nine cases out of ten it will be too late to benefit the patient. If you find nothing wrong at the exploratory operation so much the better, and you have really done the patient no harm provided modern antiseptic methods have been adhered to. Even in military surgery, where asepsis is not always possible, it is better to take the risk and prevent the further exudation of fæces into the peritoneal cavity or further hæmorrhage, and even at the worst to provide drainage. It is wonderful what an amount of dirt the peritoneum will reject through a good drain.

The use of Murphy’s button, as tending to lessen the time necessary for the repair of wounded intestine in these cases, was highly recommended by many of the speakers, but most of them, I notice, spoke of it on theoretical grounds. One very interesting side light on the discussion was as to the use of the X-rays in determining the position of the bullet. Dr. Blacker, the superintendent of the X-ray department of St. Thomas’ Hospital, London, said that his experience covering 66 cases led to the conclusion that it was most difficult to get a good skiagraph or a satisfactory fluoscopic examination of these cases, owing to the fact that the abdominal contents, as well as the bullet, were kept moving up and down by the respiratory movements of the diaphragm. He had tried a very ingenious method of having the exposure at one phase only of each respiratory act, but it had only been partially successful.

The Treatment of Surgical Shock.

MOYNIHAN. “On the Prevention or Anticipation of Shock in Surgical Operations.” *British Medical Journal, Nov. 25, 1899.*

HALL, J. BASIL. “The Treatment of Surgical Shock by Large Doses of Strychnine.” *Ibid.*

The first paper by Mr. B. G. A. Moynihan, Assistant Surgeon, Leeds General Infirmary, discusses the best means of preventing shock in surgi-

cal operations. He would employ all measures calculated to conserve the body heat; have the temperature of the operating room 70° F.; place the patient on a warm operating table, preferably one that can be kept warm by a current of hot water; and then swathe the parts not to be operated on in cotton wool with flannel bandages. Before giving the anæsthetic he advises a hypodermic of strychnine, and here he thinks the usual mistake is that too small a dose is given. He gives ten minims of liquor strychninæ at first, followed as needed by five minim doses during the operation. He also gives subcutaneously as the operation progresses, one to four pints of normal, warm, saline solution. By careful attention to these details, he claims, we may prevent shock in most cases of severe operations unattended of course by serious hæmorrhage.

In the second paper, Dr. J. Basil Hall, Surgeon to the Bradford Union Infirmary, also makes a strong plea for the use of large doses of strychnine in sudden shock during prolonged surgical operations. He gives liquor strychninæ in doses of ten to twenty-five minims (N.B. 25 minims equals $\frac{1}{4}$ grain of strychnine), and has never had any poisonous after effects. It may be true, as he says, that in conditions of shock proportionately large doses of stimulant are borne without producing the usual effects. He says: "It seems certain that the human body when suffering from profound shock will endure very large doses of strychnine, not only without ill effect but actually with benefit, and I feel convinced that when given boldly it is a most powerful remedy . . . where strychnine is indicated at all, I believe it is futile to give less than $\frac{1}{10}$ grain."

This seems to us a very large dose of strychnine, the minimum being three times as large as our surgeons are in the habit of employing, and this may be one reason for the statement we not infrequently hear in our operating rooms, "that strychnine is not a very reliable remedy in shock." Personally, I have always seen much more rapid and satisfactory results from camphor (one grain dissolved in ten minims of olive oil) given hypodermically in doses of one grain. It is very rapidly diffusible and may therefore be repeated in a few minutes. As regards prevention of shock, we are quite at one with Dr. Moynihan in his advocacy of the conservation of the body heat and the free use of saline transfusion as a routine procedure; and we would also advocate the completion of all operations as soon as possible. It is just possible, that in these days of large surgical clinics, too much time is spent by the operator in showing to the class the different steps of the operation and the different structures exposed.

A Plea for the Further Use of Carbolic Acid.

ADAMS, F. J. "A Plea for the Further Use of Carbolic Acid." *New York Medical Journal*, November 25, 1899.

