

The Canada Lancet

Vol. XLI.

JULY, 1908.

No. 11.

THE PATHOLOGY OF ARTERIOSCLEROSIS.*

J. J. MACKENZIE, B.A., M.D.,

Professor of Pathology, Medical Faculty, University of Toronto.

IN a discussion of such a many-sided subject as the Pathology of Arteriosclerosis, in which there is such an enormous mass of clinical observations with an equally large number of studies upon human post-mortem material, which have served as the foundation stones of older theories, one must guard against being led away into the maze of older theories which are familiar to all present.

Fortunately to-day, as the result of experimental researches of the past few years, we do not depend entirely upon a correlation of clinical facts and post-mortem findings, but can draw upon these results to enable us to elucidate this most important subject.

We cannot say as yet that experimental research has enabled us to offer a clear explanation of the causation of human arteriosclerosis, but each additional fact obtained by direct experiment renders the task easier, and there is no doubt that our knowledge of the pathology of the disease has advanced as much from the publication of Josue's experiments in 1903 upon adrenalin injection in rabbits as during the whole preceding period from the time of Lobstein in 1835.

Arteriosclerosis, or as Marchand suggests is shown now to be called Atherosclerosis, is primarily a disease of the later years of life, but it must not be forgotten that it may occur amongst younger people and, in its typical form, even amongst children.

Leaving on one side the syphilitic disease of the arteries, whether of the smaller vessels or the more recently recognized mesaoritis, chiefly present in the arch of the aorta, we may with Marchand classify the conditions as follows:

1. The simple fatty degeneration of the intima with beginning thickening.
2. Sclerosis of the intima with fatty degeneration and calcification.
3. Sclerosis and calcification of the media, chiefly of the arteries of the extremities.

The first class may be considered to represent the first step in the development of the true intimal sclerosis and to pass over into it.

When seen as one sometimes sees it in the aorta or in the coronary arteries of younger individuals who have died of typhoid, it presents

* Read at the Ontario Medical Association, 26th May, 1908.

yellowish plaques, often situated about the mouth of the vessels, of limited extent and showing a very slight thickening and deformity of the intima. On section, when stained with fat stains, one sees that the subintimal cells are in various stages of degeneration, but one can also see that the internal lamina is frequently degenerated, and one can practically always see that where the patch is 'thickest there has been coincident fatty degeneration of the muscular elements of the underlying media. The importance of this condition in typhoid and other acute infections has been especially noted by Thayer and others. It is more than likely that moderate degrees of this change may disappear completely after convalescence, but the more severe types must seriously damage the vessel wall and be a factor in the further development of the disease in later life.

The true sclerosis of the intima, the deforming endarteritis of Virchow, is familiar to you all. I need not dwell on it at length. An important point, however, which was first most thoroughly studied by Jores, is the great increase in elastic elements which takes place in the sclerotic area. This to my mind is of the greatest importance in its bearing on the etiology of the disease. It was pointed out by Thoma and his pupils many years ago that with increase of age there is diminished elasticity of the aorta. The formation of new elastic elements in the endarterial plaque seems to point most certainly to an effort of nature to restore elasticity to the injured wall. Jores has described in some cases of senile arteriosclerosis the formation of plaques in which very slight regeneration of elastic elements occurred.

Often in these elements of endarteritis deformans the degeneration is most marked at the medial border of the intima, involving both intima and media, whilst towards the lumen one finds a comparatively thick layer of proliferating elastinogenic tissue.

The third type, that of the pure medial sclerosis, or Mönkeberg's type, although recognized before his extensive studies, has been given its proper position as the result of his work. The picture which I show is a typical example from the femoral of a patient at the Toronto Asylum, who showed the condition in an extreme degree. In this man all the arteries of the legs and arms were so sclerosed and calcified that they could be traced perfectly through the skin after death. The interesting point about it was that there was only a slight endarteritis in the aorta and the visceral arteries, the coronaries, carotids and vessels of the brain showed only slight change. The patient died of a miliary tuberculosis.

The specimen I pass around was from a similar case and shows the peculiar ring-like stiffenings of the vessel, which has been compared to a goose's trachea. This is the typical gas pipe artery, and we find that the change begins in the media leading to muscular degeneration, calcification, and in many places ossification with more or less intimal thick-

ening in places, but the intimal change is relatively slight as compared to the media.

This is the type which one finds associated with senile gangrene, and I am very much inclined to believe that the obliterating endarteritis in these cases is really a thrombo-arteritis due to the direct injury to the vessel wall from the fracture of these small plaques of calcareous material or bone damaging the intima.

After this brief account of the pathological changes in the human arteries, I wish to pass on to the experimental production of arterial disease in animals, as it is here that we will find most light thrown upon the disease in man.

We may pass over the earlier researches as of uncertain value and come at once to Josuè's experiments with the intravenous injection of adrenalin in rabbits.

He found that by giving daily injections of a few minims of the 1 in 1,000 adrenalin solution he could in time produce extensive sclerosis and degeneration of the aorta, in some cases getting the aneurismal bulging of the vessel walls, and sometimes extensive dissecting aneurisms. His work was confirmed by a large number of observers. The experiments are easy to perform and there is no difficulty in getting the sclerosis. A study of the lesions showed that the degeneration was in the media, degeneration and calcification being almost confined to this coat. Josuè concluded at first that the action of the adrenalin was solely due to the repeated rises in pressure brought about by the drug. But the objection was soon raised that if it were due to the pressure then there should be not only some relation between the amount of the drug administered and the extent of the sclerosis, but also that in any given animal the condition should be more diffuse, instead of this it is distinctly patchy. Pathologists generally came to the view that the adrenalin action was chiefly a toxic one, and this is the view most generally held to-day, but, as we will see later, there is other and stronger evidence in favor of the effect of pressure.

In addition to the adrenalin a number of other substances have been used which produce a similar mesaortitis, e.g., pyrocatechin, nicotin, digitalin and barium chloride. It will be noted, however, that these substances, although toxic, also have a pressure producing influence. I myself have obtained the same change in animals suffering from uranium nitrate nephritis.

Of great importance in this experimental work are some researches carried on by a former pupil of my own, Dr. Harvey in Cambridge. Whilst in my laboratory he published a piece of work upon the effect of tension upon the degeneration of elastic tissue when transplanted from

one animal to another, in which he showed that under tension it degenerated much more rapidly than when buried in a relaxed state. Following up this experimental work he tried to see what would be the effect of compressing the aorta of a rabbit for 3 or 4 minutes every day extending over a long period of time. Blood pressure tracings showed that such a compression pushed the blood pressure up almost as high as a dose of adrenalin.

He found as a result that in about 100 days the animals showed a most extensive media degeneration and calcification extending from the point of compression up the whole aorta to the heart. This was very even in its distribution and much more marked than in the adrenalin animals, and he concludes, and I think rightly, that in all these experiments with pressure-increasing drugs, the high pressure is an important factor.

All these experiments, however, although producing a disease comparable to the Mönkeberg type of sclerosis of the arteries of the extremities in man did not produce a condition in any way comparable to the endarterial changes in the human aorta.

Later on, other workers have been successful here, not however with pressure-increasing drugs, but with microbic toxins. The first to succeed with this were several French experimenters.

Afterwards Klotz of Montreal succeeded by the use of Typhoid B.; and Stuplocow, and quite recently Stolnykow, has by the use of continued injections of staphylococcus aureus succeeded in producing in the rabbits' aorta small intimal plaques in every way similar to the plaques which one meets with in man.

These are the results of the most recent experimental work upon arterial degeneration. What conclusions can we draw from them? I think the following are warranted: First, that high tension is an essential factor in the production of arteriosclerosis. Where this alone acts, as in the arteries of the extremities of laboring men, we get the pure medial type. Second, that toxic influences, very frequently microbic, but probably also metabolic, are important factors. Again I think that experimental work has clearly shown that it does not require continued high tension to produce arterial degeneration, that it may equally well be produced by repeated excesses of tension acting for a short time over a long period. The importance of this for the daily activities of the modern individual is self-evident.

I have said nothing about the influence of alcohol in the production of this disease. My own view is that it is of slight importance. I should place tobacco as a much more serious factor in its production, both as the result of clinical experience and experimental studies. Hyper-alimentation probably is much more important than alcohol.

AORTIC MANIFESTATIONS OF ARTERIOSCLEROSIS—DIFFUSE DILATATION OF THE AORTA.*

By THOMAS MCCRAE, M.D., F.R.C.P. (Lond.),

Associate Professor of Medicine and Clinical Therapeutics, The Johns Hopkins University, Baltimore.

INTRODUCTION. By the term diffuse dilatation of the aorta is meant the condition in which there is an enlargement of the vessel in its whole circumference, the extent varying, sometimes being of the whole arch, sometimes terminating at the point where the aorta passes through the diaphragm and rarely extending throughout the whole course of the aorta. Should this condition be designated as an aneurism? This will depend on the meaning which is attached to the word aneurism. If it be used in the widest sense as any local increase in the size of an artery, this diffuse dilatation would be included. But if the occurrence of a sac communicating with the lumen of the vessel be regarded as typical of aneurism, then the diffuse dilatation can hardly be included. The fusiform or globular dilatations of an artery were spoken of by the older writers as "true" aneurisms, a term which it is well to drop in our terminology. Thoma described these diffuse dilatations under the term of *Aneurysma verum diffusum*; Walshe designates them peripheric dilating aneurisms.

In this article the term dilatation will be employed to designate this condition, which strictly speaking probably comes under the term aneurism as we generally use it. There seems no question, however, that in its clinical aspect it differs considerably both from the saccular and ordinary fusiform aneurism of the aorta. As Gairdner pointed out, in these cases of diffuse dilatation of the aorta there is nothing that "clinically speaking can be definitely called a tumor."

Diffuse dilatation of the aorta occurs under various conditions. Thus the so-called *dynamic dilatation* is found in neurotic conditions, sometimes in severe anæmia and Grave's disease. This occurs more often in the abdominal than in the thoracic aorta. This form occurs also in aortic insufficiency, especially in young persons when associated with acute infections, as for example acute rheumatic fever. Then it may occur with acute aortitis, a rare condition. The most common form is found in association with arterio-sclerosis, and it is to this that attention is directed here. This frequently occurs with chronic aortitis, and some writers refer to it under this heading, but not in all cases of chronic aortitis does diffuse dilatation develop, and in some instances it occurs with comparatively slight signs of aortic disease. The diffuse dilatation is apparently to be regarded as usually the result of passive dilatation of the whole vessel without any giving way at one point.

Considering the apparent frequency of the condition it is recognized comparatively rarely. There are descriptions of it in the older

* Read before the Ontario Medical Association, 26th May, 1908.

writers, and Morgagni, Scarpa, Vieussens and Boerhaave apparently recognized it, but in some of the writings it is not easy to be sure whether they were describing a large fusiform aneurism or diffuse dilatation. The first accurate description was given by Joseph Hodgson in 1815, and by many French writers the condition is termed "maladie de Hodgson," although they sometimes associate an aortic insufficiency with the dilatation of the aorta as an essential part of this "disease." Thoma¹ in 1888, drew special attention to this form. As Osler points out, it is a striking commentary that of the cases studied by Thoma, very few had been recognized clinically. It is one of the conditions more often found in the dead house than recognized in the wards. However, once have the workers in a clinic alert to the condition and familiar with it, and it is surprising how often it is found; the disclosures of the autopsy room may stimulate the clinical acumen. The use of the fluoroscope has been a great gain in the diagnosis, and allows us to verify the opinion based on the usual physical signs.

For this study a series of thirty-five cases is considered, all of which occurred in the wards of the Johns Hopkins Hospital, or were seen in consultation.

Etiology. This may be regarded in general as practically those of arterio-sclerosis and aneurism. The immediate essential factor appears to be disease of the vessel wall with loss of elasticity and subsequent dilatation. The various etiological factors in this series are discussed in detail.

1. *Age.* The figures are as follows :

30 to 40 years	8
41 to 50 "	12
51 to 60 "	11
61 to 70 "	3
71 to 80 "	1

Of the patients under the age of 40 years, 5 were males (2 white and 3 colored) and 3 females (1 white and 2 colored). The relative preponderance of colored patients among the younger ones is a striking commentary on their tendency to early vascular degeneration. Among the eight patients there was a definite history of syphilis in 4; in 2 others there was aortic insufficiency, in 1 a history of severe muscular exertion for many years, and in the remaining one the condition apparently followed exposure and strain. The number between the ages of 40 and 60 is to be noted. One might have thought that there would have been a greater number among the aged, but probably the condition does not permit of many years' duration of life, and 50 to 60 is the time of

¹ Virchow Archiv, 1888, CXXI, p. 76.

greatest incidence. It occurs not uncommonly in the aged in almshouses and asylums, and is found at autopsy without there having been any symptoms during life.

2. *Sex.* The condition occurs most often in males, as might be expected. In this series there were 31 males and 4 females, three of these being colored.

3. *Color.* The colored race show a relatively high proportion; of this series 21 were white and 14 colored, (the total medical admissions being 5 to 1). This is in agreement with the relatively high incidence of aneurism and sclerotic vascular disease among them, due probably to alcohol, syphilis and hard work. The total medical patients with aneurism of all kinds numbered 345, (white 213, colored 132), so that the relative proportions for aneurism of all kinds and dilatation of the aorta are about the same.

4. *Syphilis.* This stands out as a most important cause. There are two principal forms of dilatation influenced by syphilis, one in which the process occurs with an acute syphilitic aortitis, usually seen in young adults, and the other in which the condition results from general chronic changes in the vessel wall. In this series there was a definite history of syphilis in 10 cases and probable in 7 cases.

5. *Work and muscular exertion.* These are factors in this exactly as they are in the production of general arterio-sclerosis. That they have an especial importance is evident when the essential condition which is necessary for dilatation is remembered, namely a diseased aorta. Occupations which involve very severe exertion at irregular times, such as stevedores, will evidently be likely to favor the condition. Sudden increase in the blood pressure must have more influence on the aorta than on any other vessel. In this series 21 of the patients had done hard muscular work, 5 were engaged in business and 5 did housework. The others had light occupations. Among those who had done hard work, in a large proportion this had involved severe sudden irregular exertion.

6. *Alcohol.* How much this is a factor, it is difficult to say. In this series 18 had used alcohol to excess and 9 were described as moderate users. This is certainly a high proportion, about 80 per cent.

7. Various factors which are concerned in the production of arterio-sclerosis doubtless have some influence here. Over-eating (in 6), lead poisoning, tobacco, gout (in one), etc., are all mentioned. With these must be put the wear and tear of a strenuous life. Probably all of these only operate through the production of sclerosis.

8. *Acute specific infections.* That these may be casual factors seems most probable. When we remember how much damage may be done to the aorta in the course of an attack of typhoid fever, it seems reasonable to suppose that from these the later changes may gradually develop,

especially if the other factors are added. Whether or not there is a true primary aortitis is difficult to say, but it seems reasonable to suppose that it may occur in an aorta previously free from disease. There is one infection in which the dilatation may occur during the acute features of the disease. This is rheumatic fever, in which there may be an acute dilatation of the aorta usually with aortic endocarditis. The same condition may occur with acute sepsis. Some writers have suggested that there might be an extension of inflammation from an endocarditis, pericarditis or pleuritis. It seems reasonable to suppose that if recovery followed an attack of acute aortitis, a chronic condition with tendency to dilatation would be left.

In this series, there was a history of typhoid fever in 6, rheumatic fever in 4, an acute arthritis, the exact nature of which was unknown, in 4, and pneumonia in 3 cases.

9. *Old age.* This is only a cause in so far as the passage of years brings sclerotic changes.

10. *Heredity.* Some would attach great importance to an inherited tendency. To estimate this accurately is difficult, yet it is possible that some may inherit vessels which are more readily affected.

11. *Malaria.* It is hard to find any condition to which malaria is not given by some one as a causal factor. There does not seem to be any evidence to attach importance to it in this connection, yet it is constantly repeated by various authors.

12. *Severe strain or exposure.* The importance of a factor such as this is difficult to estimate. It might only cause symptoms to appear from a condition already present. There is one striking example in this series:

The patient, a white man, aged 37 years, a ship captain, was admitted complaining of shortness of breath. He had not had typhoid fever, rheumatic fever or pneumonia. He had been at sea most of his life. There was no history of syphilis, and he had used alcohol very moderately. His illness began one month before, previous to which he had been perfectly well so far as he knew. His ship caught fire and the crew had to take to the boats. Naturally he was under a heavy strain, and in addition they were exposed to severe weather; as a result of this he contracted a severe attack of bronchitis. Shortness of breath began with this and continued constantly. He had a well marked dilatation of the aortic arch, seen with the fluoroscope, with dulness over the manubrium, and in both the right and left first and second interspaces, where there was faint visible pulsation. The heart was not enlarged; the sounds were clear, the second being very ringing. The pulse rate was normal, and there was moderate thickening of the peripheral vessels.

13. *Trauma.* This is probably only a factor in determining the onset of symptoms. In one patient, a miner aged 39 years, the onset had been

three months before, when he was struck on the chest by a dump cart in a mine. He was knocked unconscious and remained so for twenty minutes. He had a great deal of pain in the chest and great distress. This became less after three weeks, but his dyspnoea continued. He had aortic insufficiency, which was thought to have been due possibly to rupture of an aortic valve. He had been previously a very hard worker in a steel plant, where he carried heavy weights, had drunk heavily and probably had syphilis, so that there were other causal factors than the trauma.

Morbid Anatomy. There are first the lesions of chronic aortitis, which need not be described and secondly the dilatation. This varies greatly, it may involve only a part of the arch of the thoracic aorta or extend throughout the whole course of the thoracic and abdominal aorta. In the cases of this series coming to autopsy, the process did not extend beyond the point where the aorta had passed through the diaphragm. The dilatation may end there very abruptly. Thus in one case the aorta measures 8 cm. in circumference at the lower part of the dilatation, and only 4.5 cm. a short distance below. The form of the dilatation is various. It may be spindle, spheroid or periform in shape or sometimes like a large flabby bag. The orifices and part of the vessels given off from the aorta may be involved in the dilatation.

The associated conditions should be kept in mind, as they influence the symptoms. Thus if the chronic sclerotic process has involved the aortic ring, there is likely to be aortic insufficiency in consequence of the valvular changes. If the first part of the aorta is specially involved there may be signs of coronary artery disease. If the orifice of the left subclavian is narrowed the pulse in that arm may be small. These are conditions which may be associated with dilatation, but the symptoms produced by them are not due to it.

A condition which may result from the dilatation of the aorta is relative aortic insufficiency due to dilatation of the aortic ring. There was one such case in this series. During life a loud aortic diastolic murmur was heard for some time. It disappeared before death, and at the autopsy the aortic valves were found to be healthy and apparently closed the orifice completely. Probably the decrease in blood pressure for some days before death, allowed the dilatation of the aorta to diminish and the aortic ring returned to its usual size.

Thrombus formation in the dilated aorta is not common. Osler¹ mentions a specimen in the Museum of McGill University in which the descending thoracic and abdominal aorta were dilated with the abdominal aorta filled by a densely laminated thrombus.

¹ Modern Medicine, Vol. IV., p. 463.

Although in the majority of cases the aorta shows marked gross evidences of disease, yet this is not always the case, and the intima may be smooth and apparently normal.

The association of sacculated aneurism with dilatation of the aorta is mentioned. No instance was found in the seven cases of this series which came to autopsy. In one case with general dilatation of the aortic arch there was an aneurism of the left axillary artery. Thoma figures an instance in which a secondary aneurism arose through a rupture of the wall of the dilated aorta.

Clinical Picture. It is evident that as dilatation of the aorta usually follows as a result of other diseased conditions, the symptoms may be very varied. The features of aortic insufficiency, coronary artery disease and myocarditis, or angina pectoris, may all be present. In this study the effort is made to separate these as far as possible, and deal with the symptoms and physical signs due to this condition. The writer believes that in many instances the picture is fairly characteristic, and that the diagnosis can be made with reasonable certainty even before it is confirmed by the fluoroscope examination. The history of a fairly typical case may be quoted :

The patient was a male, aged 56 years, a merchant by occupation. He came complaining of uneasy feelings in the thorax, which he described as being rather more than oppression and yet less than severe pain. His family history was negative. In the previous history it was found that the patient had had diphtheria, measles and typhoid fever. He had not been a specially heavy eater, but had always used alcohol rather freely. For many years he had been working at high pressure, carrying a great deal of responsibility, and a heavy load of worry. There was no history of lues.

P. I.—For about two years past he had noted at times, especially with any sudden exertion, such as running for a car or any unusual excitement, that he would have a curious feeling in the chest. This was generally described as being in the sternum or a little to the left of it. At times it was apparently more marked at the lower end of the sternum, and occasionally it seemed to radiate into both shoulders. None of these attacks were at all alarming. He was always able to go on, although sometimes he had to rest before doing so. No one had ever commented on anything strange in his appearance when they occurred. He himself rather thought that it was needless to seek advice, but the continuance of the symptom rather worried him.

Examination. The patient was the picture of health; he was well nourished and had a good color. The lungs and heart were clear throughout, except for a soft systolic murmur in the pulmonary area. The pulse was 72, of good volume and regular; the blood pressure was 135 mm.

On inspection, over the manubrium there was a distinct lift, and a visible pulsation in the first and second right and left interspaces. On percussion there was dulness over the manubrium and to either side. On auscultation both sounds were heard at the base, the second with a marked ringing, amphoric quality which could be made out over rather a wide area. The fluoroscopic examination showed a diffuse enlargement of the aortic arch, and a shadow could be seen both to the right and left of the sternum, which was continuous with that of the heart.

Clinically there are several groups of cases, which can usually be separated.

