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Original Communications

ON THE COMMONER TYPES OF FUNCTIONAL CARDIAC MURMURS*

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The question as to the significance of cardiac murmurs is often one of the gravest which is brought before the physician—and the surgeon. Examiners for insurance companies, medical boards of the army and navy, school physicians, surgeons on the eve of an operation meet daily with individuals in whom there are detected cardiac murmurs of varying character, unassociated with evidences of functional disturbances. And if, in the course of the examination, the patient gains knowledge that he has a cardiac murmur, the question as to its nature and significance is often referred to one or more colleagues of the original examiner. The experienced clinician, meeting with many such cases, learns soon to pass almost unconsciously over the commoner and more obviously unimportant of these murmurs, making, perhaps, no comment on them even in his private records, and is genuinely surprised to find that his younger and less experienced colleague is unfamiliar with that which to him is too obvious to mention. He forgets that it is only long clinical experience that brings confidence in such matters, and that, under the imperfect methods of clinical instruction which have prevailed in the past, and unfortunately still prevail to a considerable extent in America to-day, a large proportion of physicians enter their profession with a very limited practical experience.

*Read before Academy of Medicine.

Upon the subject of "functional," "accidental," "anæmic," or "hæmic" murmurs, as they may chance to be called, there is a large literature, rich in observation, but especially rich in hypothesis. In many of the studies the hypothetical considerations have overshadowed the clinical description.

It cannot be denied that there are many cases in which the significance of a murmur can be determined only by time and observation. That, however, which seems to me to have been hardly enough emphasized is that there are certain clinical pictures of functional cardiac murmurs, which are really rather easily recognizable. To consider some of these commoner pictures is the main object of the present communication.

What is the significance of a cardiac murmur in general? By what mechanism are cardiac murmurs produced? Rather broad questions, one may say; and yet the questions may, I believe, be answered in a relatively simple manner. The overwhelming majority of cardiac murmurs are probably the result of fluid veins arising beyond a point of constriction, or just beyond a more or less fixed point through which the blood passes into a vessel of considerably larger size, or capable of greater distension. At such points it is obvious from the simple physical consideration that murmurs should arise the more readily the more rapid the current and the less viscous the fluid; and, moreover, that they should be transmitted in the course of the current.

Nothing is simpler than the illustration of these points to a class by means of rubber tubes attached to a water tap. The character of the murmurs which arise with stenoses or insufficiencies of the four cardiac orifices are familiar enough to all, and the explanation of their manner of origin and conduction is simple enough. The manner of origin and the conduction of all the ordinary cardiac murmurs, with the exception of stenoses of the auriculo-ventricular orifices, may be illustrated in the living dog's heart as clearly as with a rubber tube, and I know few demonstrations more illuminating than the production of an artificial mitral insufficiency, where one may hear, on auscultation, a soft systolic murmur at the apex of the left ventricle, while in the left auricle, immediately beyond the valves, there is a marked thrill and a murmur of the very highest degree of intensity.

If it be easy to see why, in disease, murmurs arise, it is difficult, indeed impossible, to explain why at certain points in the heart murmurs *are not always present* in the normal indi-

vidual. That, under ordinary circumstances, no murmur should be produced by the entrance of blood from auricle to ventricle is, perhaps, not remarkable when one reflects upon the large size of the orifice—so large, after all, that auricle and ventricle represent in diastole practically one cavity, and the relatively low pressure under which the blood passes from auricle to ventricle. But when one considers the normal emptying of the ventricle, the structure of the aortic and pulmonic rings, and that of the vessel beyond, the wonder is not that systolic murmurs at pulmonic and aortic orifices often occur, but, as has been well said before, I think by Dr. Broadbent, that they are not always present. A ventricle contracting with considerable force, throwing a large quantity of blood through the fibrous ring at the root of the aorta or pulmonary artery, a ring which is practically indistensible, into a vessel beyond capable of great dilatation—here we have elements which one might well fancy should produce always a relative stenosis sufficient to result in fluid veins beyond the point of relative constriction, i.e., the normal ring. That, with a dilatable aorta, an unusually large quantity of blood thrown out of the ventricle with greater force through a normal ring may produce murmurs, and loud murmurs, is clearly shown in aortic insufficiency, especially in young individuals. How often, in such cases, a mistaken diagnosis of aneurism is made is familiar to all clinicians. But as we all know, there is a variety of conditions in which, without disease of the valves or muscle of the heart, murmurs are audible. Certain of these functional murmurs are so constant in their character as to be immediately recognizable. There are, it seems to me, at least three such clinical pictures.