The author of this article points out that carbolic acid has held its own as a germicide amongst a host of later rivals. It occurs to him that it might with advantage be used pure in certain infectious conditions now that we know of a quick and reliable antidote (pure alcohol) to its chemical action on the tissues to which it is applied. "My method," he says, "has been for the past eight months to use the crystals, liquefying them and applying the fluid to the surface with a camel's hair brush. As soon as the surface appears white, I apply alcohol (chemically pure) in copious quantities and the work is over. I have been using this treatment in all cases of cellulitis, felons, about ulcers with wide spread exudate, carbuncles, erysipelas, and, in short, any and all inflammatory conditions where streptococci and staphylococci are present." Dr. Adams then proceeds to give the clinical histories of some cases treated by this method, and the results due to the treatment in every case are certainly highly gratifying.

For instance, take this one:—Mary S., aged 50 years, cellulitis of the arm, right hand and forearm, lymphatic channels red and swollen, axillary glands greatly enlarged. Pure carbolic acid painted over entire hand, forearm and lymphatic channels. Bathed thoroughly with alcohol. Reported next day, cured."

One would like to know in such a case as the above a few more facts about the condition. What was the source and character of the infection? What constitutional symptoms were present? Dr. Adams does not say anything about pain following the application of the acid, but our own experience of it, accidentally, proves that burns from carbolic acid are not very painful and its general action on open wounds is that of an analgesic. It occurs to me that it might be a good substitute for acid nitrate of mercury as an application to chancreoid ulcers, neutralizing with alcohol as suggested in this paper. It has also lately been recommended subcutaneously in many localised suppurative conditions, e. g., furuncles, carbuncles, suppurative amygdalitis, etc. The use of pure alcohol as an antidote in suicidal drinking of carbolic acid should not be lost sight of, and the author of this paper gives a very instructive case of this kind.

J. M. Elder.

Ophthalmology.

UNDER THE CHARGE OF FRANK BULLER,

Traumatic Pulsating Exophthalmos.

ARNOLD LAWSON. "Traumatic Pulsating Exophthalmos." *Ophthalmic Hospital Reports, May, 1899.*

This interesting case report by Lawson is that of a woman who developed pulsating exophthalmos of the right eye following a blow on the back of the head. At first rest in bed and administration of potassium iodide was the line of treatment followed, but at the end of a fortnight, as no improvement had resulted, the right common carotid was tied opposite the cricoid cartilage. The change for the better was immediate and marked, and after the patient had been kept absolutely quiet for four weeks she was discharged. It would appear that her demission was a little premature, since the patient very shortly after reappeared complaining of the return of all her symptoms, and in addition, copious nasal hæmorrhages. Further absolute rest in the recumbent position gradually effected a permanent cure.

The point Lawson emphasizes is the necessity of prolonged rest after the ligation.

Resection of the Cervical Sympathetic in Glaucoma.

JONNESCO. "Resection of the Cervical Sympathetic in Glaucoma." *Wiener Klin. Wochenschr., May 4, 1899.*

ZIMMERMANN. *Die Ophthalmologische Klinik, Aug. 5, 1899.*

In 1897, Jonnesco for the first time resected the superior ganglion of the cervical sympathetic nerve in a case of glaucoma with marked success, and he now reports eight more cases. Removal of the ganglion destroys the function of the vasoconstrictor fibres so there follows dilatation of the arteries, decrease in blood pressure, and diminished extravasation. The excitosecretory fibres are likewise paralysed, and accordingly, there is a corresponding decrease of the aqueous humour. The iris dilator fibres are affected, so marked contraction of the pupil follows with a resulting opening of the filtration canals in the iris angle. The nerves to the nonstriped peribulbar muscles also lose their functional activity, and the said muscles no longer exert any constricting force on the emissory veins, so that a normal return circulation is established.

After the operation there is a transient congestion of the eye and of the same side of the face, and an increased flow of tears, saliva and nasal secretion. As permanent results of the operation, in addition to the cure of the glaucoma, are a narrowing and paresis of the pupil, and slight ptosis and sinking of the eye-ball in the orbit.