1. Latent. Absence of all symptoms is especially likely to occur in old people, and the condition may be found at post-mortem. In this series there were five patients in whom the condition was recognized in a routine examination. They made no complaint of any symptom which suggested disease of the cardio-vascular condition. One was admitted for diabetes, one for chronic alcoholism, one for organic disease of the spinal cord, one for lipoma, and one for diarrhoea. In all the diagnosis was confirmed by the fluoroscopic examination.

2. A group in which cardiac symptoms predominate, especially those of aortic insufficiency. There were three well marked instances in this series, and it is interesting that two were in colored women aged 32 and 33 years. In other instances the picture is that of cardiac failure. This, of course, is the final stage in the majority of cases, not because of the dilated aorta, but on account of the associated conditions.

3. A group with features much like those of angina pectoris, in fact sometimes it may be difficult to say that angina is not present. There were four in this series in whom the pain might be described as anginoid, while the patient was under observation. Others gave a history of it. In all of those who had the attacks of thoracic pain while under observation, it was noted that the severity was less than that usually seen in angina pectoris.

4. The group in which the symptoms are those of the condition in the aorta itself, the heart being practically normal.

Symptoms. Complaint. There is considerable similarity in this. The most frequent one is shortness of breath, usually not constant, unless there was a marked cardiac condition present. This was a prominent symptom in 22 cases. Next in frequency came oedema of the feet and legs, which in several occurred without the heart showing any signs of disease. Thoracic pain was complained of by five, and thumping in the chest by one. Weakness was rather a frequent complaint. Loss of weight, cough, etc., were also mentioned. That certain patients had no symptoms referred to the vascular system has to be remembered in regard to the figures.

Onset. This was gradual in 24 and sudden in 4, in one of these following unusual exertion, in another injury, and a third mental strain and exposure.

Dyspnœa. This was the most common symptom, and occurred in 23 cases. Its severity depended largely on the state of the heart. When with the dilatation only it was usually brought on by some special exertion or excitement. Cough accompanied it in 11 cases, in one with spitting of blood. A striking point in several cases was that the dyspnœa as described by the patient and as observed was quite out of proportion to anything that could be found to account for it.

Oedema of the feet and legs occurred in ten cases. In several of these the heart seemed normal in every way, and as a rule the blood pressure was low.

Pain was a prominent feature in six cases. In three of these it was referred to the chest generally without any special localization; in two it was referred to the left chest, and in one it was described as being beneath the sternum and going into the right shoulder. In no instance was there a definite statement of the pain radiating any distance down either arm.

General weakness, loss of weight, palpitation of the heart, syncopal attacks, giddy feelings and dizziness were all mentioned. The complaint of loss of strength was quite frequent. Only one patient complained of difficulty in swallowing; this was verified by observation and occurred quite frequently.

Physical Signs. Inspection. This may show many features due to associated cardiac conditions (aortic insufficiency, etc.), which need not be considered. Marked fulness of the veins of the neck was noted in five cases, of the veins of the upper thorax and arms in two cases, of both the veins of the neck and upper thorax in five cases, and of the veins of the neck, arms and upper chest in one case. Visible pulsation in the episternal notch was noted in fifteen cases, in the first right interspace in one, in the second right interspace in five, in the second left in one, and in the first and second interspaces on both sides in two, in the first on both sides in one, and in the second interspace on both sides in four cases. This visible pulsation in the interspaces is usually not so localized as that seen in saccular aneurism, and can rarely be felt as distinctly; it does not give such a definite lift to the finger. As a rule the pulsation is not conveyed to the palpating finger as is often seen in the saccular aneurism. The visible pulsation over the carotids and subclavian arteries is often very marked and gives a striking picture. The subclavians seem to be lifted higher in the chest by the increased size of the aorta. The diffuseness of the pulsation is often marked. There may even be a *visible tumor*, as in one patient in whom a definite pulsating

mass could be seen at the inner end of the right clavicle and in the suprasternal notch.

Manubrium. There was a definite lift to the manubrium in 17 cases. In two the absence of any visible heaving was noted, and in the remainder the point was not noted. In two cases the manubrium was prominent, and there was a distinct lift of it and the inner end of both clavicles, in one of the manubrium and right clavicle. In one the inner end of the right clavicle was lifted. In some cases it was noted that there was a widespread visible heaving, but no well marked local impulse. The essentials in observing the lift of the manubrium and local pulsations in the interspaces are good light coming from the side, proper position (usually best with the patient lying flat and the observer's eyes about on a level with the thorax) and a seeing eye.

Pulsation in the back. In no instance of this series was this made out, although usually looked for. It is quite possible that in a thin individual it would be found, but the experience of this series suggests that it is rare.

Palpation. One of the most striking findings is the palpation of the arch of the aorta in the episternal notch, as was done in seven instances. In one case there was a distinct pulsating tumor projecting above the inner half of the right clavicle and in the episternal notch. The finger could be passed between it and the clavicle. The heaving of the manubrium could be felt in six cases. The contrast between the marked *visible* lift of the manubrium and the slight *palpable* lift is often very marked. The shock of the second sound was felt in the aortic area in two cases, and in the pulmonic area in one. A diastolic thrill was felt over the manubrium in two cases, and in the aortic area only in two. In one case there was a marked diastolic thrill over the right sterno-clavicular joint, the manubrium and the upper half of the sternum.

Percussion. This gives information of great importance. In 29 cases of the 35 there was distinct dulness over the manubrium. In two cases its absence was noted, one being with quite marked emphysema, and in four cases there is no note. The area of dulness was usually continuous with the cardiac dulness, and often extended some distance outside of the edge of the sternum in the first and second interspaces. In seven cases it was marked in the first and second right and left, in four in the first right and left, in two in the first left, and in one each in the first and second right and first and second left interspaces. The width of the area of dulness varies somewhat, the usual measurement being about 7 or 8 cm. The widest was 10 cm.

Auscultation. With murmurs due to the disease of the aortic orifice occurring so frequently, the second sound may be absent. However, when it is present it often has a distinct quality, perhaps the most characteristic sign on auscultation. In several instances this first sug-

gested the condition being present. This is a bell-like, ringing, amphoric quality, very distinctive when once heard, but quite different from the accentuation found in high blood pressure. It has been given various descriptions, "clangoreux" by de Mussy, "bruit de tabourka" by Potain, "timbre métallique," etc. This sound may be heard over rather a wide area and with special distinctness over the manubrium, and in the neck of the carotids. It was well marked in eight of nineteen cases in which the second sound was clear. In one case with aortic insufficiency the second sound had this quality, and the diastolic murmur had somewhat the same. In two of the nineteen cases the second aortic sound was very loud, in two very short and sharp and in one very feeble. In the others it was not strikingly abnormal. The character of the second pulmonic sound depends largely on the mitral lesions present. The first sound shows no special characteristics. When aortic insufficiency is present, the diastolic murmur may be heard with great distinctness over the manubrium and at the episternal notch.

Pulse. This showed many variations in character, especially with associated cardiac conditions. In the cases with no decided cardiac change it had no striking peculiarity. The rate was not specially rapid, in about one-third of the cases it did not rise above 80, and in the same number was not above 100 as a rule. In four cases the rate was persistently below 70, in one usually being about 50 per minute.

Blood Pressure. The statement sometimes made that in this condition the blood pressure is high is not borne out by this series. Of course there are many accompanying conditions which may influence it, such as myocarditis, marked sclerosis of the smaller vessels, etc., but as a rule, and especially in the cases in which the aortic dilatation was the prominent factor, the blood pressure was not increased. Among 26 cases with records, in 20 the average systolic pressure was below 140 mm. (Riva-Rocci instrument, broad arm piece). In two of these it rose temporarily to 150 and 160, but this did not last. In two patients it varied from 70 to 95, never being above the latter figure, and with an average of 80. One of these had acute aortic endocarditis on an old chronic process, with which he died. The other had quite marked arterio-sclerosis with aortic insufficiency, and was discharged from the hospital in fairly good condition. Of the remaining cases, three varied from 125 to 180, one from 150 to 220, one from 150 to 240, and the sixth was admitted with a pressure of 260, which gradually fell to 180. All of these had marked sclerosis with hypertrophy of the heart; two had aortic insufficiency. In the patients without marked changes in the heart the pressure usually varied from 120 to 135.

In four cases in which there were records of both the systolic and diastolic pressures, these showed a fairly steady difference. In one with

a systolic pressure averaging 110, the diastolic averaged 70, and in one with systolic 180 to 190, the diastolic was 60 to 100, and in two with a systolic pressure averaging 125, the diastolic was 100 and 95 respectively.

That the pressure should not be specially high may seem surprising at first glance when we consider the almost invariable arterio-sclerosis. But it is evident that the condition in the aorta must make a great difference. The blood, instead of being pumped into an elastic tube, is forced into one which is passively dilated, has lost its elasticity to a great extent, and no longer acts as a pressure reservoir.

Fluoroscopic examination. This gives information of the greatest value, and in the hands of one accustomed to the work, may make the diagnosis. There is a very definite increase in the aortic shadow which is continuous with the heart shadow, and is usually more marked to the left than to the right of the sternum. The degree of visible pulsation varies, but in the majority there is no great difference in the extent of the shadow during systole and diastole. In one patient with quite marked dilatation it was noted by Dr. Baetjer that the shadow to the left of the sternum did not vary, but that to the right it did. This may have been due to the greater direct force of the flow from the ventricle on the first portion of the arch. In several instances it was noted that the shadow of the aorta extended unusually high in the thorax. Dr. Baetjer tells me that in several patients the position of the heart in the thorax seemed more horizontal than normal.

Pressure effects. These are interesting in view of their frequency and importance in the saccular aneurisms of the aorta. As a rule it may be said that in the diffuse dilatation they are much less frequent and less serious.

(a) *Vascular system.* Fulness of the veins of the neck, upper thorax and arms, may be present, as was noted in twelve cases in this series. In two cases the radial pulses were unequal, in both the left being the larger and in one the difference in the blood pressure was 20 mm. The possibility of this being due to some obstruction at the beginning of the innominate artery has to be remembered, or it may be that the innominate was involved in the dilatation.

(b) *Respiratory tract.* A tracheal tug was noted in three instances, in two of which it was quite marked for some time after admission, but with improvement in the general condition it disappeared. No evidence of pressure on a bronchus was found. In some patients there was dulness at one or both bases, but this may have been due to the state of the heart. In two patients there was recurring hydrothorax on the right side for which repeated tapping had to be done.

(c) *Nervous system.* There was inequality of the pupils in four patients. In two the left was the smaller, in one the right, and in one

there was no note. While this is often held to be due to pressure on the sympathetic, yet the conditions of the circulation may be largely the cause. There was pressure paralysis of the left vocal cord in two patients, and in two others the voice was hoarse, and the cough had the "goose" quality.

(d) *Bones and muscles.* There was no instance of perforation of the thoracic wall or erosion of the vertebræ.

(e) *Alimentary tract.* Dysphagia was present in one patient. No attempt was made to prove the presence of obstruction.

It is evident that the pressure effects are few in comparison with what we would find in an equal number of cases of saccular aneurism. The most frequent and most striking is the fulness of the veins of the arms and head. This was not associated with signs of general venous engorgement.

Associated conditions. Thickening of the palpable arteries was practically always present. In twenty-two cases it was noted as being marked. In three there was calcification of the vessels. Aortic insufficiency was present in fourteen cases, in eight with mitral insufficiency, in one with aortic stenosis, and in one with aortic stenosis and mitral insufficiency. Mitral insufficiency without an aortic lesion was found in one case only. This is as might be expected; the valvular lesions are of sclerotic origin, and specially marked in the aortic valve. The heart was normal so far as could be made out in nine cases; in two others there were marked hypertrophy, and in three others slight hypertrophy, without any valvular lesion.

Relative aortic insufficiency. The occurrence of this is of interest, as in diffuse dilatation of the aorta we have a condition which should favor a relative insufficiency. If the aortic ring was not so rigid, doubtless this condition would occur more frequently. There was only one case recognized:

The patient was a colored female aged 32 years, admitted March 25, 1898, with dyspnoea and oedema. She had marked fulness of the veins of the neck and upper thorax. The heart was enlarged to the left. There was a heaving impulse over the manubrium, with dulness, which extended into the first interspace on both sides. There was a well marked systolic murmur at the apex and a definite diastolic murmur in the aortic area. The second sound could be well heard over the manubrium and in the neck. Later there was a diastolic shock at the base. The pulse varied from 70 to 80; it was not specially collapsing, and the pulse tracing did not suggest aortic insufficiency specially. The presence of the aortic diastolic murmur was noted by Dr. Osler. The fluoroscope showed dilatation of the arch. She was admitted six months later in a very critical condition, with marked dyspnoea and oedema. There was marked

pulsation in the episternal notch, but the heaving of the manubrium was not as marked as in the previous admission. Over the body of the heart the second sound was much accentuated, but no diastolic murmur could be made out. She died the day after admission. The autopsy showed arterio-sclerosis, hypertrophy of the heart, pulmonary thrombosis, and dilatation of the arch of the aorta with uncompensated degeneration in the intima and media. The aortic and mitral valves were normal. The aorta was much dilated and thin, measuring 9 cm. in diameter above the valves. It showed many areas of nodular thickening, and three areas about $1\frac{1}{2}$ cm. in diameter, which were very thin.

The infrequency of relative aortic insufficiency is well recognized, and is probably due principally to the rigidity of the aortic ring. The experience of this series does not support the view expressed by Balfour,¹ that "when once dilatation of the ascending aorta is produced, the secondary development of incompetence of the aortic valves is only a question of time." There were fourteen cases with aortic insufficiency, regarded as due to organic disease of the orifice, and one due to relative insufficiency—a total of forty per cent. with aortic incompetence.

Renal system. In twelve cases the urine was clear throughout, showing neither albumen nor casts. In ten there was a small amount of albumen and occasional hyaline and granular casts. In four there was only a slight trace of albumen and no casts; in three there was albumen only on rare occasions and no casts. The others were regarded as having chronic nephritis.

Blood. This showed no changes of any moment. The count was about normal in the majority, a few showing secondary anæmia.

Course. As regards the condition of dilatation itself there seems no reason why the patient with it may not go on indefinitely, especially as long as he leads a quiet life. In the majority of cases it is the associated conditions which are responsible for serious symptoms. One patient in whom the condition was recognized in the routine examination has gone for about three years without any evident change, and without any symptoms which might be referred to the condition of the aorta. Serious accidents such as occur in saccular aneurism were not noted in this series. There was no instance of rupture of the aorta, although it seems possible that this might occur, or of severe pressure signs. It would seem reasonable to suppose that the mode of life must have considerable influence on the prognosis. In the case of a patient whose occupation, such as that of a stevedore, involves at times sudden severe muscular effort, there must be greater danger of sudden damage. In the majority of cases it is probable that the condition of the first inch of the aorta will largely determine the outlook. With serious disease of the

¹ Clinical Lectures on the Diseases of the Heart and Aorta, London, 1882.

aortic orifice or interference with the coronary circulation, a grave prognosis should be given.

Diagnosis. Naturally a knowledge of the disease, the comparative frequency and the means of recognition are most important. There are sometimes suggestive complaints by the patient. Perhaps two groups stand out most prominently. In the one the complaint is especially of thoracic pain, but the history of the attacks and observation of the patient in one of them do not quite bear out the diagnosis of angina pectoris. In the other group the symptoms suggest cardiac disease, the special complaints being shortness of breath and œdema of the ankles, but on examination the heart is found comparatively normal. In both these groups it is well to keep the possibility of dilatation of the aorta prominently in mind.

Of the results of examination, the visible impulse seen over the manubrium and in the adjoining first and second right and left interspaces, the retrosternal dullness, the curious amphoric quality of the second sound, if this be present, and the result of the examination with the fluoroscope, are the most important.

If the presence of some intrathoracic condition apart from the disease of the heart be recognized, the following points have to be kept in mind :

i. *Saccular aneurism of the aorta.* It may be said that there is no need in the majority of cases in attempting to distinguish between saccular aneurism and a dilatation of the aorta. This, however, is not the case, because the question of treatment is entirely different. To attempt to wire a diffuse dilatation of the aorta cannot possibly be of any advantage, and might do harm; while as regards the question of a prolonged period of absolute rest, it is doubtful that this is indicated in diffuse dilatation. The outlook is also quite different, being less favorable in saccular aneurism. The points in the differential diagnosis are as follows :

(a) *Effects of pressure.* As has been pointed out these are comparatively slight in the dilatation, and if very severe should always suggest saccular aneurism. This is especially true of pain, which apparently is rarely continuous in dilatation, and is more suggestive of angina. It does not seem to ever have the steady severe character of the pain in saccular aneurism.

(b) *Pulsation.* This is usually more diffuse and widespread in dilatation, while an important point is the difference on palpation. The visible impulse in the interspaces in dilatation may be readily visible, but cannot be felt, while in the sacculated aneurism it is apt to be more punctate and readily palpable with a distinct local impulse, which is very readily felt. Very often the pulsation of a saccular aneurism is more forcible than that of the heart. This was not observed in any of the cases of

diffuse dilatation. The heaving impulse of the manubrium is not readily felt in the diffuse dilatation.

(c) *Percussion.* The area of dulness in dilatation is more or less regular. It is found over the manubrium and perhaps in both sides of it, usually rather more to the left. As a rule it is continuous with the cardiac dulness, whereas in saccular aneurism very often an area of resonance is found between the cardiac dulness and that of the aneurism. In no instance of this series was dulness made out in the interscapular region, although in a marked dilatation there seems no reason why it should not be present.

(d) *Auscultation.* Here the curious quality of the second aortic sound already referred to, is very significant when present. The wide area over which the second sound may be heard, and also the transmission of the murmur of aortic insufficiency up into the neck is important.

(e) *X-ray examination.* This is perhaps the most certain single thing, as in the hands of anyone accustomed to the pictures presented by thoracic conditions the results are very positive. Of course, any unusual shadows due to mal-position of the aorta should be kept in mind.

2. *Intrathoracic tumor.* This may give difficulty, but the pressure signs of tumor are likely to be more marked. The visible pulsation, often so characteristic of diffuse dilatation, is not likely to be present. In a case in which there is doubt from the physical signs the examination with the fluoroscope will usually settle the question at once.

3. *Malposition of the aorta.* If the aorta be unusually twisted, and lie further to the right than usual, there may be visible pulsation to the right of the sternum and an increase of dulness. Then in some patients with scoliosis, the vessel may be out of the normal position. The same may be seen in some of the thoracic deformities due to rickets with displacement of the heart and aorta, or in instances of marked changes of one side of the thorax with shrinking. The general features should suggest the diagnosis, and if there is doubt the x-ray examination would decide without difficulty.

In the distinction between saccular aneurism and dilatation or mal-position of the aorta, the continuance of the signs and symptoms without any great change has to be kept in mind as important. Of course a saccular aneurism may show but little change during a considerable period, but as a rule is more progressive. In the absence of severe cardiac features, apparently diffuse dilatation may persist for a time without any marked change.

Angina pectoris. The attacks of pain may suggest this, and in fact it is difficult sometimes to know where to draw the dividing line. However, the pain is not usually as severe as in true angina. It is often described as more of a feeling of weight and oppression, with occasional

pain, which is rarely agonizing. It sometimes runs into both arms, or into the right as often as into the left. In no instance in this series did the pain run very far down the arm. If the patient is seen during an attack of pain, the symptoms are not as severe as is usual in angina. Should it come during exertion, rest may cause it to disappear rapidly, or if it come on while the patient is at rest, the duration may be longer than is usual in angina, sometimes persisting for hours.

Cardiac disease. As Hodgson pointed out, the condition is often mistaken for cardiac disease. Of course this may be present as well, but before there are any signs of cardiac breakdown, the dilatation may suggest it. A careful examination should prevent this mistake.

Treatment. Here only the management of the cases with dilatation as the principal condition is described. When there is coronary artery disease with myocarditis, aortic disease or dilatation, the most marked conditions must be treated. In the dilatation itself there are several points to be considered. Of course, as a rule, there is some general sclerosis, which must always be kept in mind.

(a) *Rest.* How much is this demanded if the cardiac condition be good? As a rule there does not seem any indication for prolonged rest, although the features in each individual must decide. With some dyspnoea and oedema of the feet, it is well to put the patient to bed for two or three weeks, then getting him up gradually. However, if there be no special symptoms, or if the condition be discovered accidentally, there does not seem much object in any prolonged period of rest.

As to occupation, many of these patients are laborers who have difficulty in getting light employment. Whenever possible this should be done, and the work involving sudden severe muscular efforts should be abandoned. As to the patients in the higher walks of life, those who are under strain, should, if possible, free themselves from this and lead a quiet life. A good long holiday is an advantage.

(b) *Diet.* The important point is not to eat too much. It is well to limit the amount of meat, and in this follow generally the régime of arterio-sclerosis. The taking of large amounts of fluid should be avoided. It is well to forbid alcohol altogether.

(c) *Bowels.* These should be kept freely open, and an occasional mercurial and saline purge is advisable.

(d) *Medicinal.* There is no drug which can essentially influence the condition. Potassium iodide in small doses (gr. V to gr. X, 0.3 to 0.6, is always worth a trial. The vaso-dilators are usually not indicated, for as a rule the blood pressure is about normal. If it be high, their use should be governed by results, but too much should not be expected. Digitalis is not indicated for the condition itself, in fact, it is likely to do harm.

In general the treatment is much like that of arterio-sclerosis. A quiet regular life, light diet, and not too much of it, care of the bowels, and general good hygiene are the important points. Sooner or later other features, such as a cardiac breakdown, are likely to appear, and they must receive appropriate treatment.

ARTERIOSCLEROSIS OF THE HOLLOW VISCERA*

By J. A. BAUER, M.D., Hamilton.