No evil after effects have been observed in any of the cases in which this operation has been performed, and in all except three, the glaucomatous condition has been greatly benefitted where it was not absolutely cured. The most marked results were obtained in chronic irritative glaucomata with prodomata, and in chronic simple glaucoma; the partial success or non-success in the other forms is attributed to the presence of the inflammatory condition which resection of the sympathetic cannot influence. It is in these chronic forms that iridectomy is of little or no avail.

Zimmermann reports a very typical case where excision of the superior cervical ganglion was followed by very rapid improvement.

Orbital Phlegmon.

DAGILAIKI. "Orbital Phlegmon of Dental Origin." *Klin. Monatsblätter*, July, 1899.

LZULISLAWSKI. "Cerebral Abscess due to Orbital Phlegmon." *Ibid*, Aug., 1899.

Dagilaiski's case was a boy seven years old who had an alveolar abscess at the root of a carious, first, upper molar. The left side of the face was greatly swollen as far up as the temporal region and especially painful over the anterior surface of the antrum and lower surface of the orbit. The eyelids were tense, swollen, and tightly closed, the conjunctiva chemosed, the eyeball proptosed and very restricted in its upward and downward movements, although the movements laterally were free.

The tooth was extracted and the antrum thoroughly irrigated, much pus being evacuated. Recovery rapidly followed. The inflammatory process had made its way along the periosteum of the upper jaw.

Szulislawski mentions the various ways in which an orbital phlegmon may extend to the brain as follows: direct, through the superior orbital fissure; or by inflammatory thromboses of the superior or inferior ophthalmic vein and a resulting sinus thrombosis; or by way of the periosteum. Some cases occur in which none of the foregoing lines are followed and in which the resulting intracranial lesion must be due to metastasis.

The writer mentions a case of traumatic orbital phlegmon in which shortly after the healing of the orbital lesion cerebral symptoms devel-

oped, followed rapidly by death. The *post mortem* examination revealed an abscess of the frontal lobe of the same side as big as a fist. Here the lesion was of metastatic origin. The general cerebral symptoms pointed to abscess formation, as no symptoms of meningitis were marked. The presence of general cerebral symptoms without any focal manifestations strongly suggested the frontal lobe as being the site of the lesion.

Conjunctivitis Due to Penetration of Hairs of Plants.

MARKISS. "Conjunctivitis due to Penetration of Hairs of Plants." *Zeitschrift f. Augenheilkunde*, July, 1899.

Markiss' case strongly suggests the similar condition due to lodgment of the hairs of the caterpillar in the eye, which Lawford described a few years ago. Markiss' case was a man who was in the habit of carrying "Juckpulver," which consists mainly of the hairs of a certain plant. The conjunctiva was red and covered with small nodules like trachoma. On rubbing the finger over these nodules they produced the sensation of a brush. The nodules were found to contain the minute hairs of the plant. The hairs were extracted, the nodules excised and cold applications used, resulting in cure.

Results of Eye Strain.

DREW. "Reflex Irritation, especially Eye Strain, a Factor in Nervous and Mental Disease." *Med. Record*, Sept. 9, 1899.

CAPPS. "Epileptic Eye Strain." *New York Med. Jour.*, Sept. 16, 1899.

NEUSCHULAR. "Odontalgia depending upon Insufficiency of the Internal Recti Muscles." *Recueil d'Ophthalmologie*, Aug., 1899.

Drew in an excellent article inveighs against the limited purview of those who claim for some special organ (*e.g.*, the eye, uterus, etc.) and its pathological conditions the cause of the most of the ailments to which flesh may be heir.

Reflex irritation means a limited or widespread exhaustion of the cortical nerve centres due to nerve currents, increased in force or duration, from peripheral organs malformed, undeveloped, or the site of pathological processes. It includes such molecular and chemical changes as may take place in the conducting nerve fibres from want of physiological rest.

Drew mentions as the abnormalities most likely to cause trouble the oblique varieties of hypermetropic astigmatism with nonparallel axes. The faulty relation between the power of the ciliary and internal recti muscles ranks next. Those who suffer most are the individuals who by

an effort can keep their eyes in line or can overcome their astigmatism, not those who, having a high degree of error, do not make the attempt to correct it.

Capps holds that it is not the direct effort of the eye to produce normal vision which induces an epileptic seizure, but rather the continued effort which is put on the filaments of the nerves of accommodation, which in course of time sets up a reflex condition of the sympathetic nervous system that produces the paroxysm, just as it does in other organs of the body. He then describes two cases in point where the correction of compound hypermetropic astigmatism and of compound myopic astigmatism resulted in cure of the epileptic seizures.

Neuschüller's patient was a medical student who after prolonged reading suffered pain in the orbit, which spread to the teeth and caused such distress that he had to desist from study. One eye was emmetropic, the other myopic. Lenses were prescribed, but no benefit accrued; finally, prisms of two degrees with the bases in, were ordered for near work, when the dental pain was relieved.

Optic Atrophy Following Profuse Hæmorrhage.

EDITORIAL, *Medical Record*, Sept. 9, 1899.

As a result of the study of these not altogether rare cases the following considerations were reached:—

- (1) Thrombosis of the central retinal artery is the usual cause.
- (2) The resistance offered the enfeebled blood current by the increased intraocular pressure is an important etiological factor.
- (3) Exceptionally, thrombosis occurs in the central retinal vein.
- (4) Very rarely, the loss of vision and ophthalmoscopic appearances are due to effusion or hæmorrhage into the optic nerve or its sheath, and here the damming back of the blood by the intra-ocular pressure may assist.

J. W. Stirling.

Reviews and Notices of Books.

G. F. NUTTALL, M.D., Ph.D. "On the Role of Insects, Arachnids and Myriapods, as Carriers in the Spread of Bacterial and Parasitic Diseases of Man and Animals. Johns Hopkins Reports, Vol. 8, Nos. 1 & 2. Baltimore.

For some reason not easy to explain, the opinion that insects are a factor in the dissemination of disease, while easily taken up by the lay mind, has not been popular among pathologists, bacteriologists and medical men generally. The parasitologists alone from their frequent observations upon the successive stages of the life history of various worms in different animals and the obvious carriage of these worms from an individual of one species to one of another, have been for long prepared to recognise external parasites, insects and arachnids as agents in infection.

It has, for example, been with a very grudging consent that Patrick Manson's brilliant studies upon Filariasis have been accepted; his demonstration 20 years ago that mosquitoes act as carriers of the embryonic form of the *Filaria Sanguinis Hominis*, even though it was immediately confirmed by Lewis, and although during the last few years numerous observers in the tropics have further studied and advanced his observations, is only now gaining full credit. But now, after all these years of doubt, the remarkable studies of Surgeon-Major Ross—who may truly be regarded as a pupil of Manson—upon malaria and upon the nature of malarial infection, has brought into a very strong light the possible role played by insects in the spread of disease, and this work of Dr. Nuttall is most timely. Indeed, the monograph before us is invaluable. This bringing together of all the available material bearing upon one special topic may truly be said to be one of the great characteristics of modern American science and in medicine from the great Index catalogue of the Surgeon-General's Library and the Index Medicus, to this and similar monographs which have emanated from the Johns Hopkins School, the service rendered to our science by this spirit of conscientious compilation, cannot be too highly valued. Here in connection with the conveyance of disease, previous to Dr. Nuttall's work, there had existed no general survey of the subject, and Dr. Nuttall to obtain his hundreds of references has had to ransack the medical literature of all Europe and America extending over the last century and a half. The amount of work accomplished is as remarkable as it is valuable.

There are very full articles upon such subjects as: the Conveyance of Anthrax by the Fly and other Insects; Plague Infection; Hog Erysipelas; Chicken Cholera; Recurrent Fever; Yellow Fever; Cholera; Typhoid; Tuberculosis; Egyptian Ophthalmia; the Part Played by the Ixodidae: in another section the Diseases due to Animal Parasites, are all passed in review, while the most important article in the work is an

admirable study of Malarial Infection and of the Mosquito Malarial Theory. Indeed, if we are not mistaken, it has largely been Dr. Nuttall's desire to give honor where honor is due, more especially in connection with the recent advances in the knowledge of the propagation of malaria, that has led to the production of this work.