MR. *Chairman and Gentlemen*: During the past few years considerable attention has been turned to the visceral manifestations of sclerosis of the abdominal arteries. Although (post mortem) one may see advanced conditions of sclerosis of the abdominal aorta and its branches without any complaints thereof, during life, symptoms have been found which could only be accounted for by the sclerotic changes in these arteries.

These symptoms have been extensively studied by Buch, Ortner and others and have received the name of *angina abdominis* (Baceli¹). They may vary from a moderate abdominal pain and distress to the severest form of an abdominal crisis. They may manifest themselves as gastric but are more usually seen as intestinal troubles.

The gastric forms may be mistaken for nervous or reflex gastric affections or for gastric ulcer and are produced when the coeliac axis artery is involved in a sclerosis. The symptoms are of an intermittent character and follow a meal or something which will increase the tension in the abdominal aorta and its branches. They manifest themselves by pain in the epigastrium, distension of the stomach with gas, and eructation of gas sometimes associated with vomiting, or according to Pal they may simulate the gastric crisis of tabes or lead colic. The stomach contents are usually normal but may be hyper or sub acid. Salivation seems to be a frequent accompaniment, and haematemesis has been described with and without ulceration. Ulceration may be the result of the sclerosis and thrombus formation in a small artery. A case of Rosengarts might be mentioned to illustrate this condition. Patient act 64, has been troubled for some time with colic in the stomach, usually coming on immediately after meals. Latterly vomiting accompanied attacks of colic. Appetite is good but afraid to eat. Constipation. Sleep is poor. After a few hours of sleep he is awakened by cramps. Under treatment the patient improves, but later the condition recurs. Haematemesis now accompanies vomiting. Salivation is profuse during attacks. No tumor or areas of hyperaesthesia of epigastrium could be elicited on examination. Condition again improved under appropriate treatment.

* Read at the Ontario Medical Association, 26th May, 1908.

The intestinal symptoms like the gastric forms are also intermittent in character and are usually pain, meteorism, and constipation (diarrhoea has been noticed instead of constipation). The pain is mostly complained of in the hypochondriac regions, but is sometimes situated in the ileocæcal or umbilical regions. The colic or distension may be relieved by the passing of flatus or the eructation of gas. Sometimes the patients are disturbed during sleep by these pains. Here as in the stomach the condition may lead to ulceration, or if a large artery is thrombosed to gangrene of the bowel (Roswell Park). In the case of thrombosis of a large artery, blood may appear in the stools and vomiting may turn faecal in character. That this trouble may be easily mistaken for other conditions will be readily apparent in the histories of the following cases. In Ortner's case the patient, a heavy smoker, had been for a long time troubled with pain two or three hours after meals. This pain was accompanied by meteorism, but no peristalsis. The distended coils of intestines could be seen against the abdominal wall. Obstinate constipation was present. Ortner concluded that the case was one of chronic obstruction of the bowels, most probably due to cancer, and operated. Nothing pathological was found. The patient died, and post mortem showed a high degree of sclerosis of the intestinal arteries. On account of the similarity of these pains to the *claudicatio intermittens* of Charcot, Ortner gave them the name of *dyspragia intermittens angio-sclerotica intestinalis*. In Schnitzler's case there were four years of unbearable pain which was, shortly before the operation on the patient accompanied by vomiting and obstipation. The patient died as a result of the operation. The post mortem showed an obliteration of the superior mesenteric artery with an arterio-sclerotic thickening at its commencement. A collateral circulation carried on the nutrition of these parts. Many other similar cases have been described since these cases were first published and a case which came under my personal observation may also be of interest. The patient was seen for some other illness. During one of my last visits she complained of having been troubled for some time with colic—like pains, eructation of large quantities of gas and distension of abdomen. On some days her condition was worse than on others and this was usually brought on by eating a heavy meal. Shortly afterwards she left my care and I did not see her for some months. I was then called in by a brother practitioner who had concluded that she had an obscure carcinoma of the intestines. At this time the abdomen was distended and tender and one could see the coils of the intestines against the atrophic abdominal wall. No tumor could be felt, but I agreed with her physician that she probably had some chronic obscure obstruction of the bowel and that an exploratory incision was advisable. No growth, no obstruction of the bowel and no ulceration could be discovered. The appendix,

gall-bladder and pelvic organs were free from disease. The patient died from the shock of the operation. No post mortem was permitted, but from the high degree of sclerosis present in the arteries of the mesentery at the time of operation, and which was commented on at this time by all present, it was evident that this was undoubtedly the cause of her trouble. Dr. Olmsted related the history of a case upon which he had operated for an acute abdominal condition. When the abdomen was opened nothing was found to account for the trouble but sclerosis. This patient also died. Warburg mentions a case which was to be operated on for chronic appendicitis, but owing to the pulsation of the aorta with pain on pressing thereon, together with other symptoms of arterio-sclerosis, he concluded that it was a case of *angina abdominalis*. Appropriate treatment relieved the symptoms. Perutz speaks of mild cases in which the abdominal symptoms were gas, constipation and moderate pain or uneasiness—the attacks usually following a meal or being brought on by climbing stairs. A later attack of *angina pectoris*, or an angina pectoris attack alternating with an attack of *angina abdominalis*, showed the true nature of the trouble. My experience is that these latter cases are fairly common, as I have seen a number with this condition in patients with advanced arterio-sclerosis since my attention has been called to these manifestations. In a recent article, Alfred Stengel speaks of a pain in the back which he ascribes to abdominal arterio-sclerosis.

The diagnosis is frequently not difficult (Buch) especially if they are accompanied by stenocardial attacks, or the steno-cardial-like attacks of aortitis, and also if the attacks of abdominal pain have been preceded by severe bodily exertion or have followed the horizontal position of the body. In other cases the trouble may be suggested when there is colic-like pain in the abdomen together with a painful aorta, especially if accompanied by painful throbbing. Sclerosis of the peripheral arteries might assist one, or symptoms of an elongation, or a widening of the thoracic aorta. Hypertrophy of the left side of the heart and a ringing accentuated second sound are also suggestive as are also irregularity of the heart beats with otherwise normal heart sounds. Litten laid stress on a peculiar fremitus on lightly palpating the abdominal aorta, but this may also be produced by deep palpation in normal arteries. The abdominal aorta may be felt on palpation to be in a sclerotic condition in some cases, and it is quite possible to find it to be the only artery in this state (Schrotter, Hasenfeld). Teisier and Van der Valden speak of an inversion of the normal difference of the blood pressure between the *arteria radialis* and the *arteria dorsalis pedis* as an important symptom of the sclerosis of the descending aorta.

The differential diagnosis is sometimes difficult in neurasthenic cases, especially where arteriosclerosis is an accompaniment of neuras-

thenia, and it may be difficult to tell whether the symptoms are neurasthenia, or from the arteriosclerosis. Various nervous reflex gastric and intestinal disturbances may at times simulate this condition. In the severer forms the acute pain, the meteorism, obstipation, and prostration of the patient suggest some acute abdominal condition, especially if one sees them for the first time during the acute stage of an attack, and one might be led to conclude that an acute abdominal obstruction, acute appendicitis, or gall-bladder trouble is the cause of the condition. In those forms-simulating obstruction, the absence of peristalsis in the distended coils of intestines is a valuable sign. Disease of the heart muscle or its valves may also produce intestinal and gastric disturbances somewhat similar in character (Schmidt, Riegel). Angina pectoris may have its symptoms referred to the abdomen, and Pal mentions an interesting case of this kind in which the patient died during an attack of the most intense abdominal pain with vomiting. Sclerosis of the coronary artery and fatty degeneration of the myocardium were all that was found to account for the trouble. Embolism of the superior mesenteric artery produces a similar condition to that of thrombus formation. That typical attacks of agina abdominus may be produced by tobacco, lead and other poisons has been mentioned by Pal and Perutz.

The analogy of these abdominal cramps in Ortner's case with the cramps of the muscles in the claudicatio intermittens of Charcot, or with the dysbasia arteriosclerotica intermittens of Erb made him give the name above mentioned. These cramps or pains have been ascribed to the distension of the intestines with gas, but as we may get the pain in rare cases with retraction of the abdomen it is not right to consider this the cause, especially when we know that under normal conditions the visceral peritoneum is insensible to pain. A good many observers think that the pain is produced by the ischemia resulting from the arterial spasm. This ischemia also affects the nerves and causes a functional disturbance in them. Buch, however, thinks that the pain, at least in those cases occasioned by over exertion or the recumbent position, is due to a neuralgia and is produced by a congestion of the large plexuses along the aorta. In the recumbent position, as well as when the body is undergoing increased exertion, at a certain time, at least during the exertion, the blood pressure is increased. When the abdominal arteries are normal their elasticity permits them to act as a reservoir for any increased fluxion of blood to these parts, but when they are rigid this is not permitted and a congested plexus, congested on account of the rigidity of the intestinal arteries, becomes more congested and the hyperalgesia is turned into a neuralgia. Another theory is that the pain is due to a local inflammatory arteriosclerotic processes, e.g., periarteritis, aneurysm formation or thrombus formation and the resulting irritability of the perivas-

cular nerves, which during an arterial spasm is turned into a neuralgia. This spasm is produced by an increased secretion of the chromatin cells of the suprarenals and plexuses along the aorta and the secretion is in its turn induced by anything which causes an increased irritability, e.g., hyperaemia of these plexuses, or to the effect of toxins, e.g., tobacco, lead or anti-toxines entering the circulation. (Pal.)

The meteorism is caused by the lessened absorption of gas from the intestines due to the cutting off of their blood supply by the arterial spasms. The obstipation is produced by the paralysis of the bowel.

Owing to the high death rate in abdominal operations in these cases, Ortner warns against these procedures where this condition is suspected.

Time does not permit an extensive consideration of the sclerosis of the pulmonary arteries, and the following discussion is, therefore, brief.

Sclerosis of the pulmonary arteries is usually an accompaniment of disease of the initial valve, or of some condition of the lung, which causes a damming back of blood on the pulmonary arteries, thus increasing their work. That it may, however, be an idiopathic condition has been shown by reports of cases by Romberg, Aust and Mönckeberg. In the cases cited, by Romberg and Aust, the patients were young men, 25 and 24 years of age respectively. They died after about fifteen months, with symptoms of cyanosis, dyspnoea, marked enlargement of the heart with rapid and regular pulse, indefinite heart murmurs, enlargement of the liver, no oedema, and no enlargement of the veins of the neck. Post mortem showed the right ventricle so dilated that the left looked as if it were a small appendage of the right. The walls of the auricle and the right ventricle were thickened; all of the valves were normal in appearance, and incompetency was due to dilatation. The pulmonary arteries were, into their smallest branches, highly sclerosed. To these cases Mönckeberg adds two others in which the symptoms were similar, and in which nothing in the heart or lungs could account for the sclerosis. Sclerosis of the arteries throughout the body was not present in the one and not advanced in the other. In none of them was there anything in the aetiology to cause the condition. To these cases Kitamura adds a fifth in which the lungs, and the valves of the heart, and the remaining arteries of the body were normal, and in which the condition was ascribed by him to the large quantities of fluids taken internally,—thirty glasses of beer daily, increased sometimes by considerable quantities of wine. This condition is mentioned only because of the clinical interest it presents, and the reported cases are the only ones, which could be discovered in the literature at hand.

Sclerosis of the arteries of the other viscera of the body has not been considered in this paper.

Literature.

Ortner—Zur Klinik der Angiosklerose der Darmarterien. Volkmanns Sammlung Klinischer Vortraege. No. 347, 1903.

Perutz—Ueber Abdominelle Arteriosklerose (Angina Abdominis) Muenchner Medizinische Wochenschrift. No. 22, 1907, S. 1,075.

Warburg—Ueber Dyspragia intermittens Angia Sclerotica Intestinalis (Ortner) Muench. Med. Woch. No. 24, 1905, S. 1,174.

Rosengart—Einige Beitrage zu den Klinischen Erscheinungsformen der Abdominellen Arteriosklerose. Muench. Med. Woch., 1906, No. 20, S. 966.

Pal—Gefasskrisen, Leipzig, 1905.

Romberg—Krankheiten des Herzens, Stuttgart, 1906.

V. Schroetter—Erkrankungen der Gefaesse, Wien, 1905.

Buch (Helsingfors—Enteralgie und Kolik—Archiv fur Verdauungskrankheiten, Band IX. Heft V. und Band X. Heft VI. Citi Muench. Med. Woch.

Roswell Park—Spontaneous Gangrene of the Hollow Viscera. Annals of Surgery, April, 1904.

Stengel—Nervous manifestations of Artriosclerosis. The Amer. Jour. of Med. Sciences, Feb., 1908.

Riegel—Erkrankungen des Magens. Wien u. Leipzig, 1908.

V. Schrötter—Erkrankungen der Gefaesse, Wien, 1901.

Romberg—Krankheiten des Herzens, Stuttgart, 1906.

Osler—Practice of Medicine, 1906.

Mönckeberg—Ueber die Genuine Arteriosklerose der Lungen arterie, Deutsche Med. Woch. No. 31, 1907, P. 1,243.

Kitamura—Ueber die Sklerose der Pulmonalartsu bei fortgesetzten uebermassigen Biergeuuss Zeitschrift. für Klinische Medizin Band, 56, 1 and 2 Heft, S. 14.

CEREBRAL ARTERIOSCLEROSIS.*

By COLIN K. RUSSELL, M.D., Associate in Neurology, Royal Victoria Hospital, Montreal;
Demonstrator in Medicine, McGill University.

MR. *President and Gentlemen*,—The subject of arteriosclerosis of the cerebral vessels is one which is not taken up to any extent in the usual textbooks, although a good deal has been written on it in the past few years in the various medical journals. This is probably to be accounted for by the difficulty (especially in the more advanced cases), of differentiating between this condition and the various psychoses, and the

* Read at Ontario Medical Association, 26th May, 1908.

inability to demonstrate the dependence of all symptoms on the condition of the diseased vessels.

The etiological factors are those of arteriosclerosis in other parts of the vascular system, age, sex, heredity, excessive muscular exercise, syphilis, over-eating and over-drinking, intoxications and infections, and so on. But the action of trauma as a causative factor seems to be particularly marked on the vessels of the brain and cord, according to Sperking and Kronthal (Neur. Centralb. 1888). And in this connection it is necessary to remember that the cerebral vessels may be extensively sclerosed without corresponding evidence of the condition in the vessels of the periphery. Examination of the fundus oculi will in these cases often give evidence of the condition of the cerebral vessels and should never be neglected in the examination of the patient.

In the fundus sclerosed vessels have what has been described by Marcus Gunn as a silver-wired appearance, that is, the slight reflex is more marked, and where the arteries pass over the veins the latter are indented by the more rigid arteries. Whether trauma acts here as a direct etiological factor by increasing in a reflex way the blood pressure and producing thickness of the vessels, or, as is more usual, gives rise to symptoms of an arteriosclerosis which has been previously present but in a latent condition, must be determined by a careful investigation of the previous history.

Clinically arteriosclerosis of the nervous system may be divided into at least two classes:—

A. The mild or nervous forms (Windscheid) is characterised by *rapid physical exhaustion*, with a remarkable diminution in the aptitude for mental work. The individual is still capable of indulging in his habitual occupation, but becomes more easily fatigued. In the presence of new ideas and new business ventures he has the subjective feeling of inability to grasp the idea and handle it as he formerly would have done; mental activity is only possible in well worn grooves. After a few moments of mental exertion he feels exhausted, often he cannot apply his attention to reading for any length of time without fatigue.

Not exceptionally we find transient loss of memory or a transient difficulty in speech, with complaints of headache and giddiness. Modification of character may be noticed in certain cases. They become irritable and nervous and a man who has formerly shown the greatest consideration for others, may become self-willed and imperious. He no longer possesses a mental equability, but frequently loses control of himself, not having the necessary coolness to direct his affairs or exercise his profession. He takes a depressed view of everything. In still other cases they are apathetic and somnolent.

Headache is frequently present in cerebral arteriosclerosis. In the morning on awakening the patient complains of a heavy feeling of pressure on the head, usually bilateral. During the day it changes to a definite headache, often pulsating. In some cases it follows or becomes more intense if the patient indulges in mental or physical exertion or after the ingestion of alcohol. It should not be forgotten that arteriosclerosis gives rise to an intolerance of even small quantities of this drug and this may be one of the early symptoms of vascular disease. Abnormal sensations in the limbs, tingling and pricking sensations; sensations of heat and cramps, often accompanied by transient paresis,—or simply a heavy feeling in the limb which may pass off in a few minutes or hours, due to a modification in the circulation of the cerebral centres.

Vertigo is frequently an early sign and one of importance, often present when the patient makes a simple change of position, as in rising from the recumbent posture. The patient often complains of a definite subjective feeling of movement inside the head and occasionally suffers from tinnitus aurium. One must exclude other cerebral and organic affections capable of producing vertigo before attributing it to arteriosclerosis.

Sleep is in many cases disturbed. There is difficulty in getting to sleep and the patient wakens early. What sleep they get is often disturbed by dreams and is unrefreshing.

Ocular symptoms are not very uncommon. Cases have been reported of partial or complete optic atrophy due to pressure of the sclerosed carotid or ophthalmic arteries on the optic nerve. It seems well established also that in the early stages of arteriosclerosis of the smaller vessels spasm of the vessels may occur from time to time, or that during periods of low blood pressure collapse of the vessel may take place, producing, when the vessels of the eye are affected, transient blindness. Wagenmann and Zentmayer have each reported such cases in which they have observed the onset of the spasm, the consequent ischæmia of the retina and the relaxation of the spasm with later return of vision.

Neurasthenia occurring in a patient of about 40 or 45, who previously has shown no stigmata of functional trouble, should suggest the onset of arteriosclerosis. It may be an early indication of malignant disease, tuberculosis or diabetes, and it occurs in old syphilitic candidates for general paresis, but it not rarely is the earliest sign of arteriosclerosis.

One is often struck with the relative acute onset of the symptoms of arteriosclerosis. In the course of a few weeks after some acute illness or following mental or physical shock or strain, the patient apparently ages considerably, evidently owing to the proverbial last straw turning the balance in the scale of nutrition of the brain and various organs. It

is singular how long the rotten tissue will hold together provided you do not handle it roughly.

The patient always recognizes the existence of the malady and there is often the fear of becoming insane, but the symptoms frequently remain unaltered for years. Death generally results from apoplexy, sclerosis of the coronary arteries or intercurrent affections. There is little tendency to passage into one of the more progressive forms.

The clinical phenomena are in these cases referable to a partial blood stasis, never severe enough to lead to destruction of large areas of nerve tissue.

According to Alzheimer the nerve cells in the cortex show pronounced pigmentary atrophy, but preserve a normal structure. There is an absence of phagocytes. Spider cells occur, singly, in the deeper layers of the cortex and the glia is increased in the superficial layer.

B. The second class of cases is usually found at a slightly more advanced age, about 55 as a rule. The mental faculties are often enfeebled with frequently loss of emotional control. The intelligence is diminished with more or less dementia. The gait of these patients is often characteristic, progression is slow, with short steps dragging the feet, not so much in a spastic way, but more as if from weakness. One foot does not advance more than 5 or 6 inches in front of the other. The lower limbs are slightly flexed at the joints; the trunk is slightly inclined forward. The tongue seldom deviates to one side; there is never hemianopsia. The reflexes are increased; there is no aphasia but often pronounced dysarthria and sometimes dysphagia. In fact the first stage of pseudo-bulbar paralysis. In these cases we often see hemiplegia coming on suddenly, perhaps not a true apoplectic stroke—but a loss of consciousness for a few minutes, with usually no loss of consciousness, and power returns inside of a few hours or days. The hemiplegia is incomplete; there remains perhaps only a difficulty in doing finer movements with the fingers. In the lower extremities one can more easily recognize the remnants of paralysis, consisting in a slight circumduction of the leg in walking with a slight dragging of the toe.

The disease commences with headache, giddiness, and weakness of memory, with severe psychical disturbances superadded or present from the first. The patient may become emotional, resistive or apparently apathetic, lucid intervals quickly giving place to apathy, are characteristic. The patient is very easily tired. The character is mostly a depressed melancholic one, never exalted, and illusions and delusions of grandeur are never present. Gradually the dementia becomes more and more complete but always with the peculiarity that certain parts of the former personality remain intact for a long time. The patient for a long time recognises his own mental deficit, but ultimately falls into a dementia

reminding one, as Binswanger remarks, of animals without cerebral hemispheres.

The pupils seldom lose their reactions. Blindness, more or less transient, occurs naturally more frequently than in the milder cases. There may be attacks of giddiness or epilepsy and focal symptoms may develop, such as apraxia or aphasia.

The duration varies from a few months to 5 or 6 years. Death results from apoplexy, heart failure, renal insufficiency, or pneumonia.

Post mortem: The dura is more or less closely adherent to the cranium. The pia shows a slight degree of thickening, especially perhaps in the frontal region. There is frequently marked diminution in the brain weight. The convolutions are shrunken; the ventricles are dilated (senile hydrocephalus); the ependyma of the ventricles is wrinkled, giving the appearance of the roof of a pup's mouth, as Marie has vividly described it. The basal nuclei do not project as much as usual into the ventricles and there is thinning of the corpus callosum. Arteriosclerotic foci give the cortex a worm-eaten appearance.

On horizontal section of the brain, the vessels in the lenticulo-striate nucleus especially project, gaping above the cut surface; there is thickening of their different coats. The perivascular spaces show a general dilatation more or less marked accompanied by a rarification of the surrounding nervous tissue.

As the pathological factor underlying this condition and accounting for the transient hemiplegias and pseudo-bulbar palsies, Marie has described a condition of "foyer lacunaires de disintegration," that is, little irregularly shaped cavities which look as if the central tissue had been torn or destroyed. They vary in size from a hemp seed to that of a pea and in number from 1 to 10. Their usual site is the external part of the lenticular nucleus and in neighbouring internal capsule, optic thalamus and caudate nucleus. They are never met with in the peduncles, bulb or cord, and rarely in the cerebellum. Under the microscope they have the appearance of a minute hemorrhage of softening. In recent lacunæ the periphery of these altered areas is infiltrated with numerous granular bodies (phagocytes); the cerebral tissue is breaking up and in a state of retrogression. One finds also bands of neuroglia and various sized vessels, for the most part permeable, although usually the walls are thickened.

In the later stages the appearance is different. The phagocytes have disappeared, the circumference of the lacunæ shows a fibrous tissue wall of varying thickness. The cavity is sometimes traversed by strands of connective tissue with vessels which show sclerosis but are always permeable.

In the cord the volume is diminished, the posterior columns stand out prominently and the vessels are sclerosed.

According to the localisation of the sclerotic processes in the brain, the clinical and anatomical picture varies somewhat. But to differentiate clinically the various anatomical types, such as Encephalitis subcorticalis chronica (Binswanger) perivascular gliosis, etc., the senile cortical atrophy of Alzheimer, as certain German authorities as Prof. Bucholz, attempts to do, seems to me premature and further clinical material is required.

Under the influence of the general causes of arterio-sclerosis the vessels of the brain are altered and the nutrition of the organ suffers, the different parts of the brain atrophy and bring about the dilatation of the ventricles and of the perivascular spaces. These latter probably play a direct role in the causation of hemorrhage, which is so common in the region of the lenticular nucleus. The vessels having lost their support and being more or less rigid are more liable to rupture. In Marie's series of 50 cases showing these *lacunæ*, hemorrhages were present in 16 and thrombosis in 7.

If the *lacunæ* have interfered with the motor fibres in the internal capsule we have more or less degeneration in the pyramidal tracts probably accounting for the typical characteristic gait.

Differential Diagnosis: Clinically one must differentiate between this condition and Senile Dementia and General Paresis. In severe grades of arterio-sclerosis one is struck with the slowed or labored character of the mental processes, indicating interference with the association faculty; this is associated with a feeling of helplessness and indecision. The rapidity with which such interference arises, disappears and appears again, is characteristic. The consciousness of personality and the insight into their own condition remains much longer present. The affections become dulled but continue normal in character. Apart from the attacks of irritability the essential phenomena in arterio-sclerotic atrophy are the direct effects of the local lesions, whereas in senile and paralytic dementia the abnormal mental phenomena, excitement and delusions are more prominent.

Anatomically general paralysis and senile dementia are easily distinguished. Arterio-sclerosis of the brain is characterised by foci of degeneration arranged around diseased vessels in which foci the nerve cells and fibres are destroyed and there is a corresponding overgrowth of neuroglia. Secondary degenerations are common but beyond these primarily affected areas the brain is practically normal. In general paralysis and senile dementia the process is a diffuse one.

Treatment: In the milder nervous cases this is most important. The general conditions should be explained to the patient so that he can

co-operate in the proper attention to details. He should lead a regular life, avoiding over-exertion mental or physical, and excitement. If his mind can be occupied by some gentle hobby, so much the better. With regard to the important factor of diet, Osler quoting George Cheyne's 13th aphorism in his *Essay on Regimen*, says: Every wise man after 50 ought to begin to lessen at least the quantity of his aliment, and if he would continue free of great and dangerous distempers and preserve his senses and faculties clear to the last, he ought every seven years to go on abating gradually and sensibly and at last descend out of life as he ascended into it, even into the child's diet.

Medicinally, a mild saline before breakfast will help to keep the blood pressure down. Potassium iodide in 2 to 5 grain doses, t.i.d., or the sodium salts as being less depressing, is useful for the same purpose and may be combined with sodium nitrite, or if necessary with amyl nitrite, with good effect. The withdrawal of a pint or so of blood in some cases is very beneficial, and is not resorted to sufficiently often in these days.

OCULAR MANIFESTATIONS OF ARTERIOSCLEROSIS.*

HERMAN SANDERSON, M.D., Detroit, Mich.

THE consideration of a subject so general in effect and so far reaching in its manifestations plainly demands study from different sides. In presenting the ocular side of arteriosclerosis I wish to do so from the standpoint of the general practitioner, for it is to him more than to those engaged in a special work that the cases must look for treatment. If as students we would give but a small proportion of the time to the ophthalmoscope that we are compelled to spend with the stethoscope and the microscope we would all be better diagnosticians.

The importance of the ophthalmoscope as diagnostic aid should be recognized by every competent practitioner. If the optical pictures of the vascular disease were difficult to interpret the diagnosis would be left to the ophthalmologist alone, but they are so simple that anyone who knows how to examine the fundus can recognize the condition with ease. When we realize that we are looking at a picture of the retina magnified from 10 to 15 diameters, the value of an observation of the minutest vessels of the circulation becomes at once apparent. In order to understand the results of the different stages of vascular disease as it occurs in the eye it is well to recall the anatomy of the part.

In the retina all the larger vessels ramify in the nerve fibre layer. The arteries have an adventitia rich in elastic fibre the outer of which run longitudinally. They have a media and an intima lined with endothelium.

* Read at Ontario Medical Association, 26th May.

As the vessels diminish in size the media disappears, while the veins have almost no media and the capillaries are mere endothelial tubes. While there are no lymph vessels proper, the vessels are surrounded by lymph spaces, the so called perivascular lymph spaces. Since these vessels lie in contact with the axis cylinder processes of the ganglion cells and are in the nerve fibre layer confined by the internal limiting membrane, it will be easily seen how any abnormality of size in the vessel or exudation affects this vital part of the visual apparatus.

With the slightest disorganization of the V wall there is a transudation into the surrounding tissues. If this affects only the nerve fibre layer we may look for improvement, but if the outer nuclear layer is disorganized, complete recovery cannot take place. When the inflammation progresses beyond the stage of oedema and we have an exudate of plasma and polyneuclear leucocytes into the adventitia and the perivascular lymph spaces we have the beginning of silver wire vessels. The smaller vessels show proliferation of the endothelium and connective tissue formation. The retinal changes show first, next the vascular network of the choroid and later in the sclerotic. The position of the vessels in the retina is shown in the drawing.

The subjective symptoms are headache after use of the eyes, fatigue of the muscles such as is common in patients suffering from eye strain. The patient often complains of a cloud passing before the eyes the so called scintillation scotoma, or of blurring vision. This is a common symptom and alarming to the patient. Fortunately it occurs early when treatment is of avail. Too little attention is given this condition in those who consult the oculist: the temptation is to refract the case, prescribe the correcting lenses without paying proper attention to the systematic disorder.

If he will ever keep in mind as he should the inseparable association of the ocular manifestations with the general or systemic condition of his patient the ophthalmologist will investigate other sources to confirm or deny his suspicions. The consideration of these does not fall within the scope of this paper.

The ocular symptoms commonly seen are conjunctivitis, blepharospasm, a partial ptosis more rarely nystagmus. The ophthalmoscopic signs may be classified according to the degree to which the sclerosis has progressed. One of the very earliest signs is the tortuosity or corkscrew formation of the small muscular vessels or of those at the periphery. De Schweinitz has called attention to a curious brick red congestion of the nerve head in the very early cases, but the commonest appearance of the disc is a light haze or indefiniteness, both of the disc and the surrounding retina. This when associated with obscuration of the capillary vessels and tortuous macular vessels makes possible an early diag-

nosis. In a second group (as classified by Alleman) there is more or less bending of the vessels at the crossings. A third group is distinguished by evidences of change in the vessel wall such as alterations in the reflections and translucency of the walls of the retinal arteries with the formation of whitish stripes showing degeneration of the walls; the silver wire artery. Pressure phenomena occur in this stage, the artery commonly indents the vein at the crossing and the vein shows a "hump" as it crosses an artery. The veins show alterations in their course caliber size and breadth later than the arteries.

In the advanced stages of vascular disease we get all varieties of lesions, such as hemorrhage degeneration or active inflammatory changes in which condition treatment is of little avail.

We can then look for results only in the early cases for while by the proper regulation of the life of the subject of arterial disease the process may be stayed in its progress. We cannot get improvement of impaired vision after the process has so far advanced to destroy the nerve elements upon which normal vision depends. On the other hand the results of treatment in cases early recognized are very satisfactory.

It is a common occurrence for a patient to temporarily lose 50 per cent. of his visual acuity, and more rarely much more. I have seen the vision return to normal in these cases after a course of well directed treatment. While nearly all cases can be improved in the early stages it is sometimes difficult to get patients to persevere in a line of treatment when the treatment can be of greatest service, and especially when there are no other evidences than the ocular findings, and until now, physicians themselves have been rather sceptical of the evidences afforded by the eye. I cannot do better than quote the experience of so well known an ophthalmologist as Mr. Gunn of London, who had a patient consult him on account of some presbyopia.

At her first visit all he noticed was that the retinal arteries were brighter than usual. There were no tuberosities. About three or four years afterwards she came back and then he noticed they were irregular in caliber and beginning to depress the veins. He therefore wrote her physician asking for a general report, and especially in regard to her renal secretions. The physician wrote that she had suffered from obscure dyspeptic symptoms but that the urine was perfectly normal and he did not regard it as a serious state. She came back not long afterward with an account of dimness in one eye and he found she had a little oedema and one small hemorrhage. He asked again for a report. She told him she had a new physician. In five tests this physician had found a trace of albumin twice and was in doubt as to whether the kidneys were involved. The next time she called she had what she called a "slight stroke." He advised her to see a neurologist which she did. The neuro-

logist said she had undoubtedly had an attack of paralysis from which she had partially recovered. Mr. Gunn asked the neurologist if she had anything wrong with her general vascular state and her kidneys. He did not think there was. Three months later Mr. Gunn was told by her husband that she was dying of renal disease. So that years before there was any apparent evidence to two good physicians of this serious disease the ophthalmoscope easily gave the signs. The moral is easy to read, and if I have laid too much stress on this one view point of the subject to be looked at from so many sides it is only that you will not forget to look into the eyes for the first glimmerings of the disorder.

THE TREATMENT OF ARTERIOSCLEROSIS.*

By ALEXANDER MCPHEDRAN, M.B.,
Professor of Medicine, University of Toronto.

BEGINNING with childhood and continuing to old age there is in all persons a gradual thickening and fibrosis of the arterial walls. This is a necessary alteration in the wall of the artery in order to enable it to meet the greater pressure of the blood current, incident to increasing physical exertion, and the irritation of the vessels by retained waste products. This thickening results from the formation of new tissue, chiefly fibrous. As Aschoff has said, the artery of the child and young adult, with its great amount of elastic tissue, has great elasticity but low powers of resistance. With the wear and tear of advancing years, or as the result of excessive strain or irritation, the elastic resistance becomes unequal to the burden placed upon it, and then the vessel needs to be strengthened by the formation of fibrous tissue which has less elasticity but greater resistance. Clinically, these changes are not usually demonstrable before the fifth decade, but in many they develop in early life. Their early occurrence may be due to one or more several causes. Of these causes one of the most important is an inherited defective viability of tissue, so that degenerative and productive changes begin in early life and advance rapidly without causes other than those incident to a quiet life—an *abiotrophy*. In others the arterial tissue is more resistant and the changes occur only as a consequence of greater departures from normal conditions. Again in some, fortunately not a few, the viability of the arterial tissue is so great that it resists the greatest strain to which it can be subjected as is shown in many old people whose arterial walls are still soft, although they have not only "lived laborious days" but may have indulged in excess of food and drink. Among these are many of the most eminent men—men who have been abstemious as to food and drink but not as to the strain of mental labor.

* Read at the meeting of the Ontario Medical Association, Hamilton, 23th May, 1908.

The sclerotic change in the artery wall is due chiefly to the production of new connective tissue and is therefore permanent. Hence treatment resolves itself into an effort to prevent further sclerosis, or at least, lessen the rapidity of its advance, and to mitigate and counteract the symptoms arising from the damage to the vessels—that is, the treatment is essentially prophylactic and symptomatic. However, it must be noted that there are some able men who believe that arterial sclerosis may be lessened, if not wholly removed. However, few deny that sclerosis of the various organs and tissues such as the liver, kidneys, spinal cord, muscular tissue, etc., is permanent; if so, it is difficult to see how sclerosis of the arteries can be an exception to the rule. Sclerosis of the vessels is an age change and the “hands of the clock may not be turned back.”

How is prophylaxis best attained? By securing the most perfect metabolism. This consists in the conversion into the most perfectly soluble products, first, of whatever is taken into the body so that it may be easily assimilated, and, secondly, of the waste products in order that they may be readily taken up by the blood and lymph to be carried to the excretory organs and cast out of the body. In other words, the first object is to reduce to a minimum the waste products in the blood, whether arising from the food or the tissues. The irritation of the vessels by these waste products is the chief cause of their fibrosis, and, later, of the symptoms. To lessen the waste products in the blood, the first step is to reduce the food supply, the proteids especially, to the absolute need of the body. In many cases in the early stage, this reduction of food, with the exclusion of meat, may suffice to arrest the progress of the disease. This is due to the fact that the food is the chief source of the vito-chemical composition of the blood; if it is greater than can be promptly and efficiently dealt with by the digestive and assimilative processes, irritants are generated which, if continued long enough, cause organic changes in the vessels. The nitrogenous group is the most deleterious. Those living on vegetarian diet are notably less liable to sclerosis. They may live to advanced age with soft arteries, sometimes, it is said, too soft. In the more severe cases in the early stage, much good may result from a milk diet for a week or so, in order to get rid of the accumulated waste products in the blood; then a gradual return may be made to carbohydrate and fats. All condiments should be excluded; also alcohol in all forms. Tea and coffee, if not wholly excluded, should at least be taken very sparingly. Tobacco is probably more injurious than even alcohol, as it may, even in small quantities, cause a marked rise in arterial tension. In a recent test, the blood pressure in each of several students was raised 20 mms. of mercury by smoking two cigarettes each, and that, too, without inhaling the smoke, a practice to which cigarette smoking owes chiefly its pernicious influence.

The digestive tract, from the mouth downwards, should be kept in as healthy a condition as possible so as to prevent auto-intoxication. The bowel should be kept regularly and freely open, laxative, being given if necessary; in most cases the regular habit suffices. An abundance of pure water should be taken, preferably when the stomach is empty, so that it may be discharged into the intestine rapidly for absorption; in the early stage it will not tax the still vigorous heart, nor even in the late stage if the kidneys are secreting freely. Sodium chloride in moderate quantities stimulates osmosis and thus promotes the excretion of waste products; in the later stages it may over-tax a damaged kidney and after dropsy occurs it is necessary to give a salt free diet. A copious physiological saline enema two or three times a week has been advised to promote excretion.

Undue physical exertion should be avoided. Probably mental strain and worry is even more injurious than physical exertion; it is certainly more difficult to control. We have all had frequent experiences of how difficult it is to get men to cease worrying; they may rest physically without resting mentally. Such a course of treatment is easily accomplished in theory, but too often impossible in practice. The strenuous life compels too many to continue the struggle without regard to results.

Baths should be tepid so as not to disturb blood pressure; cold baths raise the pressure and should therefore be avoided, and hot baths may cause dangerous cerebral congestion, and may also lead to such sudden lowering of blood pressure within the heart as to stop its action. A stay at a resort such as Preston, St. Catharines, and Banff in Canada, Virginia, Hot Springs, and Mount Clemens in the United States; and the many well-known places in Britain and on the Continent of Europe. The chief benefit derived from these places is due to the regular quiet life, early hours, simple diet, the abundance of water drunk and the freedom from worry, to the last named probably more than to anything else.

There are certain measures directed towards counteracting the morbid process itself, as well as to removing the cause. Of these the iodides are the most frequently used, given in 5 grain doses three times daily, gradually increased to about 15 grains. They should be given with an abundance of water and continued for two or three years, with omissions of a week in each month and one month in five or six. The sodium salt is most easily borne, but is not so prompt in action as the potassium one. Iodine is the active ingredient and is effective in any form. By some writers it is credited with the power of resolving even the already formed fibrous tissue, but this is at least doubtful.

Thyroid extract has been used for a similar purpose, 5 grains being given three times daily. Here again effect is largely due to the iodine.

It lowers blood pressure and probably promotes metabolism, as it does in myxoedema. If given, the effect should be closely observed, the dose being increased or decreased according to its effect on the blood pressure.

High blood pressure may demand prompt action. In the earlier stages it is due to hypertonus and is temporarily easily relieved by one of the arterial dilators as nitroglycerine. The degree to which the high tension of the artery is due to hypertonus as contrasted with sclerosis can be fairly determined by the fall of pressure under nitroglycerine. When the blood pressure is high in any case I am in the habit of trying the effect of nitroglycerine gr. 1-200 to 1-100 or more. The greater the fall, the more is the excess of tension due to hypertonus and the less to sclerosis, and consequently the better the prognosis, since the high tension will be relieved if the blood is purified of its excess of irritants by regulation of diet and stimulation of excretion. In some cases little if any impression is made on the blood pressure by the nitrite. Recently in an Englishman the pressure was 280 mms. and was only reduced to 260 by sufficient nitroglycerine to cause a sensation of fulness in the head. He had been taking erythrol tetranitrate gr. $\frac{1}{4}$ four times a day for some time. It did not affect the pressure and must have been quite useless to him. It is quite possible that in this case the high pressure was necessary to maintain the cerebral circulation and should not therefore have been interfered with. Such was certainly the case in a man whom I examined a year or two ago. He had very advanced sclerosis of both arteries and kidneys, and great enlargement of the heart. He was "water-logged" up to the nipple level and unable to lie down on account of dyspnoea. He was greatly emaciated and very weak yet his blood pressure was near the 300 point and scarcely at all affected by nitroglycerine. There was no doubt that in his case the high pressure was necessary as without it the cerebral circulation would have failed.

There are cases of arteriosclerosis, especially when assisted with marked renal disease, in which occur attacks of distressing dyspnoea resembling asthma. The nitrites usually give relief because the attacks are due to recurrent spasm of the arteries. Some years ago a physician whom I knew well had very severe attacks which he thought were due to asthma. At first 1-100 of a grain of nitroglycerine promptly checked the attacks, but as the time went on he had to increase the dose until at last he required to take 1-5 of a grain, and sometimes had to repeat it in an hour or two; by that time the heart had so far failed owing to dilatation and sclerosis of the arteries so marked that the attacks of arterial spasm ceased and the dyspnoea lost its paroxysmal character. Such large doses given with due care, are quite safe so long as the occasion for them continues to exist; then nitrites should, however, be always given under the physician's supervision and not trusted to the patient to take at will.

It is objected that the effect of the nitrites is too short to be of much benefit in high tension, but, as pointed out by Sir Clifford Allbutt, the reduced tension, even for short periods, may improve the nutrition of the arteries, as the heart is nourished during the brief diastolic pauses. Sir Wn. Somers says that in many conditions the nitrites have, in addition to lowering the pressure, by prolonged use a "steadying effect on the vaso-motor centre," he therefore administers them for many months continuously, sometimes adding a little strychnine.

High arterial tension may cause insomnia from the cerebral hyperaemia that is excited. Such insomnia is probably always due to hypertonus, and can then be relieved by one of the nitrites. Nitroglycerine gr. 1-200 and upwards according to the effect, may be given at bed time for a week or more, unless it causes headache or nausea, in which case an hypnotic may be tried, such as chloralamid, paraldehyde, or veronal. Potassium bromide and chloral hydrate of each 10 grains, may give relief. If there is distinct pain not relieved by the nitrite, morphine subcutaneously usually gives the best results as in Angina Pectoris. The pain is usually retrosternal and due to the arteritis and periarteritis of the aorta causing irritation of the aortic plexus. The pain occurs almost always on exertion and disappears with rest. This clearly indicates that keeping the patient quietly in bed is the most effective treatment. Hot or cold applications, or each alternately, may be applied over the sternum, the object being to cause contraction of nutrient vessels of the inflamed tissue so as to lessen the blood supply and consequently the pressure on the irritated nerve terminals.

In the early stages of arteriosclerosis while the heart is vigorous the urine is usually abundant even although the renal arteries are sclerosed. In some cases in the early stage and in most of the further advanced ones, the renal secretion is insufficient, and dropsy supervenes, owing partly to the sclerosis of the vessels and partly to failure in the power of the heart. Diuretics are then needed.

Huchard advises the use of the theobromine, as it directly stimulates the renal secretion, dilates the peripheral vessels, including the coronary and renal arteries, and at the same time stimulates the heart. Its derivatives may be used in place of the alkaloid itself, and with more effect, since they are more soluble, as diuretin and theocin. I have found *theocin: sodium acetate* the most effective, about 20 grains, in divided doses, being given daily. It usually causes a copious flow of urine.

If the heart is dilated and weak, digitalis should be added, about 10 minims of a reliable tincture being given with each dose of the theocin. The relaxing effect of the theocin on the arteries will usually be sufficient to prevent their undue contraction by the digitalis. The existence of arteriosclerosis is not a contraindication to the administration of digitalis,

if the action of the heart is not effective in maintaining the circulation. If the right ventricle becomes over distended the venous system engorged and the breathing laboured digitalis even in large doses seldom gives relief. In such cases the action of the heart is usually tumultuous and there is considerable œdema although there may be little apparent dropsy. In cases of moderate severity, morphine grain $\frac{1}{3}$ - $\frac{1}{4}$ hypodermically usually quiets the heart's action, so that its contractions become effective under the influence of the digitalis and relief follows. The chief cause probably for the failure of digitalis in such cases is slowness of absorption, due to the nervous congestion of the gastro-intestinal tract. A reliable digitalin or digitoxin, or strophanthin, given subcutaneously, should prove much more effective.