Nuttall points out that so long ago as 1807 Dr. John Crawford, of Baltimore, would seem to have made some reference to the "Mosquital Origin of Malarial Disease," but we have to pass to the year 1883, when Dr. A. F. A. King, of Washington, D.C., published in the *Popular Science Monthly* an elaborate argument bringing together a mass of evidence on the subject which, as Nuttall points out, is by far the most masterly exposition of the theory which appeared until the recent discoveries were made. At later periods the theory would seem to have been rediscovered in various countries; thus in France, it is ascribed to Laveran, 1891; in Germany to Koch and Pfeiffer, 1892; and in England to Manson, 1894; whilst in Italy, Bignami and Mendini in 1896, and Grassi in 1898, are quoted as the authors. Koch, indeed, states Nuttall, since his visit to India in 1883 and 1884, had always referred to the theory in his lectures. It is needless here to point out the various steps which led to the discovery that the malarial micro-organism passes one stage of its existence in the body of one form of mosquito, the *Anopheles*, or to give the details of the work undertaken by Ross at the suggestion of Manson. Nuttall brings out very clearly the undoubted claims of Ross to be regarded as the first discoverer of the true relationship, and shows how the observations of Bignami, Grassi and Bastianelli confirm Ross's observations in every respect, though apparently from their ignorance of English these latter observers have ignored certain of his observations and have taken the credit to themselves, just as somewhat earlier Koch had completely ignored the observations of Manson and Ross. At a period when we are apt to ascribe all important advances in bacteriology and parasitology to French and German observers, it is a matter of no little comfort to remember that it is to Manson, Lewis, Bancroft, Theobald Smith, Ross, Bruce, Macallum, and Councilman and Lafleur that we owe some of the most important fundamental observations upon the relationship between animal organisms and disease.

J. G. A.

S. G. SHATTOCK, F.R.C.S.—An Atlas of the Bacteria Pathogenic in Man with Descriptions of Their Morphology and Modes of Microscopic Examination, with an Introductory Chapter on Bacteriology; Its Practical Value to the General Practitioner. By W. WAYNE BABCOCK, M.D., New York. E. B. Treat & Co., 1899. Price \$1.00.

This work is a little beyond a reprint of the plates and letterpress published in the *International Medical Annual* for 1898 and 1899, to which has been added an introductory chapter upon the Practical Value of Bacteriology to the General Practitioner. The plates in question are very fair though not all of them appear to us to be thoroughly typical. Plate XXX for example, of the Tubercle Bacillus in Sputum, while representing one appearance frequently seen, is not what we should regard as the most common appearance, nor is the first figure of Plate

XIX, representing what is spoken of as the typical form of the Diphtheria Bacillus, wholly satisfactory in the print, nor has the material here depicted been selected to bring out prominently the characteristic grouping of the bacilli side by side.

Similarly, Plate XXIV, Fig. 1 of the culture of the Diplococcus Pneumoniæ (which by-the-by should be labelled, not encapsulated, but unencapsulated) represents a form in which the chain formation is much more pronounced than is ordinarily the case. But on the whole, for one wishing to have by him a cheap atlas of the leading forms of bacteria, the work can be recommended. The letterpress of Dr. Shattock and the introductory article by Dr. Babcock, which has been impressed into service, place matters simply and straightforwardly before the reader.

J. G. A.

THE NERVOUS SYSTEM AND ITS CONSTITUENT NEURONES: DESIGNED FOR THE USE OF PRACTITIONERS OF MEDICINE AND PSYCHOLOGISTS. By LEWELLYS F. BARKER, M.B. (Tor.), Associate Professor of Anatomy in the Johns Hopkins University, and Assistant Resident Pathologist to the Johns Hopkins Hospital. With two coloured plates and 676 illustrations in the text. New York, D. Appleton & Co., 1899.

Exceedingly valuable articles on the Anatomy and Physiology of the Nervous System and its Constituent Neurones, by Dr. L. F. Barker, were published at different times in the *New York Medical Journal*, in the years 1897, 1898, and those who have been familiar with his contributions will be pleased to hear that his articles, plus a considerable amount of added matter, have been put into book form. Dr. Barker's volume is an epitome of what is to-day known of the histology of the central and peripheral nerve organs. The subject is presented in an unusually attractive, clear and forcible way. It is profusely illustrated, coloured and uncoloured, which is a very great help to the student reducing the amount of text to a very considerable degree. The book opens with an introduction to the newer conception of the central and peripheral nerve organs. Sections I, II, III and IV, are the articles that appeared in the *New York Medical Journal*, revised and brought up to date. Sections V and VI, dealing with the known tracts in the nervous system are published for the first time and are written from the point of view of a modern neuron-theory. This new field offers many fascinating opportunities for investigation and speculation, into which the author has entered with eagerness and with sufficient definiteness, stating many propositions, which although speculative in their nature, are accepted by the most advanced workers in the field. Section V, on the histo-genetic relation of the neurons, and Section VI on the grouping and chaining together of the neurons deserves special mention, for as a rule those subjects which are ordinarily so difficult for the student to grasp are presented in a way that can be easily followed and understood. Chapters 28 to 31, dealing with the neurons connecting the sense organs of the body with the central nervous system are profusely illustrated and are works of art, many of them appearing for the first time.

The arrangement of the subject matter, the foot notes and index, helps one to get through an enormous amount of material in a very short time. This book stands out above all others in brain anatomy and pathology by its essentially readable character. Too often works of this nature are written in such a style that only the specialist can comprehend them, even then only when he has a wet towel on his head. The book shows clearly that it is the handwork of an indefatigable, keen critic and broad minded student, abreast of the progress of the work of his chosen field. The type, paper, and general get-up of this large book are in every way excellent and it is a pleasure to recommend it. I am sure that it will find favor and meet the requirements of the practitioners of medicine and students of medicine and psychology.

D. A. S.

A MANUAL OF MODERN GASTRIC METHODS, CHEMICAL, PHYSICAL AND THERAPEUTICAL. By A. LOCKHART GILLESPIE, M.D., F.R.C.P., F.R.S.E. Oliver & Boyd, Edinburgh, 1899.

In a comparatively small space the author has succeeded in giving a clear and sufficiently detailed account of the different methods used in the clinical investigation of disorders of the stomach.

A short description of the condition present in healthy digestion is followed by the consideration of the methods of obtaining the contents of the stomach, including a list of the principal test meals in use, and a full description of the use of the stomach tube for removing the stomach contents. This latter section is especially satisfying in drawing attention to the various obstacles commonly met with in carrying out the procedure, and in pointing out the manipulations by which they may be overcome. The necessity of insisting on these details will be fully appreciated by all who have had a considerable experience in the use of the stomach tube. There is a short chapter on the macroscopic and microscopic examination of the stomach contents. The bulk of the volume is devoted to the chemical examination of the stomach contents. Toepfer's alizarin method is recommended for the estimation of the free and the combined hydrochloric acid, and the author adds a ready method of his own, a modification of Hayem and Winter's method, based on the estimation of acidity of stomach contents before and after evaporation and controlled by qualitative tests for the presence of free mineral acids or of organic acids.

In the section on mechanical methods used in the treatment of diseases of the stomach a number of the elaborate modern instruments are described and figured, particularly those of Einhorn and Turck, and a special chapter written by Dr. John Thomson, is devoted to the mechanical methods used in young children. The volume is concluded by a list of apparatus and reagents required and an appendix containing a description of new "intra-gastric instruments"

There are few errors to record. One of them is the statement that "the pylorus is 1.8 cc. distant from the cardiac end in the empty stomach but after food only 1.4 from it."

H. A. L.

SYPHILITIC DISEASES OF THE SPINAL CORD. By R. T. WILLIAMSON, M.D., F.R.C.P., Medical Registrar, Manchester Royal Infirmary; Assistant to the Professor of Medicine, Owens College. With illustrations and four coloured plates. Pp., 127. Manchester, Sherratt & Hughes, 1899.