If these means fail to give relief *venesection* should be done, as free a flow as possible being obtained. For that purpose it is often advisable to open the veins in both arms simultaneously. In such cases venesection is never dangerous, and if resorted to sufficiently early it will always give at least some relief.

For the *anæmia*, which is so prominent a condition in many cases of arteriosclerosis, it is not necessary to say anything beyond this, that the general condition of the patient should receive first consideration, the existence of the arteriosclerosis being largely, if not wholly, disregarded. The diet should therefore be the most nutritious that he can digest, containing a liberal quantity of nitrogenous food, care being taken to keep excretion as active as possible.

151 Bloor Street West.

DISCUSSION ON ARTERIOSCLEROSIS.

JOHN FERGUSON, M.A., M.D., Toronto.
Senior Physician Toronto Western Hospital.

MR. *President, Ladies and Gentlemen*: I am sure it has been an unfeigned pleasure to all of us to have listened to the lucid addresses on the subject of arteriosclerosis. The day has now gone past when we need to argue on the importance of this state, condition or disease. The mortality records of civilized countries and life insurance offices furnish the answer if there be a Thomas amongst us. A disease which causes the death of some of us while young, of many of us in mid life, and of most of us when old, commands our attention.

Morgagni laid it down as the rule for our investigations that we must make dissections and post-mortems, and collate the results into a scientific whole. For a long time we had to depend upon the findings revealed to us by the dead body; but now we are calling in the aid of experiment to assist in clearing up much of the doubtful ground in the

study of arteriosclerosis. To the many and valuable discoveries of the pathologist, we can now add those of the experimenter and practical investigator.

Disease in the arteries has now been produced experimentally in animals so often that this phase of the subject has been settled. There is much yet to be done, however, by way of final detail. High blood pressure, caused by mechanical means or by toxic agencies, has been shown to be a competent cause for those changes in the arterial system, which we call arteriosclerosis. Interrupted pressure on the abdominal aorta, as carried on by Klotz, Leonard Williams, and others, shows that too great a degree of lateral pressure on the arteries will lead to various changes in their walls. It has also been shown that nicotin can cause such changes in the vessels as are known by the terms arteriosclerosis and atheroma. This has been made abundantly clear by the studies of W. T. Herringham, Dr. W. T. Cummins and P. S. Stout, working in the University of Pennsylvania Laboratory, have proven by direct experiment that arteriosclerosis can be caused by the hypodermic administration of adrenalin; and these changes again, can be materially retarded by the exhibition of the iodides which lower the arterial tension. The investigations of Dr. H. Batty Shaw and others have proven that an extract from the kidney cortex can increase arterial tension and cause thickening of the arterial walls.

It will thus be seen that two causes have been established by actual experiment as being capable of giving rise to sclerotic and atheromatous changes in the arteries, namely, increased tension and toxic agents. In such agents as adrenalin and extract of kidney, it is likely both factors play an important role; for when the iodides were given, the action of the adrenalin was retarded. On the other hand there are toxins which act under lowered tension as that from typhoid bacilli, the colon bacillus, nicotin in free doses, and the general endarteritis of syphilis. So we find that from experimental and clinical observations, it is safe to lay it down as an axiom that increased arterial tension and toxins in the blood, separately or combined, are the two main factors in the pathological etiology of arteriosclerosis.

Now, what can be gathered from the experimental study on the production of this condition in animals is well borne out by our clinical observations on man. The strenuous life, the indulgence in over-eating and drinking, the taking into the system of certain poisons, as lead and nicotin, and the products of bacterial and protozoal diseases as typhoid fever and syphilis, are the foundation upon which that house of death arteriosclerosis is built.

The effects of pressure is well seen in the causation of arterial changes in man in several localities. In the coronary arteries, where

there is marked tension, the tendency is very pronounced to atheroma; in women, where the emotional aspect comes in more than in men, the drift is towards arteriosclerosis of the abdominal arteries, and in men there is a distinct tendency towards hardening of the arteries in the lower extremities, where there is the influence of gravity added to those of labor and toxæmia.

Some diseases are prone to be followed by atheroma or sclerosis of the arteries. Of these we readily think of syphilis and typhoid fever. In both of these, the infection is very persistent, lasting for years in the system. In syphilis there is a strong tendency to general endarteritis, the intima suffering in a special degree. In typhoid fever we know now that the bacillus may be found in the excreta for many years after the person has completely recovered. Such conditions as these may influence the future of the vascular system to a very great extent.

Diathetic conditions, as gout and rheumatism; occupations that bring persons into contact with lead compounds; faulty methods of dieting, as over eating and drinking, and the existence of prolonged worry and nervous strain, have caused many an arterial system to become old long before the usual span of life.

In trying to sum up the causes of arteriosclerosis from their relationship to its pathology, I would group them thus :

1. The high tension group, or the hyperpietic of Allbutt, due to high arterial tension from a strenuous life, either physical or mental, prolonged worry, tension from poisons, as adrenalin, the extract from the kidney cortex, and the tension from interrupted pressure, as in the splanchnic area in women.

2. The infection group, or those cases following syphilis, typhoid fever, malaria, chronic colon bacillus infection. In most of these cases there is direct action upon the vascular walls by the toxins.

3. The group from poisons taken into the system, as lead, nicotin, caffeine, alcoholics, and proteids, of which the excessive consumption of foods and alcoholic beverages is by far the most important.

4. The group caused by changes in important organs of the body, such as may be met with in the suprarenal glands and the kidneys whereby pressor agents are produced; by atrophy in the thyroid gland, by which its controlling influence upon blood pressure is lost; or by some change in the pituitary body, from which may come a powerful pressor product. Here we have a true autointoxication.

5. The involutionary group, such as is usual to advancing age. But this group is not always met with in the old. There are persons of so with soft arteries, while a hardened condition of the vessels may be met with of the typical involutionary form at or under mid-life. The

vital tissue, as Osler puts it, wears out too soon. The disease may occur in quite young persons, but then, I think, it is of toxic origin.

As I have exhausted my time and, I fear, more than exhausted your patience, in these remarks on the pathological etiology, I shall attempt but few remarks on the morbid changes in the vessels themselves. The disease may be regarded as focal or general.

Of the focal form two well recognized types present themselves, namely, (a) endarteritis obliterans, which attacks the small vessels, and (b) atheroma, or endarteritis nodosa vel deformans, which is found usually in the larger arteries.

(a) Endarteritis obliterans is very frequently the result of syphilis, though not invariably so. The lumen of the artery is lessened or completely blocked. It may be due to tuberculous arteritis. The intima is thickened and composed of loose connective tissue with many stellate and spindle cells. In the outer layers there is cellular infiltration with the formation of new vasa vasorum. When the condition is due to syphilis, there is much adventitial change with mononuclear cell invasion and connective tissue hyperplasia, tends to become hyaline. This form of endarteritis has been known to follow acute rheumatism, scarlet fever, diphtheria, smallpox, and typhoid fever.

(b) Atheroma, or endarteritis nodosa vel deformans, is frequently met in the arteries of elderly persons. These patches may vary in size from a pin's point to that of a quarter of a dollar, or more. Their color is usually grey or yellow, but may be white or calcified. They are sometimes soft, gelatinous, or translucent, but they are more frequently opaque and firm. Ulceration is not uncommon in the older plaques. This form of the disease attacks by preference the arch of the aorta, then the coronaries, the cerebral, the peripheral and the visceral arteries in the order of frequency named, while the pulmonary rarely suffer. The intima is thickened and contains round, stellate and spindle cells. Later on hyaline, granular, fatty, mucoid, or calcareous changes may be found. In the earlier stage, the elastic tissue shares in the hyperplasia, but later may become granular, indistinct or broken up into little masses. The media undergoes some changes. It is thinned, the muscle cells are scanty and shrivelled, with disappearing nuclei. The elastic elements are degenerated, while the connective tissue is excessive. There is a tendency to the multiplication of the vasa vasorum. The adventitia is less changed. In the earlier stages it is thickened and cellular, while, later on, it is sclerosed and there is the presence of hyaline and connective tissue. This is really an intimal disease as these changes clearly show; but once in a while a case is met with where the intimal atheroma is the result of adventitial disease. It has been shown by several eminent pathologists, F. W. Mott among them, that local arteritis may commence

in the adventitia and extend to the media and intima, giving rise to rupture. So that atheroma may come from intimal or adventitial disease, notably by age, syphilis, and strain in the intimal, and from tuberculosis and some bacterial infections in the adventitial. It will thus be seen that atheroma is not a pathological entity. Syphilis, tuberculosis, infections, intoxications, and strain are all among its causes.

Turning to the general form of arteriosclerosis, we have a morbid state that involves the arteries and capillaries, and frequently the veins.

The intimal changes are thickening and multiplication of the elastic fibrils. Those may at a later stage degenerate, and the connective tissue becomes hyaline. The media is sometimes thicker than normal, but the relative proportions of muscle, elastic and connective tissue is maintained. This coat may be thinned from an atrophied and fatty condition of the muscle. In other examples the muscle is atrophied and the connective and elastic tissues are hypertrophied. In some instances there may be extreme sclerosis of the vessels due to this atrophy of the muscle fibres and over growth of the connective tissue elements. In the adventitia there is almost always some thickening. The elastic tissue is excessive. In the early stage, the cells are nucleated, but as the disease advances the tissues become hyaline and sparsely nucleated. In the capillaries important changes take place. Their walls which are almost invisible in health become thickened to two or three times their normal and present a double contour. Their lumina are greatly reduced. There is often marked granulation of their walls.

This general form of arteriosclerosis is a diffuse disease, and affects the entire arterial system. The essential cause is increased arterial tension, which may result from one or more of the causes given, such as chronic renal disease, adrenalism, chronic intoxication, or infections.

The pathology of the vascular system is as interesting as a fairy tale. The arteries feed the whole body, and through their potential energy fill their own vasa vasorum and feed themselves. It can be seen at a glance how poisons and mechanical forces may unbalance these delicate adjustments, and we pass from physiology to pathology, with as little apparent changes as do the colors of the rainbow, where they blend into each other. High tension in a vessel may alter the lumina of the vasa vasorum and mechanically shut off the vessels needed quota of blood. On the other hand a poison in the blood may seriously damage the elements of the vessel walls, causing them to perish, as the poet says, "while young, like things of earth." To this broader view of the vascular system we cannot pay too much attention. The arteries are the branches on which all the fruits of the body hang, and these fruits are the healthy workings of our organs and tissues.

I shall make no attempt to say anything upon the cerebral, ocular, aortic, muscular and visceral manifestations of arteriosclerosis. I have devoted my remarks solely to its pathology, as this portion of the discussion was more specially assigned to me. Before I close, however, let me put in a word to the effect that we should be on the alert for this disease. All our studies will avail but little unless they lead to an improvement in our therapeutics, and that these may be effective we must be able to recognise the disease in its earliest stages.

In the early period of the disease there is an increase in the blood pressure, the first heart sound possesses an increased heaviness from extra muscular action, the second heart sound is accentuated owing to the *resistentia a fronte*, the pulse wave is changed and the descent is prolonged and gradual, there is an extra urinary flow with very often a low evening specific gravity, there is a sort of anaemic appearance due to contraction of the surface vessels, the skin is less active, the person tends to lose flesh and there is a reduced power to resist fatigue.

If to these symptoms we add those more special to the brain and nervous system, such as migraine and various forms of sudden pains; those of the heart, such as anginous attacks, shortness of breath, and arrhythmia; and those of the abdomen, in the form stomach, intestinal, hepatic and pancreatic derangements, we will not be likely to go far astray in our efforts to form a working diagnosis. It is to this end I have directed my remarks; and, while we should all aim to work according to the motto *nec silet mors*, may death not keep silent, let us also have ever before us the other ideal *velut arbor therapeia crescat*, may our therapeutics flourish as a tree, in order that we may be able to relieve or cure the conditions revealed by our pathological and experimental researches.

By Dr. W. J. WILSON, Toronto,

Where arteriosclerosis is general the visceral symptoms may not be marked, and also where only the large trunks are diseased, we may have few symptoms, as their lumen is mostly unaffected; but it is where the smaller arteries, with their thick muscular coats, and distributed to the viscera, are sclerosed that we are the more likely to have symptoms. In the mesenteric arteries there is interference with the normal function of the bowel, viz., peristalsis, and as a result we have constipation and flatulency. The peculiar cramp like pains are no doubt partly due to the flatulency and partly to the effects of defective blood supply.

The superficial arteries do not give very reliable information as to the condition of the whole arterial system. They may be markedly sclerotic, while the visceral arteries are unaffected or the reverse. From

this fact we are forced to use all the means of diagnosis at our command to make anything like an accurate diagnosis.

In the gastro-intestinal forms we have the intermittent pains, distention of the stomach and bowels, eructations of gas, obstinate constipation.

Pains worse after meals and often at nights,—symptoms common to many gastro-intestinal and nervous conditions. If we should have arteriosclerosis of the superficial arteries with the claudicatis intermittens and especially if we can relieve all the symptoms with vascular stimulants, such as sodium nitrite, we may reasonably diagnose arteriosclerosis.

The diseases most apt to be confounded with abdominal arteriosclerosis, are ulcer of the stomach or duodenum, cancer, enteroptosis, cholelithiasis, neurasthenia and perhaps the early girdle pains of locomotor ataxia.

In one case which we saw through the kindness of Dr. J. Stenhouse, cancer of the stomach had been diagnosed by at least two surgeons. In this case an exploratory incision was made and the tumor, which with the pains, led to the diagnosis of cancer proved to be the calcified coeliac axis and no other condition existed to cause the symptoms.

In enteroptoses we may have pains in abdomen, associated with flatulency and constipation. Pains are not so apt to be at night, are often relieved by abdominal supports. The blood pressure is generally low and the patient is usually rather spare of flesh. On careful examination the right kidney and perhaps lesser curvature of the stomach may be found lowered.

In well marked cases of cholelithiasis there is not likely to be any difficulty, but there are cases, such as one we saw lately, where the diagnosis was between cancer and ulcer of the stomach, and which might easily have been attributed to sclerosis. It proved on careful examination to show free H C L. very slight tinge of conjunctiva, a tender spot in epigastrium size of point of finger. No tenderness at the back. No tenderness on deep pressure by Murphy's method over the gall-bladder, pain after eating. No occult blood in fæces. A diagnosis of stone was made and verified by section.

In locomotor ataxia the history of syphilis with the eye symptoms and reflexes should clear the field and lead to a correct diagnosis. Our knowledge of this subject will be much improved by an increased knowledge of blood pressure.

The Canada Lancet

Vol. XLI.

JULY, 1908

No. 11.

EDITORIAL.

UNIVERSITY DEGREES VERSUS THE COUNCIL.

It may be fairly accepted that the conditions are greatly changed since the days when the Medical Council had conferred upon it the power to examine all candidates for the right to practise in Ontario. When this power was secured by the College of Physicians and Surgeons of Ontario, the Medical Colleges of the Province were proprietary schools, conducted by a body of medical men, mainly for profit, and secondarily for the purpose of giving an opportunity to young men to acquire a medical education. We are not finding fault with those conditions, but merely pointing out that things have changed completely during the past twenty years.

The Toronto School of Medicine, and Trinity Medical College are now no more and their places have been taken by the Medical Faculty of the University of Toronto. The Medical College in Kingston has become a faculty of Queen's University. The Medical College in London is now a part of the Western University. These changes remove the subject of medical education from the private corporation to the public institution; and with these changes, a complete change in the relationship of the medical college to the public at large.

With the words of Mr. I. H. Cameron, before the recent meeting of the University Alumni Association, we heartily concur. These words in brief, are as follows:—

“The University should again take to itself the authority of having its degrees in medicine carry with them the privilege of practising in Ontario and Quebec, without requiring its students to go to the trouble and expense of passing several arduous and, to them, unnecessary examinations before the Ontario Medical Council. The Universities of McGill and Laval now have this power, and the speaker thought it was an anomaly and absurdity to think that such a University as Toronto was impotent in this regard.”

The Medical Council might still be allowed to act as in Great Britain, as a sort of sentinel to see that the standard was maintained. The Western University in London, the Medical College in Kingston, and the

University of Toronto Medical Department would all have to comply with such a curriculum as might be regarded as a sufficient passport into the practice of medicine. Some such change as this is bound to come, and the council may reconcile itself to this outlook.

By far the best solution of the medical question is Dominion registration. By this means a common standard could be fixed for the whole of Canada, and the Universities in the various provinces could live up to this. We think that Ontario is the Province that should move in this matter.

THE ONTARIO MEDICAL ASSOCIATION.

The recent meeting in Hamilton was a marked success, and reflected much credit upon the energy of President Ingersoll Olmsted and his associates. The local committee on arrangements worked very hard to make this meeting a successful one, and these efforts were crowned with the result that the meeting was the best in the history of the Association.

The Association met for the first time in Toronto in 1881. Most of those who took an active part at the first meeting have passed off the scene, but the Association lives on and gains in strength as the years go by.

We have always felt that this Association should not have its permanent place of meeting in Toronto. By moving to other cities a new set of men are induced to take an interest in it from time to time. This has the happy effect of enlarging the membership, lending variety to the proceedings, and preventing the Association becoming too routine in its methods. The Hamilton meeting fully proved the correctness of these views.

One who attended the earlier meetings cannot fail to notice the enormous strides that have been made in these twenty-eight years. The class of papers is wholly changed. To have read a scientific paper in the early history of the Association was a sure way to invite asperse criticism. Not so now. The order of the day in the Hamilton meeting was the very high standard of the papers and discussions. Another feature was that the younger men came forward and did some of the very best work.

A noted feature of the meeting was the attention paid to preventive medicine. Among these topics were the health of school children by Dr. Helen MacMurchy; the milk problem, by Dr. C. J. Hastings; the sewage system in towns, by T. A. Murray, C.E., and precautions in typhoid fever, by Dr. J. A. Amyot. The paper on quarantine and compulsory vaccination by Dr. H. H. Sinclair was rather reactionary, and we think will win but few adherents in the profession.

The social aspect of the meeting was well managed, indeed could not have been better adapted to suit the tastes and comforts of those who attended the meeting.

Dr. Roddick, the Dean of McGill Medical Faculty, made a strong appeal for inter-provincial registration. This has not yet come, but it is bound to do so. It has such merit in it that it will win its way to the front without fail. Local jealousies of one or other of the Provinces may hold it back for a time. To Dr. Roddick the profession of Canada owes much. He succeeded in placing upon the statute book of Canada an admirable Act which makes a truly national profession a possibility. The various Provinces will avail themselves of this Act in time. Its adoption would make for good all along the line.

On this very important subject we imagine if the Province of Quebec came into line the rest of the work would be easy. If, however, Quebec sees fit to stay out, an amendment might be secured to the Act enabling it to go into operation among such Provinces as adopted its provisions. There is no reason why the Maritime Provinces, Ontario, and the Western Provinces should not have inter-provincial registration. They are a common people and should have a common profession.

THE PRESIDENT'S ADDRESS TO THE CANADIAN MEDICAL ASSOCIATION.

In the first portion of his address, Dr. Montizambert touched upon the history of medicine. He said there had been four main periods: 1. The Hebraic epoch, when special attention was paid to domestic sanitation; 2. The Roman period, when attention was paid to municipal sanitation; 3. The Gothic period, when attention was paid to national sanitation; 4. The modern era of international sanitation.

He referred to the fact revealed to us by history that at one time filth was almost sanctified, and mentioned the habits of the hermits and some religious orders. He said that under the Hebraic era women could render their homes almost immune to disease; but to attain to this ideal condition, education was necessary. On this line he referred to such bad practices as putting ice in drinking water, drinking suspected water without boiling it, the widespread custom of kissing, the wearing of long skirts.

Coming to the sanitation of the Roman period, he drew attention to the fact that Rome paid the most scrupulous attention to its water supply. It had also a complete sewerage system. He referred to the splendid results that had been attained from the installation of proper filtering plants.

The Goths were a hardy and healthy race. With them it was a national duty to care for the health of the people, and this duty remained with us to-day; and was becoming steadily more pressing as the conditions of social and industrial life were becoming more complex. We should take active measures to stay the spread of tuberculosis, vaccination should be made compulsory. There ought to be a Bureau of Health, There should be a Council of Public Health, to advise with the government. An effort should be put forth to destroy rats. They carried such diseases as the plague and typhoid fever, and they daily destroyed about \$30,000 worth of food. Plumbing was also mentioned as coming within the scope of national supervision.

In the close of his address he referred to the great work that countries were doing by coming to an understanding in health matters, and regulating trade, commerce, migration and the spread of disease. Here he suggested that the Government of Canada might station medical men in the principal emigrating centres of Europe and the Orient.

As the result of all this discussion, something positive is sure to come. If but little has been done by the government to control the ravages of tuberculosis, the medical profession has done much to educate the public, and action will follow as a result. The present editor of the CANADA LANCET gave an address before the Ontario Medical Association in 1885, in which the need for care in consumption was required, and contending that the disease was a communicable one, and that the future management of the disease would be largely one of prevention. These views were severely condemned and aspersely criticized, and among those who were most severe in their condemnations were two professors in a medical college. This incident goes to show how opinion has changed in those 23 years.

THE CANADIAN MEDICAL ASSOCIATION.

When the Association has reached its 41st annual meeting it should be able to look back upon something that it had accomplished, as standing to its credit, and making for the good of the people. We believe that the Canadian Medical Association can fairly lay claim to have accomplished a fair amount for the advancement of medical thought in this country.

That it has not fulfilled its full mission we think all will be ready to admit. Let us ask why.