The author in this work gives a very complete description of the different varieties of spinal syphilis. The following forms are described :—

- (1) Syphilitic disease of the vertebræ.
- (2) Chronic syphilitic meningitis.
- (3) Meningo-myelitis.
- (4) Paraplegia of acute onset (acute myelitis).
- (5) Chronic syphilitic spinal paralysis (Erb's spinal syphilitic paralysis).
- (6) Spinal tumour.
- (7) Anomalous forms, the symptoms simulating various other spinal diseases which are usually looked upon as nonsyphilitic in origin. Cases simulating spinal disseminated sclerosis, primary lateral sclerosis, anterior poliomyelitis, idiopathic muscular atrophy, etc., etc., have been met with.
- (8) Post syphilitic degeneration—locomotor ataxia.

It would seem that there are few diseases of the cord which may not be either brought about by or simulate syphilis. Its importance therefore as a possible etiological factor should be always taken into consideration.

The work is profusely and well illustrated and bears the stamp of careful work, much of which is from personal observation.

J. S.

ON THE RELATION OF THE NERVOUS SYSTEM TO DISEASE AND DISORDERS IN THE VISCERA. Being the Morison Lectures. Delivered before the Royal College of Physicians in Edinburgh, 1897 and 1898. By ALEXANDER MORISON, M.D., Physician in Charge of Out-Patients to the Great Northern Central Hospital and the Children's Hospital, Paddington Green. Edinburgh and London, Young J. Pentland, 1899.

The Morison Lectures, six in number, which first appeared in the *Edinburgh Medical Journal*, are here reproduced with some additions in a handsome volume of a little over 100 pages. We congratulate the author on the very excellent character of the work.

The first and second lectures are devoted to the anatomy of visceral innervation. The third deals with the physiology and the fourth with the pathology of visceral innervation. The fifth lecture is concerned with the disorders of visceral sensibility while the sixth has to do with the disorders of visceral motion. Both form solid and valuable reading for the thoughtful practitioner. A concluding chapter on the relation of body and mind is one of great interest.

The work is properly illustrated and beautifully printed.

J. S.

MINOR SURGERY AND BANDAGING. By HENRY R. WHARTON, M.D., Demonstrator of Surgery in the University of Pennsylvania, Surgeon to the Presbyterian Hospital, etc. Four Edition, thoroughly revised and enlarged, with 502 illustrations. Lea Brothers & Co., Philadelphia and New York, 1899.

This work is too well known to need any commendation. In addition to the clear and concise description of the elementary surgical procedures, with which every student should be thoroughly conversant, this edition includes a chapter on Surgical Bacteriology. A brief description of such major operations as can be practiced upon the cadaver adds to the value of the book.

K. C.

THE

Montreal Medical Journal.

A Monthly Record of the Progress of Medical and Surgical Science.

EDITED BY

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No. 1.

UPON MILK AND TYPHOID FEVER.

Once again, after an interval of some few years, we in Montreal are brought face to face with an epidemic of typhoid fever, obviously due to the milk supply and narrowly limited to those obtaining their milk from an individual dealer. While we cannot but feel some sympathy with the dealer, who from the first intimation that anything was wrong would seem to have done all that lay in his power to prevent the spread of the disease and who is temporarily ruined by the misfortune which, unwittingly, he has brought to so many households, we cannot allow this feeling to overweigh or indeed to approach our concern for the many families into which a terrible anxiety, and indeed in some few cases actual mourning, has been brought by a criminal disregard or ignorance of the ordinary rules of hygiene. For some one has certainly been careless of the danger accruing to public health which ensues from faulty water supply. At some one point or other the water employed to wash the cans or the vessels in which the milk was placed, had become contaminated from typhoid excreta.

The important question that ought to be immediately answered is how we in Montreal, as indeed in other large cities throughout the Dominion, are to legislate in order to prevent such epidemics as typhoid through milk. Preventable they are, and prevented they must be.