In the first place the meetings, with a few exceptions, have never been well attended. Many of the annual gatherings did not exceed about

100, and for the forty-one years, perhaps the average has been below 200. This should not be the case.

The profession in this country should take a greater interest in the National Medical Association, but they do not. There are many reasons for this.

The distances in this country are very great, and it is therefore difficult both in time and money to attend the annual meetings.

But the local and provincial medical associations demand a share of support, and, being nearer at hand, receive most of the attention.

It is difficult for members of the medical profession to prepare papers and discussions for so many meetings; and the tendency is to prepare for the one nearest home.

If we may be permitted to speak somewhat plainly, we do not think that the Canadian Medical Association has done its duty to its members, the profession at large, the public, nor the medical journals. Up to the present no effort has been made by the association to furnish the medical journals of this country with correct reports of its meetings. This could be easily done and at little cost.

The entire effort of securing reports have been left to the journals themselves. This is by no means an easy task. No firm effort is made to secure a copy of the papers and addresses, and therefore, there must be gaps in the reports of the proceedings. It would not be a difficult matter to overcome all this.

The journals are willing to assist. By taking time by the forelock, arrangements could be made for a few competent reporters to take the discussions and oral addresses. By this simple means, and at small cost, a complete report of the transactions could be got out in a short time.

The publication of these reports would interest those who were at the meeting, and would be the means of enlightening those who were not at the meeting, and more than likely induce them to attend on a future occasion. It would also keep the work of the association for future reference, and thus would have its effect on the public life of the country.

We do not think that the association is going about this in the right way by trying to publish a journal of its own. This means a lot of money and a vast amount of labor, which must be paid for. We have gone into this and tried to show that a good journal of 80 pages per month with all the costs for office rent, clerical help, manager, etc., for a circulation of about 1,500 would cost about \$10,000 a year. To secure such a circulation would require the untiring effort of a very able person for at least a year. This in salary and travelling expenses would run up to about \$5,000. If the journal committee put the enterprise on the market and waited until the circulation gradually grew up, there would need to be on hand many thousands of dollars to meet the initial cost.

If the association enters upon the publication of a journal and fails in the effort, the whole association and profession of the country would be more or less discredited.

It should be borne in mind that the British Medical Association was founded in 1832. The *British Medical Journal* is now in its 48th year, and was started in 1860. In 1872, when the late Mr. Fowke became the general secretary of the association, the journal was in a bad way, and could not have paid 50 cents on the dollar if it had gone out of business. This was the state of affairs after twelve years' hard work.

We think we have shown that it behooves the association to move with much care; and especially do we say this since the Ontario Medical Association is now a branch of the Canadian Medical Association.

In another portion of this issue are to be found a report of the general sessions. We have not space for the work and discussions in the sections in this issue.

PERSONAL AND NEWS ITEMS.

ONTARIO.

Dr. and Mrs. Wishart, after spending some months abroad, arrived home the end of June.

Dr. D. A. Sinclair, of Melbourne, has been appointed an associate coroner for Middlesex.

Dr. J. D. Berry has purchased the practice of Dr. E. L. Procter, of Port Perry, the latter removing to Whitby.

Dr. Charles A. Herbert, of Hawkestone, Simcoe County, has been appointed an associate coroner for Nipissing.

Dr. W. C. Gilday, who went to London last fall, has passed the joint examinations for M.R.C.S and L.R.C.P.

Dr. A. A. Jackson, formerly of Everett, and who has been doing post graduate work in Britain, has gone to Bolton to practise.

Dr. Herbert Carveth, late of Toronto, has bought the practice of Dr. Harcourt at Powassan. Dr. Carveth was married a few weeks ago.

Dr. T. D. MacGillivray, after 14 months' post graduate study in Europe, has resumed practice in Kingston.

Dr. James Third, of Kingston, is taking a three months' holiday in Europe.

Dr. W. C. Herriman, of the Rockwood Asylum, Kingston, has been transferred to Mimico, and Dr. Young succeeds him.

Arthur Fares, a student of Queen's, and son of Dr. O. W. Fares, of Port Colborne, was drowned 21st June in the Welland River.

In a card from Dr. W. H. B. Aikins of Toronto, we notice that he was having a good time in Berlin, and enjoying some of the clinical work there.

The Victorian Order of Nurses for Toronto has decided to place a special nurse at the disposal of the public to visit homes where there may be tuberculosis, and give instructions. This is a good move.

The Medical Department of Queen's University has made marked steps onward. The subject of chemistry is much better provided for and the adoption of the five years' course are among these.

An effort is being made to secure a hospital for consumptives in Brantford. It looks as if those in charge of the task were going to succeed.

Dr. A. D. Macintyre has resigned his position as medical superintendent of Kingston General Hospital, and will sail in August for Britain.

Orillia's new general hospital was formally opened on 28th May, by Dr. Bruce Smith, Government Inspector of Charities, in the presence of a large and fashionable gathering. The hospital is admirably equipped, and cost \$16,000, the whole of which sum is covered by subscriptions.

The *Ontario Gazette* announces the following Provincial appointments: Dr. Chas. J. Laird of Southampton to be an associate coroner for Bruce County; Dr. A. J. Fisher of New Liskeard, to be a coroner for the District of Nipissing.

The wedding took place at Dunnville recently of Bessie Helen Brown, daughter of Mrs. Brown and the late John Brown, ex-M.P.P., of Dunnville, to Dr. John Alexander Kerr, son of the late William Kerr of Dovercourt Road, Toronto.

From the Third Annual Report of the Toronto Free Hospital for Consumptives the following items are taken. The National Association for the Prevention of Consumption was incorporated in 1896, the Muskoka Sanatorium for incipient cases was established in 1896, the Muskoka Free Hospital in 1902 for incipient cases, the Toronto Free Hospital for advanced cases in 1904, the King Edward Sanatorium in 1907. There are over fifty branches of the Association in Ontario. In Muskoka \$200,000 have been spent on buildings and land, over \$250,000 expended on the maintenance of patients. There have been 2,500 patients cared for. So far \$80,000 have been expended on the Toronto Sanatorium for Consumptives and the King Edward Sanatorium.

QUEBEC.

The Association of Physicians of the French Language of North America will meet this year in the Laval Buildings, on July 20th, 21st and 22nd.

Prof. Frank D. Adams has been appointed dean of the faculty of Applied Science at McGill, with Prof. C. H. McLeod, as vice-dean. The vacancy caused by the retirement of Dr. T. G. Roddick was filled by Dr. F. J. Shepperd. Both are graduates of McGill.

A number of changes have been made in the faculty of Laval Medical College. The resignations of Drs. Rottot, Desjardins, and Demers have made this necessary. Dr. Hervieux takes the work of Internal Pathology, Dr. Benoit succeeds Dr. Rottot as clinician at the Hospital Notre Dame, and Dr. Asselin becomes assistant to Professor Duval in the department of Physiology.

Dr. J. W. Scane, Registrar of the Faculty of Medicine at McGill, has received a cable from Dr. MacAllister, President of the British Medical Council, stating that students holding Laval or McGill degrees and a Quebec license will be permitted to practise in any part of the British Isles. It is expected that this privilege will soon be extended to other universities, and will involve not only reciprocity between Canada and the motherland, but also between Canada and all parts of the Empire.

MARITIME PROVINCES.

It will be learned with regret that Dr. S. C. Primrose, of Lawrence-town, has been seriously ill in the Victoria Hospital, Halifax.

Dr. M. Chisholm, of Halifax, has been again elected chairman of the Board of Health.

Drs. G. W. MacKeen and D. T. C. Watson are in the West Indies, the former for his health, and the latter visiting his parents.

A recent Moncton despatch says that forty houses were quarantined at Granddigue and vicinity, five miles from Shediac, on account of small-pox, and the church there was closed. There were a large number of cases of a mild type. No fatalities have yet been recorded.

WESTERN PROVINCES.

In Winnipeg during April there were 143 deaths, 290 births, and 128 marriages.

Principal Tory, of Alberta University, was honored by the McGill University with honorary degree of LL.D.

The Regina city council has called for plans for a hospital of 100 beds. The work will go on at an early date.

A municipal hospital, costing about \$55,000, is to be erected for Saskatchewan.

Dr. Graham, of Stettler, will receive sympathy of his friends at his loss by fire of his library and instruments.

Dr. Raymond Brown, Winnipeg, intends confining his work to diseases of the eye, ear, nose and throat.

Progress is being made towards forming a Western Canada Medical Society, and the various societies will be approached with this end in view.

The annual report of the hospital at Selkirk showed assets of \$22,000, and liabilities of \$11,000, leaving a margin of \$11,000. Well done!

Dr. J. Park, of Edmonton, has been spending some months in New York, Chicago, and Rochester, Minn., doing post graduate work in surgery.

At a recent meeting of the Educational Convention held in Winnipeg, there was some discussion on the advisability of having Hygiene taught in the Schools. There was a strong expression of opinion that this should be done.

BRITISH COLUMBIA.

Assurances have been given by the Government that a grant of a site and \$1,500 will be made for a hospital at Lillooet.

Dr. McGuigan, who has been a patient in St. Paul's Hospital, Vancouver, for many months, is much improved.

Dr. J. Gibbs, of Vancouver, intends making a specialty of diseases of the kidneys and bladder.

The ninth annual meeting of the British Columbia Medical Association will be held in Vancouver on August 20th and 21st. A good programme has been arranged for.

A short time ago a very pretty wedding took place in Victoria, when Dr. Lachlan MacMillan, of Vancouver, was married to Miss Hattie Nicholas, of Victoria.

Dr. Underhill, Medical Health Officer for Vancouver, has been conferring with the health officers of Seattle, Portland, and San Francisco, with the view of preventing the spread of the bubonic plague.

FROM ABROAD.

Mr. Francis Fowke, who acted as secretary of the British Medical Association from 1871 to 1902, died on 19th May, in his 69th year.

The optometry bill has become law in the State of New York. This bill incorporates the opticians to do refraction.

Professor Crum Brown has retired from the chair of chemistry in the University of Edinburgh after a service of forty years. He was a very popular teacher.

The first International Congress of Laryngology was held in Vienna a short time ago under the presidency of Professor Chiari. The science of Laryngology was founded in Vienna 50 years ago by Türck and Czermak.

In memory of the distinguished Pirogoff, a congress is to be formed in Russia, for the purpose of uniting all the societies dealing with the prevention of consumption in the Empire of Russia.

Mr. Balmanno Squire, surgeon to the British Hospital for Diseases of the Skin, died on 7th May, in his 71st year. He was an extensive contributor to the literature of skin diseases.

There were in Germany last year 7,574 medical students and the number of practitioners in the empire was 31,416. Quackery is very common and active in some portions of Germany.

A Young Folks' League for the home treatment of consumption has been started in New York. It is hoped to spread useful information and render services of various kinds by its aid.

The value of vaccination is well shown in India. Some 30 years ago very many of the recruits to the army were marked by the disease; whereas at the present day, very few recruits show any scars.

Dr. M. K. Forcart, in the *Medicinische Klinik*, claims that the best urinary disinfectants are those which liberate formaldehyde in the urine. He recommends urotropine, hetraline, borovetrin.

On 18th May, Sir A. E. Wright was presented by the Medical Society of London with the Fothergill gold medal for original research work.

There is a marked fall in the birth rate in Britain. During the five year period 1881-85 it was 32.1 per 1,000, whereas in the period 1901-05 it had fallen to 27.7, or 14 per cent. in 20 years.

The terms of union have been agreed upon between the *Edinburgh Medical Journal* and the *Scottish Medical and Surgical Journal*. The united journal is to bear the name of the older one, namely, the *Edinburgh Medical Journal*.

A form has been prepared in Scotland for the protection of medical men who may be called upon to issue certificates of lunacy. The form is to be signed by the principal relatives, and the object is to hold the profession harmless against suits.

Dr. Sherman, Pathologist, Royal Infirmary, Edinburgh, speaks of the plague as a disease caused by the three factors—parasites, rats, and man. The flea communicates the disease from rat to rat, from man to man, from rat to man, and from man to rat.

The commission which was appointed in France a year ago to report on the best methods of improving medical education, has come to the conclusion that the medical student's education should be intellectual, literary and philosophical.

Since July, 1904, Professor Tuffier, of Paris, has performed 586 major operations, under spinal anaesthesia by means of stovaine.

Vomiting, headache and retention of urine were the complications he had met. These were not severe, and yielded to treatment.

When Dr. Robert Koch was tendered a great banquet in New York some time ago, he said in reply to the praise that had been heaped upon him that he was only doing what his hearers had always been doing, namely, his duty and working hard.

A bill has been signed by Governor Hughes of the State of New York, providing for the reporting of all cases of tuberculosis, and allowing a fee of 25 cents to the physicians reporting these cases for each report.

The Government of Britain has established in London a bureau for the collection of information regarding sleeping sickness. The committee consists of Sir J. West-Ridgway, Sir P. Manson, Sir R. W. Boyce, Dr. J. Rose Bradford, and others.

An active effort is being made in Egypt to destroy disease-carrying mosquitoes. This is being done by pouring petroleum on the stagnant waters where these insects breed. Their larvae cannot come to the surface to breathe.

Mr. D'Arcy Power, in a paper on syphilis, which he read a short time ago before the Medical Society of London, emphasized three things: the late appearance of inherited syphilis at times, the curability of the disease by mercury, and the limitations in the use of the iodides.

In some recent work done on the administration of vaccines by the mouth, Drs. Latham, Inman and Spitta have shown that positive reactions can be obtained in this way, and that the opsonic index of the blood is raised by this means of administration.

In a recent issue of the *British Medical Journal*, there appeared an article on the value of cats as means of preventing the spread of the plague. In districts of India, where cats are numerous, there is but little plague, and in other portions of the country into which cats have been introduced, the disease has very much decreased.

According to an article in the *Cronica Medica Habana*, from the pen of Dr. Aristides Agramonte, it would appear that Dr. Louis Daniel Beauperthuy, of Venezuela, was the first to discover the connection between ague and yellow fever and the mosquito. He said that the mosquito introduced a poison by means of its proboscis. This was in 1853.

A short time ago there was a very animated discussion in the Berlin Medical Society on the value of sanatorium treatment of tubercular patients. A number of the speakers held that the drop in the death rate from this disease was due to better hygiene and improved methods of living, and not to the influence of sanatoriums.

The *Antiseptic* (India) puts in a strong plea for a better method of making appointments to the teaching staffs of the Indian Colleges. These positions should be thrown open to the whole profession, and the best men chosen. At present the appointments are made from the Indian Medical service, and this narrows things down too much.

Dr. Charles J. Collingworth, Consulting Obstetric Physician, St. Thomas' Hospital, died on 11th May, 1908, in his 67th year. He held the position of professor of obstetrics and gynecology on the University of Manchester. From this position he was called to the one held at St. Thomas' Hospital for 20 years.

From the proceedings of the 59th meeting of the American Medical Association, there appear to be now 31,343 members, and the net income was \$28,000. The total number of practitioners in the United States is estimated at about 130,000. Thus the Association has about one-fourth of the profession in its membership after 59 years' work.

There has been a good deal of discussion of late, in France on polyarthritides deformans. It is contended that there is some fault in nutrition, preceded by some infection due to gastric fermentation and the retentions of toxic products. Tincture of iodine is laid down as the best remedy. It should be given in doses of 10 to 60 minims daily.

Dr. Auguste Marie, Chief of the Pasteur Laboratory, Paris, has been experimenting with a new serum for rabies. The serum is mixed with the virus of the disease and can be used in the severest cases. It secures immunity much quicker than when the ordinary method is employed. The mixture can be used to produce immunity which will last in a dog for at least one year.

For some time past there has been a good deal of discussion in certain parts of South Africa over the management of the hospitals. Some think they should be government institutions and supported by public funds. Others are of the opinion that they should be purely local affairs; while a third set think that both plans should be adopted in part, and the hospitals receive both local and government support.

Dr. Daniel B. Jackson, of New York, has recently directed attention to the influence of the common house fly in spreading intestinal diseases. Insects are now receiving much consideration in the causation of disease. The *Stegomyia* causes yellow fever, the *Anopheles* ague, the *Palpina glossalis* sleeping disease, the louse relapsing fever, the bedbug small-pox and tuberculosis, while leprosy, elephantiasis, filariasis, anthrax, typhoid fever, etc., have been shown to be carried by insects at times.

The Medical Times, British, contends that it does not impress the public favorably to notice that doctors differ so much in discussion, etc.,

and agree so universally in consultations. It is also thought that the use of Latin should be abandoned in the writing of prescriptions. It is said that this is the last "block house of mediaevalism." Then there are a number of archaic rules of etiquette that ought to be abolished. The medical profession should take on more of the wake-up methods of to-day, even at the risk of being charged with becoming commercial in its ways.

CORRESPONDENCE.

THERE IS NO ANTAGONISM.—RELATIONS OF THE MEDICAL COUNCIL AND UNIVERSITY.

(To the Editor of the Globe).

Owing to the fact that I speak very rapidly and indistinctly a grave error has arisen in your report of what I said in my valedictory remarks to the University of Toronto Alumni Association on Thursday last. That I was misreported is personally a matter of no importance, but the occasion being one which might seem to lend undue authority to the utterance, I am constrained to trespass upon your indulgence and the public patience in order to make the necessary correction. In doing so I may be permitted to recall the fact that there is and can be no antagonism between the University of Toronto and the Medical Council of Ontario, each in its legitimate sphere, as your report might imply. Some of your readers, but not the majority, are old enough to remember that at the birth of the Medical Council of Ontario the University of Toronto played an important part, and that the existence of the Council only became possible through the co-operation and consent of the University *e pluribus una*. At that time the diploma of any of the medical degree-conferring bodies carried with it the license to practise, and these rights were voluntarily surrendered or extinguished by these corporations in order that by this joint action a common standard of examination for medical practice might be set up and the interests of the medical profession as a whole (academic and non-academic) safeguarded by a central authority.

The good-will of the University towards the medical profession was by this action demonstrated and has been ever since maintained. Forty years have elapsed since the Medical Council of Ontario was created. In that time great changes and developments have occurred, "all along the line," and it has been increasingly felt, as the years have passed, to be a pity and a reproach to our boasted civilization that it appeared to be

necessary to maintain high protective and estranging walls between the component parts of our great Dominion. The pity of it was strongly emphasized when the General Medical Council of Great Britain offered reciprocity of medical registration to the Dominion so soon as the component Provinces should agree upon a common standard of recognition and registration amongst themselves, but reasonably declined to treat with the Provinces individually or separately. Later, however, owing chiefly to the strenuous and unremitting labors of Dr. Donald MacAllister, then of Cambridge, but now Principal of the University of Glasgow, and then, as now, President of the General Medical Council of Great Britain and Ireland, and unwearying friend of Canada, the Medical Council of the motherland consented to enter into reciprocity with the various Provinces of the Dominion, and all except the Province of Ontario have completed their negotiations and established this relationship.

All this would seem to be the domestic concern of the profession, and a matter of indifference to the University as such. But it is necessary to push inquiries a little farther in order to learn how the University of Toronto is affected, and the outcome of this inquiry explains the reason for my broaching the subject before the Alumni Association, to which we look as the public guardian of the University's rights and privileges.

The Medical Council of the Province of Quebec has recently entered into reciprocity with the Medical Council of Great Britain, and it happens in the Province of Quebec that there are two Universities, Laval and McGill, whose diplomas are recognized by the Medical Council of Quebec as entitling to registration in the Province of Quebec, and hence, through reciprocity, in Great Britain, and the rest of the empire also. Upon registration in Great Britain depends access to the public services of the empire.

The medical diploma or degree of the University of Toronto is registrable nowhere—not even in our midst—as a license to practise, and it is easy to perceive therefore at what a disadvantage our graduates stand.

Hence accordingly the object of my address to the Alumni Association was to make this Association's position known, and to suggest what seemed to me the feasible and proper remedy, as well as to solicit the powerful and, I may say I believe, irresistible influence of that body, as a unit, in having our disabilities in the premises removed.

The remedy suggested is a simple one, viz. : the persuasion of the Medical Council of Ontario by the influence of our graduates residing in the various electoral districts of the Province upon their representatives in the Council that the Province of Ontario also should seek reciprocity in registration with Great Britain, and that instead of passing a special examination for the license to practise before a special board of examiners

appointed by the Medical Council, which involves a very serious loss of time, and materially curtails the length of the medical session of the University, now all too short for the work to be accomplished, the undergraduates of the University should be tested as to their fitness for admission to the register of those licenses to practise by assessors sent by the Council to act with the examiners appointed by the University for the annual examinations. In this way by passing the one examination test our graduates would be admitted to the degree of the University, to the license of the Province, to the register of Great Britain and Ireland, the other Provinces and the colonies, and to the portals of the public services of the empire, and thus stand upon a parity with their cousins german of Laval and of McGill.

I trust that I have made it clear that I, as one of the earliest to submit to the examinations of the Medical Council of Ontario, and its lifelong supporter, made no attack upon the Council in my address to the alumni, but freely and fully recognize the great service it has rendered to the profession and still more to the public. Regarding it as a parliament of physicians, I am obedient to the Scriptural injunction to honor a physician with the honor due unto him for the uses ye may have of him.

I. H. CAMERON.

Toronto, June 13.

OBITUARY.

J. R. G. MURRAY, B.A.

Mr. J. R. G. Murray, B.A., who was in his third year in medicine at the Medical School, University of Toronto, died in the General Hospital early 27th May. Though quite ill, deceased insisted on writing in his examinations. He came to the hospital a few days before his death suffering from pneumonia, which had a severe hold on him, and he finally succumbed. He was the son of Mr. Robert W. Murray of 12 Maitland place, a teacher in the Model School. Deceased was only 24 years of age, and was among the most promising as well as one of the most popular of his class.