Up to the present time the City Milk Inspectors are powerless outside the city limits, or, in other words, while practically all the milk supply of the city is drawn from outside the city limits, the city authorities have no right to inspect outlying farms and to condemn unsanitary buildings, defective drainage, etc., or to order alterations in same. The question before us is by what means can the city gain control over those farms and over their milk supply? It would be possible to obtain the passage of a law at Quebec giving the city the necessary powers, but any such legislation on the part of the city might be opposed by country members, while again it has to be remembered that not a little of the Montreal milk supply comes from the neighbouring province, and it would certainly be out of the power of Montreal authorities to gain any control by this means over the Ontario farmers.

This method, therefore, is doomed to failure. On the other hand, we think it would be possible to obtain the passage of a city by-law to the effect that no dealer be granted a license to distribute milk within the city limits unless he at the time of application for such license and whenever called upon, produce a full list of the farms from which he receives his milk supply, together with written and signed forms of consent on the part of the farmers themselves affording that milk supply to permit the inspection of their farms by city officials and to carry out the directions of those officials with regard to alterations in unsanitary premises and the condemnation of diseased animals. And this by-law should include the further proviso that failure on the part of the farmer or dealer to carry out the provisions of the by-law *ipso facto* renders the license null and void, and arrests the sale of milk within the city limits by the holder.

The passage of such a by-law would necessitate the establishment of a small corps of duly qualified travelling inspectors on the part of the city, and to this extent would entail a certain amount of expense; to meet this expense the license fees should be sufficiently large.

On the part of the householder there are very simple precautions which can be taken to prevent the danger from the use of possibly contaminated milk. Despite the abundant literature contained in our city papers during the past year, these precautions do not appear to be by any means generally recognised. We have received several enquiries from householders asking what they should do to protect themselves against possible infection. Without exception it has evidently been news to those householders that keeping the milk for a short time after receiving it at a heat above 150° F., but below boiling point, will effectually destroy any disease germs likely to be present.

This ignorance on the part of the ordinary householder with regard to the keeping of milk in good condition, renders it clear that it is not to

the householder but to the dealer that the authorities must look for the proper treatment of the commodity. And when we consider that not a little of our milk comes from places which are from 50 to 100 miles distant and that consequently, instead of the morning milkings being delivered at the house in time for breakfast, inevitably half a day elapses between the milking and the delivery in by far the greater number of cases, then it is for the city and the dealers to recognise that the time has come so to treat the milk as to arrest in it the growth of micro-organisms, and this matter is so simple that there is no excuse for not carrying it out. There is one large firm of milk dealers in this city which at various points in the country round Montreal has receiving stations where the milk as it comes in is filtered, Pasteurised and then cooled. The objection to this process on the grounds that it alters the taste of the milk, is, it seems to us, effectually met by the fact that now for some long period this firm has, without saying anything, delivered this milk in the Pasteurised condition, and that instead of complaints coming in to the firm on account of poor taste, the large corporations employing the milk of the firm in question have complimented it upon the uniform and good keeping quality of such milk. That firm is rapidly extending its sale and is succeeding, as it is bound to succeed.

We sincerely trust that this object lesson which it affords will eventually force the other dealers in this city to recognise that milk for city purposes is a fluid that requires special and careful handling and that the public demands in connection with the milk supply, as in connection with other departments of agriculture, that the teachings of modern science and the application of the same shall not be neglected, but shall be utilised both for the benefit of the public and of the individual.

How many householders, we wonder, make any detailed enquiries as to the source of the milk supplied to their families, or have the faintest idea as to the sanitary state of the cattle from which it is derived, or know how it has been handled? But even with this indifference, the knowledge that there are dealers in the city supplying an absolutely wholesome article ought surely to tell in favor of employing those dealers. There is, we know, a sentimental objection to dismissing a tradesman who has for years served the family indifferently well, and this is not confined to the weaker members, "*salus populi suprema lex.*" And if that tradesman will not employ modern and sound methods, it is not a matter of ingratitude; the blame is his if his custom falls off. Above all, it is for us as medical men to instruct those depending upon our council with regard to the wisdom of employing pure milk.