REV. WILLIAM WRIGHT, M.D.

The late Rev. Dr. William Wright was for many years a well known personage in Montreal. For thirty years he held the chair of Materia Medica in McGill. Some years ago he retired from his professorship and entered the Church of England as a clergyman. His

knowledge of materia medica was very extensive. He was highly esteemed by all who came in contact with him. He was a graduate from Edinburgh and Paris, and was 81 years of age when he died last April.

THOMAS McCAUSLAND, M.D.

Dr. Thomas McCausland, who died at his residence, 133 Yorkville Avenue, Toronto, on Sunday, after a prolonged illness, which he endured with great fortitude, was born in 1835 near Newmarket, Ont. He studied medicine at McGill University, Montreal, and afterwards in Dr. Rolph's Toronto School of Medicine, from which he graduated in 1858. In June of the same year he married Emma, second daughter of Dr. S. J. Stratford, M.R.C.S., England, who survives him, and was able to see the fiftieth anniversary of their married life. Three sons of his deceased daughter, Eva Frind, also survive—Paul Edmond, Max Arno and Herbert Otto Frind, of Toronto.

Dr. McCausland had a large practice for many years in Markham, Aurora and Toronto, where he not only soon acquired the reputation of being a highly talented physician, but also that of a true friend to his patients. He retired from active life about fifteen years ago.

Apart from his professional life, he was a vice-president of the Toronto Humane Society, and among his large circle of friends and acquaintances he will be remembered as an advanced thinker, also for his high literary taste and great business ability.

MISCELLANEOUS.

THE FORTY-FIRST MEETING OF THE CANADIAN MEDICAL ASSOCIATION, OTTAWA, 9TH, 10TH AND 11TH JUNE, 1908.

JUNE 9TH.

The opening session was occupied with routine business. Dr. Elliott submitted his report as secretary, and took occasion to remind those present that many signed the register, but were not formally admitted to membership.

The report of the special committee appointed to report on the matter of a journal for the Association reported in favor of establishing such a publication.

The actual membership for 1907 was 272, 37 being medical students students.

The members of the new executive are : Dr. R. W. Powell, Ottawa; Dr. G. E. Armstrong, Montreal; Dr. J. T. Fotheringham, Toronto; Dr. R. A. Reeve, Toronto; Dr. W. I. Bradley, Ottawa; Dr. F. A. L. Lockhart, Montreal; D. E. P. Lachapelle, Montreal; Lt.-Col. C. Jones, Ottawa; A. B. Atherton, Fredericton; Dr. A. T. Shillington, Ottawa; Dr. C. J. Hastings, Toronto; Dr. Jas. Bell, Montreal; Dr. J. H. Elliott, Toronto, and Dr. J. C. Mitchell, Brockville.

During the forenoon four papers were read before the section in general medicine, Dr. Omar Wilson and D. J. H. Alford, both of Ottawa, placed before the section some notes on the action of the x-Rays on the organs of the body. It was, they stated, a powerful therapeutic agent, and they detailed a number of disturbances which in cases under their observation had been set up in the generative and secretory organs by the action of the rays. Drs. V. E. Henderson and W. H. Cronyn of Toronto, read papers on the action and uses of the drug ergot, and Dr. C. S. McVicar, a member of the staff of the Toronto Hospital for Sick Children, spoke of the experiences of the doctors of that institution in regard to broncho-pneumonia in children. Finally Dr. G. S. Young of Prescott read a very interesting paper on the treatment of neurasthenic patients.

The annual meeting of the Doctors' Protective Association was held at noon. This society is designed to protect the medical men against attempted blackmail through the means of unjust actions in the court. Wherever a practitioner is subjected to persecution in this manner, his case is taken up by the Association and he is assisted in his fight. In instances where the doctor himself is unable to stand the cost of the action the expenses are defrayed from the funds of the society. The reports of the work of the Association for the past year were read at the meeting, and plans were laid for its continuance with a yet wider scope were discussed. Financially the Protective Association was shown to be in a satisfactory condition.

In the sections in medicine and surgery a number of papers were read. At five o'clock the meeting adjourned and the members and guests went out to the Golf Club at Aylmer, where a reception was held.

In the evening Dr. Montizambert, of Ottawa, delivered his presidential address.

The address won the highest commendation for the many valuable and original suggestions that it contained. The subjects discussed were in line with those of special interest to the Association. More adequate protection of the public health and a diffusion of information regarding preventive measures constituted the main theme. It was suggested that woman's peculiar sphere was in the home where she could originate sanitary precautions through her influence and authority. Inspection of

water supply and plumbing work was advocated, and it was urged that the Federal Government should establish a Bureau of Public Health and undertake to lead in the struggle against tuberculosis and other contagious diseases. In the course of his discussion of measures that would tend to improve the conditions of public health, Dr. Montizambert condemned a number of social customs that are now in vogue. He described the habit of kissing as a form of greeting as dangerous and a possible medium for the spread of contagious diseases.

Dr. Powell, chairman of the local committee on arrangements, occupied the chair. On the platform were Sir Wilfrid Laurier, Dr. Montizambert, Dr. J. S. Risien Russell, London, Eng., and Dr. J. C. Munro, Boston.

Sir Wilfrid Laurier was given a most cordial reception. He expressed his pleasure at having the privilege of addressing the medical Association. "A lull in proceedings," he said, "in the place that was mentioned has permitted me to attend this meeting, and as a citizen of Ottawa I give you the warmest welcome to the city, a welcome as warm as the weather, and that is as warm as can be desired." Continuing, he expressed his personal interest in the work and objects of the Association. He explained that five years ago he had been out of health and had consulted physicians in Canada, England and France, and had in every case received the same prescription. He had been uniformly advised to take simple food, no drugs and longer hours of rest. Through this treatment he had been restored to health and was now equal to the hardest work. "The only man who knows the value of health is he who has lost it and regained it," he proceeded, "and that is the reason I recognize my personal indebtedness to the medical profession."

Coming to the proposais made by Dr. Montizambert, Sir Wilfrid stated that he could not turn a deaf ear to any reference to the duty of the national government. He stated that he was glad to listen to any arguments and was open to conviction. He facetiously compared the government to the Kingdom of Heaven in that public matters could be brought to its attention for action only by a somewhat persistent rapping at the door.

As for the establishment of a National Tuberculosis Sanitarium he stated that the government had several times been approached on the matter. Certain constitutional questions had arisen, however, to complicate the difficulty of deciding the correct course. The government, it was pointed out, is anxious to meet the wishes of the profession; and, said the Premier, "while I cannot commit myself to anything this evening, I shall gladly listen to any consideration from you, and I can assure you of my heartiest sympathy with your aspirations." In conclusion, he invited the Association to meet in Ottawa again, coming in winter

the next time, that as warm a welcome might be given it when the thermometer marked thirty degrees below zero as has been extended on this occasion.

Mayor Scott formally welcomed the members of the Association to Ottawa and stated that every courtesy would be shown them. "Under the influence of your president's remarks regarding kissing," he said, "I have no hesitation in handing over the freedom of the city." He went on to describe the steps taken in Ottawa to protect the public health, stating that milk was regularly inspected by an official engaged for the purpose. He concluded by inviting the Association to Carnegie Library, where the humble hospitality of the city might be participated in, in the form of light refreshments.

The reception proved a most pleasant and enjoyable occasion. An orchestra stationed near the refreshment room rendered several selections. A large number of the wives of members of the Association were present. The function came to a close about 11 p.m.

JUNE 10TH.

During the forenoon of 10th June, the time of the Association was taken up with many papers on the various sections. One of the most important of the discussions was that in the section on medicine on tuberculosis. Dr. Harold C. Parsons of Toronto, gave an account of the work that is being done in the Toronto General Hospital. Dr. Parsons gave a detailed account of the campaign against tuberculosis in Toronto. He held that the object of the doctor should be not so much to cure as to prevent the disease. With this end in view he recommended the education of the people, and as a headquarters for the distribution of the knowledge of the laws of health, he regarded a dispensary as of supreme importance.

The treatment of tuberculosis patients in hospitals along with other cases he did not regard with favor. He thought that sufferers from this disease should be either treated in their homes or else in a sanitarium built especially for that purpose.

"When a patient suffering from tuberculosis comes to me," said he, "I first endeavor to get him to go to Gravenhurst, if his case is not very far advanced, or to Weston if the destruction of the lung tissue has gone far. I endeavor to get him to attend these institutions not only for the rest and treatment, but also for the education. This I regard as of the greatest importance."

In these sanatoria the doctor stated that the patients learnt how to take care of themselves, and were also instructed in the precautions that they ought to take for the general safety of the public. The speaker also insisted on the importance of the distribution of literature among the

patients instructing them in the proper methods of conduct. The greatest agent of all, however, in the education of those suffering from tuberculosis was the trained nurse. As in Ottawa, he stated, a nurse was engaged in Toronto whose business it was to visit tuberculosis patients and see that they followed sanitary modes of living. Her work was of the very greatest importance. She saw that the patients were supplied with sputum cups and that they used them, and carefully burned them when once used. She saw that they kept themselves and their surroundings clean and their rooms well ventilated, and this, the doctor stated, was a matter of some difficulty in the case of foreigners, of whom there were large numbers in Toronto. It was wonderful, however, the improvement that in many cases had been wrought by the persistent but tactful work of the nurses. All depended on the character of the nurse. She must be tactful, quiet, but forceful, and sympathetic. Dr. Parsons further insisted upon the importance of the disinfection of houses in which tuberculosis patients have died. In closing he urged that in view of the dreadful havoc wrought by the disease, special grants should be made by the government for the purpose of combating it.

Dr. P. H. Bryce, medical inspector of immigration, spoke strongly, endorsing all that Dr. Parsons had said. He mentioned the work of the Anti-Tuberculosis Society of Ottawa and called attention to the fact that the May Court club has obtained rooms for use as a dispensary in the lower part of the city. This dispensary would, he stated, be opened on the fifteenth of the present month. In the meantime he extended an invitation to all the doctors to visit and inspect it. He stated that the Province of Saskatchewan, in awarding grants to hospitals, demanded as a condition that a number of tents should be maintained for the accommodation of tuberculosis patients and he urged that some steps of a like nature should be taken in this province.

Dr. Campbell Howard spoke of the campaign against tuberculosis in Montreal. He held that the nurse could do more in the treatment of this disease than the physician and expressed an opinion to the effect that tuberculosis patients should not be admitted to hospitals in which other cases were being treated.

Rev. Dr. Moore, the secretary of the Canadian Association for the Prevention of Consumption, who was present and spoke a few words, cited instances tending to demonstrate that tuberculosis sufferers could be treated in general hospitals without danger to other patients so long as proper precautions were observed. He gave a brief summary of the work of his society.

Dr. Parsons closed the debate with a few words, in the course of which he touched on the subject of visiting. There should, he held, be

as little of this as possible. Patients were very often sensitive and disliked to be treated as objects either of charity or curiosity. Sometimes even the visits of the nurse were objected to on the ground that they called the attention of the neighbors to the condition of the sick man. The visits of the nurse were indispensable, but those of other persons should be limited as much as possible.

The paper of Dr. J. K. M. Gordon, of Gravenhurst, was an exceedingly interesting one and outlined the treatment of certain cases of tuberculosis that had come to the sanatorium. He especially advocated that children in the schools should be taught proper methods of breathing, for an examination of schools had shown many of the pupils affected by certain minor diseases of ear, nose, mouth or throat.

The morning session of the section in general medicine closed with an extremely interesting paper by Dr. George Porter of Toronto, in the course of which he dealt with the influence of climate on various kinds of diseases, pointing out what meteorological conditions were most suitable to patients suffering from specific diseases.

For the afternoon the committee of arrangements had a very pleasant trip planned via the C.P.R. to the Caledonia Springs.

The visit of the Canadian Medical Association to Caledonia Springs was enjoyable as well as productive of practical results. All morning it seemed as though there was sure to be a downpour to mar the enjoyment of the outing, and although no rain actually fell, it remained threateningly dark during the afternoon. It was just as well, perhaps that the temperature was not a repetition of Tuesday's as the extreme heat might have proved too much for the ladies of the party, of which there was a goodly number.

At 12.55 a special C.P.R. train was in waiting at the Central depot for the convenience of the visitors and Caledonia Springs was reached after 1 o'clock. Lunch was immediately served on arrival in the grand dining-room of the hotel and covers were laid for nearly 400 people. After lunch the guests roamed through the beautiful grounds and under the able guidance of Mr. G. A. Cole, the newly appointed manager of the hotel, the party were shown all of interest in the vicinity. The springs and mineral wells, were a source of great interest to the medical men, who were also immensely impressed with the spotless cleanliness of the house and grounds.

At the conclusion of the luncheon there was a little speech making by the officers of the Association, but as there was very limited time left in which to visit the grounds, the addresses were curtailed. Toasts were proposed and drunk, that of the King being proposed by Dr. Montizambert, President of the Association. Sir James Grant paid high tribute to the C.P.R. and to the tremendous influence which it had on the welfare

of the country. Mr. LaJeane, the assistant manager of the C.P.R. hotels, who acted as host, responded to the toast in a few words, and heartily welcomed the guests.

After the luncheon there was a short meeting of the executive committee to draw up proposals to be submitted to the general meeting.

One of these proposals was that the next convention of the Association be held at Winnipeg.

At 5 o'clock the party left on the return trip to Ottawa. The doctors, individually, and as a body, give unstinted praise to the Canadian Pacific for the perfect and unique entertainment it devised on their account.

The Medical Association resumed business after the excursion to Caledonia Springs in the afternoon, and listened to two interesting papers by Dr. J. S. Risien Russell, of London, Eng., and Dr. John C. Munro, of Boston, Mass.

Dr. Russell's Paper on "The Use of Reflexes in Diagnosis," was technical in its nature, but for the benefit of the laity who were present he simplified his explanations where he could and made clear the meaning of the true reflex. From the standpoint of the members of the Association, Dr. Russell's contribution to the programme of the annual meeting was of unusual importance.

At this stage the lecturer sat down, and crossing his legs in the usual fashion tapped the knee of the suspended leg. The limb below the knee jerked. That, explained, constituted a reflex action. The same process, too, he pointed out, could be repeated by tapping the ankle, when under certain conditions the foot would move as the leg had done in the other experiment. Having thus made comprehensible the word on which an understanding of the matter with which he was dealing turned, he proceeded to suggest the uses to which a test of the reflexes could be put in diagnosing neurotic or nervous diseases. While not in all cases infallible, he stated that not infrequently the value of the reflexes in differential diagnosis was beyond doubt. In cases of suspected locomotor ataxia the reflexes could be used to determine the nature and extent of the lesion. In a certain type of diseases of the nerves or brain the knee jerks would be abolished. In others it would be exaggerated. This it was explained, was the principle at the basis of the use of the reflexes.

"For instance," said the speaker, "if when I tickle the feet of my patient the toes crumple up, I regard that as a good sign. If, however, on tickling the sole the toes do not contract, but, on the contrary, remain normal or are extended, that I regard as a bad sign and a cause for anxiety."

These reflex actions, he stated, were useful in diagnosis in four different ways. In the first place, they were invaluable in distinguishing one nervous disease from another; secondly, the seat of the trouble could be located by their use; thirdly, the extent of the morbid process could often be defined through them; and, fourthly, it was possible by them to tell whether the condition was merely the result of hysteria or shamming.

The doctor disposed of the last two cases in a few words. When, he stated, he was visited by a patient who thought that she—for such patients were usually ladies—was suffering from some nervous disease, he was in the habit of looking wise, prescribing certain medicines and then interviewing the husband. “Him,” said the doctor, “I tell to order a new dress straight from Paris and then to give a party. And I recommend him to inform his wife that Mrs. So-and-so, who is to attend the party, has also got a new dress, but that hers was made in Ottawa. Such treatment, I find, usually works a cure.” In the case of patients who were merely shamming for the purpose of securing the payment of damages from transportation companies or something of the same sort, the reflexes gave an almost infallible clue.

He showed slides of sections of the spinal cord and of the brain affected by tumors and various diseases, and gave accounts of the symptoms of each case and the manner in which by means of the reflexes he had been able to make a correct diagnosis and to locate the seat and extent of the trouble. There were, he explained, many kinds of nervous diseases whose more obvious symptoms were very much the same, and yet for which the treatment was diametrically opposed. In distinguishing these diseases the reflexes were of the very greatest value. He described the use of the ophthalmoscope in determining the existence of tumors in the brain, and also described the method of determining affections of the cervicular portion of the spinal marrow and the cerebellum by means of reflexes of the pupil of the eye, the jaw and the abdomen. In particular he emphasized the importance of the reflexes in determining the exact location of tumors of the brain. Until the exact location of such disorders was known it was impossible for the surgeon to operate, inasmuch as while operation was possible when they were located in the cerebrum or cerebellum it was absolutely impossible in those cases where the seat of the trouble was the pons, or stem of the brain. The position of growths and disorders could be determined with exactness by a careful and thoughtful use of the reflexes.

At the conclusion of the paper a vote of thanks was tendered Dr. Russell, the appreciation of the Association being expressed by Dr. F. Finley, Montreal, and Dr. McPhedran, Toronto.

The rights of Surgeons and Patients, discussed by Dr. J. C. Munro, of Boston, was the next address.

At the commencement of his paper, Dr. Munro explained the manner in which his attention had been called to the necessity of a better understanding between the surgeons and the public. "While listening some time ago," he said, "to an interesting address by Prof. Müller, of Munich, on the German system of insurance of the laboring classes against sickness and death, I was impressed by the fact that the insurance was established not as a charity but because the poor have the right to be protected against the various accidents and illnesses incident to our complex modern life. At that time it occurred to me that against unnecessary suffering, disease and death the public, both rich and poor, has an equal right to be protected by means other than that of insurance. In other words if modern surgery can lengthen life, can protect against malignancy, can nullify suffering better than can be accomplished by other therapeutic measures, the public has the right to know accurately when and to what extent this is possible."

Surgeons, he continued to explain, have been so busy watching developments that they had failed to let the people know what could be done for them. It was time, he thought, that the profession should stop and survey its relation to its clients. As for the rights of patients, he said that major operations should not be undertaken by men who had not taken special courses in surgery. The practice of hospitals in putting important work on young surgeons was condemned in the following word: "To attract students, to become popular or to shirk labor the surgeons of many hospitals delegate more or less operative work to immature and irresponsible house pupils; because of this the public suffers." Such action was described as almost criminal. It was stated, moreover, that in his dealings with a patient the surgeon should place the facts before him and allow the decision whether or not he should undergo an operation to remain open.

In concluding Dr. Munro expressed the opinion that the public should be made to realize that the dangers, remote and immediate from anaesthesia, the state of insensibility produced by the inhalation of drugs are very small. He also suggested certain changes in the method of choosing the staffs of hospitals. "A reform" in the constitution of our hospital staffs he believed to be necessary. Some such system as that in vogue in Germany should be adopted by our hospitals. As constituted at present, many of our public hospitals are overweighted by cumbersome staffs that could easily be reduced to a third or a sixth of the present number. As I have indicated, too, uniformity and permanency in the operating and ward staff is of utmost importance in obtaining good results.

The Association tendered its thanks to Dr. Munro.

During the session of the Military Surgical Section a very important contribution was made by Lt.-Col. Jones, D.G.M.S., of Ottawa.

Col. Jones' paper was on the advisability of forming a Candian Ambulance and Red Cross Association. The colonel pointed out that both the order of St. John of Jerusalem and the Red Cross Association of Great Britain had carried their sphere of activity into this country. On the whole, however, he did not regard their working here, save in the absence of any other association of a more national character, as being satisfactory. The order of St. John did excellent work in training citizens in first aid to the injured. It, however, labored under the disability that attached to all British Associations having branches in this country. It was impossible for the Canadian members to participate fully in the advantages offered to British members of the institution.

As to the Red Cross Society, Col. Jones pointed out that it confined its activity entirely to times of war, while what was needed in Canada was some institution which, in times of great civil disasters, would undertake the work of caring for the sick or suffering. He called particular attention to the inestimable benefits which could have been conferred by such an institution in the case of the recent landslide at La Salette, and also mentioned the service which it could be at the great fires which occur with such lamentable frequency in this country.

In closing, he grouped the activities of his proposed society under four heads: First, relief of the suffering in peace and war; second, instruction in first aid to the injured; third, the education of the public in hygiene and sanitary modes of life, and fourth, the training up of men to take their places in the Red Cross department in time of war. As to the organization of such a society he moved that its head and center be placed at Ottawa, the national capital, and that in all matters in which it was concerned with foreign nations it have authority to act through the Dominion Government with the colonial office at London. He urged that representatives of the department of Militia and of marine and fisheries be on the board of control and that the minister of militia be ex-officio chairman. He further recommended that the finances should be audited by the public financial officers.

Col. Jones' recommendation gave rise to an interesting discussion, in the course of which it was pointed out that any action for the formation of such a society as suggested would have the effect of causing a clash with the order of St. John and the Red Cross Association. Nearly all the officers, however, agreed with the speaker as to the advisability of some such step as he recommended, and it was decided to appoint a committee to further look into the matter and to make such recommendations as they may see fit to the proper authorities.

The committee, which will meet in Toronto next September, was appointed as follows: Lt.-Col. Jones, Capt. Fotheringham, and Major Shillington.

JUNE 11TH.

A general session was held on the afternoon of June 11th.

The meeting opened with the presentation of a report from the executive in regard to the place of the next annual meeting and the appointment of officers. It was announced that Winnipeg had been selected as a suitable place of meeting. The following members were recommended for the finance committee: Dr. Fotheringham, Toronto; Dr. F. N. G. Starr, Dr. G. E. Armstrong, Dr. Jas. Bell and Dr. R. W. Powell. It was further suggested that the committee be urged to provide as far as possible for the establishment of a journal under the Association. Dr. Blanchard was named as president, the vice-presidents to be presidents and secretaries of the Provincial Medical Societies, with Dr. F. A. L. Lockhart, of Montreal, as vice-president for Quebec; Dr. C. A. Peters, Montreal, local secretary; Dr. Geo. Elliott, general secretary; Dr. H. B. Small, treasurer. Another clause in the report advised the following appointments to the chairmanship of the standing committees: Chairman of the committee on medical legislation, Dr. A. T. Shillington, Ottawa; chairman of committee on medical education, Dr. R. A. Reeve, Toronto; chairman of committee on public health and hygiene, Dr. C. J. C. O. Hastings; chairman of the committee to amend the constitution and by-laws, Dr. H. B. Small, Ottawa; chairman of committee on reports of officers, Dr. Lockhart, Montreal; chairman of the committee on necrology, Dr. J. H. Elliott, Toronto. The recommendations were approved by the Association without amendment.

On motion of Dr. Bryce, of Toronto, it was decided to make the distinguished medical men who had visited the convention as the guests of the Association honorary members of the organization. Dr. Risien Russell, of London, England, the distinguished neurologist, who delivered a learned paper on The Value of Reflexes in Diagnosis; Dr. John C. Munro, of Boston, Mass., who spoke on The Surgical Rights of the Public; and Dr. John B. Deaver, of Philadelphia, who read a most interesting paper on Gall-Stone Disease, were all admitted on this motion.

In the general session, Dr. John B. Deaver, of Philadelphia, gave a very able and interesting address, and was accorded a hearty vote of thanks.

The principal business of the afternoon session of the Association was the reading of a number of papers on general acute peritonitis and a discussion on this disease. Five papers were delivered on the subject. Dr. C. W. Duval of Montreal made a report on his investigation into the bacteriology of the peritoneal cavity, with special regard to peritonitis, which was immensely appreciated by the medical men. Dr. J. T. Fotheringham of Toronto read a paper on the diagnosis and general medical treatment of the disease. In regard to the latter item, he stated that the malady really had no medical treatment; it was a surgical disease, and

as soon as a physician found a case developing, he should hand the patient over to a surgeon. The surgical treatment was dealt with in papers and lectures delivered by Dr. J. F. W. Ross of Toronto, Dr. Murray McLaren of St. John, N.B., Dr. L. C. Prevost of Ottawa and Dr. George E. Armstrong of Montreal. These papers all served to show that disease was one on the treatment of which the doctors differed widely. All were fairly well agreed as to the importance of a speedy operation although Dr. Ross pointed out that in many cases recovery took place without any surgical treatment. This, he stated, was particularly noticeable in the days when the nature of the disease was not so well understood as it now is, and doctors were more loth to call in the services of a surgeon. Surprising recoveries often took place in cases where hope had been given up.

The other medical men were, however, for the most part unanimous in urging the importance of operation. They were inclined to differ again on the exact nature of the operation, some holding that the intestines should be bathed, sponged and drainage tubes inserted after the section, while others, Dr. Ross among them, held that it might be advisable to close the abdomen completely after the section. Dr. Ross held that by washing the power of the phagocytes or disease destroying organisms was weakened and that consequently the bacilli of the disease had a better opportunity to multiply. He stated that if the abdomen were closed after the section, any liquid matter which might collect was soon shut off by nature. Other doctors agreed with him in this, one stating that he had proved it by laboratory experiments. There was also considerable difference of opinion as to the administration of opium after operation.

At the close of the discussion, Dr. Montizambert, the president, thanked the members of the Association for their free attendance at the meetings of the sections and of the Association as a whole. By their general behavior they had made the duties of his office light. In return the meeting passed a hearty vote of thanks to Dr. Montizambert for his services. He in replying stated that any credit that might be coming for the success of the convention of the Association was due wholly to the doctors of Ottawa. Votes of thanks were also passed to the corporation of the city of Ottawa, the C.P.R., the press and other institutions.

In the evening as a pleasant diversion from the labors consequent upon an annual meeting, the members of the Association took part in an enjoyable smoker held in the dining hall of the Russell House. A programme embracing several musical numbers and recitations was provided. Mr. Gordon Rogers delighted the medical men with a humorous version of their doings while in Ottawa. He traced them at every stage of their itinerary and brought out the humorous side of all their actions. Mr. A. Heney gave a recitation from the works of the late Dr. Drummond, the poet of the habitant, that brought forth the greatest applause. He

also gave a recitation. Songs were rendered by Mr. Cecil Bethune and Mr. Charles Parkinson. Mr. Charles R. Carter acted as accompanist. The entertainment closed with expressions of gratitude from the visiting doctors at the kindness shown them by the local committee. The smoker that marked the termination of the annual gathering constituted, they agreed, one of the most pleasant features of a visit that was crowded with congenial work and interesting and considerate entertainment.

ONTARIO MEDICAL ASSOCIATION, TWENTY-EIGHTH ANNUAL MEETING.

TUESDAY AFTERNOON, MAY 26.—GENERAL SESSION.

It was moved by the Secretary and seconded by Dr. Perfect, that the minutes of the meeting of 1907 be accepted as read.

Copies of transactions of various medical associations of 1907 were received and it was moved by the Secretary that in the usual custom these be turned over to the Academy of Medicine with the compliments of the Ontario Medical Association.

Letters from the British Columbia Medical Association, the West Middlesex Medical Association, and the Canadian Medical Association, with reference to the scheme of affiliation with the latter body of the various Provincial Associations, on motion of the Secretary were referred to the Committee on Revision, to be brought in with their report.

Dr. Ingersoll Olmsted then read his Presidential address.

Dr. R. A. Reeve moved a vote of thanks to the President. Representing a city usually the home of the Association and also representing the profession, not alone for the address, but also for showing what can be done by enthusiasm and the wise conduct of the Association in having one of the best programmes ever presented to the profession, he had much pleasure in this vote. He trusted that as so much work here had been done, the Hamilton men would voice more of the work done in this city at the Ontario Medical Association in the future.

Dr. W. A. Harrison, Selkirk, seconded the motion with great pleasure, amid enthusiastic applause.

Dr. Hamilton, being in the chair, extended the thanks of the Association to Dr. Olmsted.

The President here appointed Drs. B. L. Riordan, A. H. Perfect and the Secretary as scrutineers for ballot of Committee on Nominations.

A symposium of papers on arteriosclerosis was then given by Dr. Colin K. Russell, of Montreal, on the cerebral manifestations; Dr. Sanderson, of Detroit, on the ocular manifestations; Dr. J. J. Mackenzie, of Toronto, on the pathology; Dr. Thos. McCrae, of Baltimore, on the aortic arch manifestations; Dr. Bauer, of Hamilton, on the visceral mani-

festations, and Dr. McPhedran, of Toronto, on the treatment. The discussion of these papers was taken up by Dr. John Ferguson and Dr. W. J. Wilson, of Toronto.

Dr. Wm. Oldright here moved a vote of thanks to the gentlemen taking part in the symposium, seconded by Dr. W. A. Laing.

Dr. Perfect reported the Committee on Nominations consisted of Drs. Ingersoll Olmsted, Hamilton; H. J. Hamilton, Toronto; B. L. Riordan, Toronto; H. A. Bruce, Toronto; H. R. Casgrain, Windsor; C. J. Hastings, Toronto; H. B. Anderson, Toronto, and R. W. Bruce Smith, Toronto.

The Committee on Nominations presented the following report, which was adopted: President, Dr. H. J. Hamilton, Toronto; First Vice-president, Dr. R. R. Wallace, Hamilton; Second Vice-president, Dr. A. Dalton Smith, Mitchell; Third Vice-president, Dr. A. M. McFaul, Collingwood; Fourth Vice-president, Dr. George Field, Cobourg; General Secretary, Dr. E. Stanley Ryerson, Toronto; Assistant Secretary, Dr. J. F. Davey, Hamilton; Treasurer, Dr. J. Heurner Mullin, Hamilton. Place of meeting, Toronto.

The following gentlemen were added to the various committees. Credential—Dr. A. M. McFaul, Collingwood; Dr. R. D. Rudolf, Toronto; Public Health, Dr. Jas. Roberts, Hamilton; Dr. W. R. Hall, Chatham; Publication—Dr. Chas. Sheard, Toronto; Dr. Hadley Williams, London; By-laws—Dr. James Third, Kingston; Dr. F. G. Sutherland, St. Catharines; Ethics—Dr. John Sheahan, St. Catharines; Dr. A. B. Osborne, Hamilton; Dr. H. R. Casgrain, Windsor.

WEDNESDAY AFTERNOON, MAY 27.—GENERAL SESSION.

The address in Medicine was delivered by Dr. C. L. Scudder, of Boston. On motion a cordial vote of thanks was tendered him for his address.

Dr. Armstrong, of Montreal, gave a paper on gangrene and abscess of the lung, and Dr. V. P. Gibney, of New York, gave an address on the Bier-Knapp treatment of tuberculous joints. Votes of thanks were tendered these gentlemen.

The officers were then installed. The Committee on Credentials reported 63 new members.

Dr. R. W. Bruce Smith, in behalf of the committee appointed to report on the care of the degenerate, stated that progress was being made, but that the census of the number of these was not yet complete. He asked that the committee be continued, to report further on the subject. This was agreed to.

Dr. A. Dalton Smith reported that the following members had died during the year: P. J. Strathy, John W. Peaker, John McMaster, J. H. Fisher, all of Toronto.

The Committee on Ethics reported that there was only one case before it for consideration. On full explanations by the parties to the complaint, it was agreed that the matter be allowed to drop.

The Committee on the Revision of the Constitution reported as follows :

Mr. President and Gentlemen,—Your committee appointed to consider and report upon the matter of reorganization of the Ontario Medical Association in harmony with the accepted change in the Canadian Medical Association beg leave to report: The committee was appointed for the following purposes—(1) to express the views of the Ontario Medical Association before the Canadian Medical Association, September, 1907; (2) to examine closely into details of proposed constitution and by-laws of the Canadian Medical Association; (3) to revise the constitution and by-laws of the Ontario Medical Association to agree with the general scheme of the Canadian Medical Association as adopted by them.

Your committee from June to September, 1907, made careful study of the C.M.A. constitution and by-laws, met the committee of the C.M.A. in Montreal, and placed before them our scheme of revision which, with a few minor details, was accepted and presented by them to the C.M.A.

In general session the C.M.A., being desirous of furthering the scheme of reorganization, accepted the suggested revision which now appears as their constitution and by-laws.

Following that meeting with the committee of the C.M.A., your committee during the past year in accordance with the resolution of the O.M.A., now presents to you the revised by-laws of the O.M.A. as proposed by the committee.

We propose that the O.M.A. shall become a branch of the C.M.A., accepting its constitution as revised to meet the requirements of Provincial Associations. While there are many difficulties in the way of merging the various interests of the bodies, yet none of these appear insurmountable. The spirit shown by the committees of the different Provinces which met the C.M.A. in Montreal vouches for the feasibility and success of the scheme. The difficulty with the men of the Maritime Provinces was, the matter of a fee common to all Provinces, but this was readily set aside when shown that such a matter could be left to each of the branches to arrange with the Finance Committee of the C.M.A. to suit the varying needs.

We now present to you, after an arduous winter's work, during which the committee has met many times, the revised by-laws of the Association, which we hope will meet with your acceptance. Our endeavor was to change as little as possible the intent of the present by-laws.

We enclose with this report a letter from the Secretary of the C.M.A., asking for the appointment of delegates, providing the scheme

is adopted, also a letter from the British Columbia Assistant Secretary, stating that it was their intention to send delegates to the coming meeting of the C.M.A., also a letter from the President of the Western Middlesex Association, asking for recognition if such scheme be adopted.

Your committee request the appointment of delegates to the C.M.A. in order that we may have representation upon the Executive Council of the C.M.A.

On motion of Drs. McPhedran and Reeve, Drs. Gordon, R. D. Rudolf, F. N. G. Starr, and C. P. Lusk were appointed delegates to represent the Ontario Medical Association and the Canadian Medical Association.

Dr. C. P. Lusk reported that the Committee on Publication had arranged for the publication of the papers and proceedings. The following journals had agreed to give \$10 each towards the expense of a type-written copy of the discussions and general business :

Dr. F. Fenton, the Treasurer, submitted the following report of the finances of the Association :

Receipts.

Cash on hand, May 26th, 1907	\$41 13	
Annual fees, 244 members, 1907 meeting	488 00	
Annual fee, Dr. C. J. Kelly, 1908 meeting	2 00	
		\$531 13

Expenditure.

Stationery	\$18 50	
Printing	88 00	
Postage	143 94	
Janitors, messengers, etc.	19 00	
Cartage	1 50	
Honoraria,—Secretary	100 00	
Assistant Secretary	25 00	
Assistant Treasurer	7 50	
Stenographer	43 15	
		\$446 59
Cash on hand	84 54	
		\$531 13

The Secretary reported that various meetings of the committees had been held; that from the office of the assistant there had been sent out 11,200 communications during the year, of these 912 were personally written letters, while 5,100 programmes and 5,100 post cards advertising the meeting were also distributed.

Expenses for postage, stationery, telephone messages, railway fares to Hamilton, typewriting of notices to committees, etc.	\$28 16
To special typewriting of synopsis of papers, and of constitution and by-laws, etc.	10 55
	<hr/>
	\$38 71
By balance cash, from amount of \$108.00 received from Treasurer for distribution of programmes, post cards, etc.	5 00
	<hr/>
Balance due	\$33 71

The Secretary moved that the report be adopted and that the Treasurer be instructed to pay the expenses, now and hereafter, necessary for clerical assistance in typewriting, etc., on account of the increased work of the office.

During the business session of Wednesday, Dr. John Hunter, of Toronto, moved, seconded by Dr. J. T. Rogers, of Hamilton: Whereas the destruction of the foetus for any other cause than that of the preservation of the life of the mother, is a deliberate murder, and whereas the perpetration of this Act by a member of the medical profession not only incriminates the physician himself, but also brings disgrace upon an honorable calling, we, the members of the Ontario Medical Association take this opportunity of stating that this Association has always condemned in the strongest possible terms this criminal practice.

THURSDAY, MAY 28TH.—GENERAL SESSION.

A paper was read on obstruction of the large veins of the body and its clinical significance, by Dr. Charles G. Stockton, of Buffalo.

Mr. Cameron moved that the thanks of the Association be tendered Dr. Stockton for his valuable contribution to the subject.

A paper on x-ray diagnosis in medicine and surgery, with lantern slide demonstration, was given by Dr. Lewis G. Cole.

A letter from Dr. Rosebrugh was received and the Secretary instructed to extend the sympathy of the Association to the Ontario Society for the Reformation of Inebriates.

In the absence of Dr. A. H. Wright, the Secretary read his notice of motion, presented in 1907. The Association received and adopted the same on motion of Dr. Chas. P. Lusk, seconded by Dr. F. E. McLaughlin.

A resolution from the Section in Medicine on motion of Dr. Norman Walker, seconded by Dr. George Acheson, was presented to the Association as a notice of motion to be given at next year's meeting, to the effect that fees for life assurance policies of \$1,000 and up be not less than \$5, and that this resolution be passed on to General Sessions.

On motion of Dr. F. E. McLaughlin, seconded by Dr. W. Langrill, it was agreed that the honoraria to the General Secretary, the local

Assistant Secretary, and the Treasurer's assistants be paid out of the funds of the Association.

Moved by Dr. Wallace, seconded by Dr. McLaughlin, that a hearty vote of thanks be tendered to Dr. C. P. Lusk for his indefatigable efforts on behalf of the Association, and to whose efforts much of the success of this meeting is due.

Moved by Dr. Wallace, seconded by Dr. McLaughlin, that the thanks of the Association be extended to the retiring Treasurer for his faithful service over a period of five years.

Moved by Dr. J. F. W. Ross, that the thanks of this Association be extended to the Board of Education, and Principal R. A. Thompson, LL.D., the presidents and members of the Hamilton Club, the Golf Club, the Thistle Club, and to Messrs. Park & Park, for the many courtesies extended to members of the Association at this meeting.

The Committee on Audit reported that they had audited the accounts and found the Treasurer's report correct.

Dr. Olmsted was tendered a hearty vote of thanks, and the new President, Dr. H. J. Hamilton, introduced. The meeting then adjourned.

The entertainments furnished by the Committee of Arrangements in Hamilton were all that could be desired. On Tuesday evening, 26th, a smoking concert was given at the Yacht Club. There was a large attendance and an excellent programme was furnished.

On Wednesday, at noon, an excursion by electric cars to Grimsby took place. Lunch was served on the cars, and the view through the peach country was very pleasing. The annual dinner was given in the evening at the Royal Hotel. The members of the Association were the guests of the profession of Hamilton. Opportunities for games at golf and bowling had also been provided.

The attendance was 317, the largest in the history of the Association.

UNIVERSITY OF TORONTO MEDICAL GRADUATES.

W. H. Harvey has completed the examination for the degree of doctor of medicine.

The following students have completed the examinations of the fourth year in medicine:—D. Allison, C. E. Anderson, B.A., H. B. Andrews, R. G. Armour, B.A., H. K. Bates, G. W. Beaver, E. Boyd, B.A., Miss L. F. Boyington (*2nd yr. anat.), J. B. Brown, R. E. Buswell, L. L. Cairns (*2nd yr. chem.), D. F. Carswell, M. J. Casserly, D. W. Clark, W. G. G. Coulter, O. S. Craise, H. Crassweller, D. T. D'Arc, R. E. Davidson, R. O. Davidson, W. E. C. Day (*2nd yr. anat.), C. F. Dorsey, R. B. Durnin, Miss M. L. Edward, B.A., A. W. M. Ellis, B.A., C. W. Elmore, H. L. Emmett, W. R. Fader, H. W. Feldhans, A. D.

Ferguson, W. D. Ferguson, W. M. Fielding, J. M. Fowler, F. J. Fox, B.A., R. B. Francis, B.A., D. J. Galbraith, J. J. Garrity, W. B. Gibb, W. J. Glanfield, B.A., T. M. Green, L. A. B. Grier, R. J. Hamilton, H. E. Hamill, J. G. Harkness, F. C. Harrison, B.A., J. P. Harrison, W. A. Harvie, M. S. Hawke, C. D. Hewett, C. E. Hill, G. Hyland, A. B. James, D. G. Jamieson, T. J. Johnston, B. B. Horton, J. E. L. Keyes, A. L. Kinsey, P. J. Kirby, W. Krupp, A. E. Kyles, W. W. Lailey, B.A., J. H. Lawson, B.A., Miss R. B. Leacock, W. Mabee, A. H. Millar, S. G. Mills, B. A., W. S. Millyard (*2nd yr. anat.), H. L. Minthorn, J. A. Monkman, H. H. Moore, S. E. Moore, H. M. Lackner, A. M. Murray, L. G. McCabe, V. W. McCormack, W. G. McCulloch, J. A. McEwen, P. B. Macfarlane, B.A., W. D. McIlmoyle, C. R. McKay, C. R. MacKenzie, J. L. McPherson, Miss S. G. McVean, W. E. Ogden, R. H. Paterson, B.A., W. F. Plewes, O. A. Pogue, W. Pratt, A. J. Prentice, C. W. Prowd, A. G. Rice, B.A., R. S. Richardson, G. E. Richards, A. C. Ricker, B.A., W. A. Robertson, G. W. Rogers, W. H. Ross, J. A. Routledge, C. E. Rowland, B. A., W. R. Scott, W. G. Shepherd, E. E. Shepley, S. H. Siung, Miss E. O. Smith (2nd yr. anat., 3rd yr. top. anat., obstetrics), J. M. Smith, F. E. Spencer, N. B. Taylor (*1st yr. chem.), J. Thomson, W. E. Tindale, T. L. Towers, E. J. Trow, H. F. Tyerman, F. W. Wallace, C. B. Ward, T. R. Welwood, R. E. A. Weston, D. W. Whillans, E. C. Whilford, A. I. Willinsky, B.A., G. N. Williams, H. A. Williams, F. D. Wilson, Miss F. E. Windsor, J. H. Wood.

Degree, with honors—J. G. Harkness, W. A. Robertson, C. E. Rowland, R. J. Hamilton, W. G. McCulloch.

Medals—G. E. Richards, gold; W. A. Robertson, first silver; R. E. Buswell, second silver; J. G. Harkness, third silver.

Graduates in arts in natural sciences or in biological and physical sciences:—C. E. Anderson, E. Boyd, Miss M. L. Edward, A. W. M. Ellis, R. B. Francis, W. J. Glanfield, F. C. Harrison, J. H. Lawson, S. G. Mills, P. B. MacFarlane, R. H. Paterson, A. G. Rice, A. C. Ricker, A. I. Willinsky.

Medicine, clinical medicine, pathology and therapeutics—G. E. Richards, J. G. Harkness, W. A. Robertson, R. E. Buswell, A. I. Willinsky, T. J. Johnston, C. E. Rowland, Miss M. L. Edward, A. W. M. Ellis.

Surgery, clinical surgery, surgical anatomy and pathology—J. G. Harkness, W. A. Robertson, R. E. Buswell, G. E. Richards, A. I. Willinsky, G. W. Beaver, C. W. Elmore, F. C. Harrison, E. E. Shepley, C. E. Rowland, Miss M. L. Edward, W. Krupp.

Obstetrics, pediatrics, gynaecology and pathology—J. G. Harkness, R. E. Buswell, G. E. Richards, A. I. Willinsky, T. J. Johnston, W. A. Robertson, Miss M. L. Edward.