1. The basic, commonly called "pulmonary" systolic murmur.

The murmurs, which are usually rather soft in character, and generally associated with an element of the first sound, are best audible in the third left interspace, but are often heard with less intensity, and may disappear in the erect posture. These usually limited to the recumbent position, disappearing when the patient stands up, while even at the base they are of considerably less intensity, and may disappear in the erect posture. These murmurs are greatly intensified, often becoming loud and rough on forced expiration. On inspiration, however, they become feebler, and when the breath is held after a deep, full inspiration, the murmur usually vanishes. Such murmurs, absent at all other times, may be brought out in a considerable number of individuals by forced expiration. They are common in young

people, and are, as a rule, unassociated with any other form of cardiac-vascular abnormality. This phenomenon forms a fairly definite clinical picture, and may be readily recognized.

2. Systolic murmurs, limited to or heard with greatest intensity at the apex, but audible only in the recumbent posture.

Murmurs, such as these, are very common in healthy young men and women. They are commoner, perhaps, in nervous or thin, emotional people, but are often found in robust youths and girls. The murmurs may be very slight and feeble, or they may be fairly loud. They do not replace the first sound, which in itself is distinct, sometimes well defined, sometimes prolonged. The murmur may be transmitted for some little distance into the axilla, and is commonly accentuated in the left lateral posture; indeed, it is not infrequently heard only in this posture. On standing up, or sitting, the murmur entirely disappears. There is no further evidence of cardio-vascular defect. Such murmurs may be heard all over the cardiac area; sometimes they are loudest in the pulmonary area. In the erect posture, however, they clear up at the apex, leaving only the pulmonary systolic, which, as has been said, disappears on inspiration.

3. Cardio-respiratory murmurs.

As is well known, there has been much discussion as to the frequency of murmurs arising in the respiratory tract, but dependent upon cardiac action, and suggesting, on cursory examination, a true endocardial sound.

Potain* sought to explain all non-organic heart murmurs by the cardio-pulmonary hypothesis.

To the careful observer, the existence of cardio-pulmonary murmurs is not a question of doubt. They form, however, a definite class and are usually easily recognizable. They are commonly systolic in time, but rather late, occurring an instant after a clear-cut first sound. They are often short and of a character different on analysis from that of the ordinary soft intra-cardiac murmurs. The important point is that they are limited to one phase of the respiration, disappearing, as a rule, when the breath is held. The commonest form is that which is heard with the several beats occurring during inspiration. In these cases careful attention reveals clearly that the murmur is simply an intensification of the respiratory murmur, and sharply limited to the period of ventricular systoles. These murmurs are often more intense on effort with rapid, forceful, cardiac action, and on deep breathing.

What is of special importance is the fact that *they are often heard with great intensity in the back.*

*Clinique med. de la Charité, 8e, Paris, 1891, Masson.

Cardio-respiratory murmurs are by no means limited to inspiration. They may occur at other phases of the respiration as well, and sometimes may be noticeable when the breath is held. In many instances, no matter at what phase of the respiration it may be present, a cardio-respiratory murmur may be recognized by a distinct difference between its timbre and that of the usual endocardial murmur, its superficial, short, rustling character, especially its lack of direct association with one of the cardiac sounds which it *accompanies rather than modifies*. This may be appreciated by making a young individual take vigorous exercise, and listening when his heart is beating rapidly and forcibly and the respiration is accelerated. Here, a short post-systolic whiff is not uncommonly heard, usually during the middle of inspiration—a sound which, on careful study, is obviously of pulmonary origin. Familiarity with the commoner post-systolic cardio-respiratory murmurs may not infrequently bring comfort and assurance to the examiner who meets with similar sounds at other phases of the respiration.

One fact which again should especially be emphasized is that cardio-respiratory murmurs are not infrequently audible in the back, and may here give rise to serious misapprehension by the unskilled observer.

Now, in addition to these three more definite types, there are observed in healthy individuals many cardiac murmurs which experience and time may and do justify the clinician in regarding on the first or on later examinations as of functional character. The judgment as to the significance of many of these sounds must be formed in the individual case. Such decisions are often of the most delicate and important duties which fall to the physician.

In a general way, murmurs which are limited to a single phase of the respiration may be regarded as of no pathological significance. Soft systolic murmurs which occur at the apex as a slight whiff, after a first sound which seems clean-cut and of a normal character, in hearts which are of normal size and without undue accentuation of the pulmonic second sound, may, as a rule, be regarded as functional, even if they do persist in the erect posture and on full inspiration. These cases, however, do not form a definite recognizable clinical picture, as in the three groups above mentioned.

Again, there are instances in which systolic functional murmurs at the apex are present in the erect posture alone and absent in the recumbent posture.

This condition on which Potain insists is, in my experience, rare. In general, however, it may be said with considerable assurance that heart murmurs, limited to a single phase of the respiration, or heard in one position of the body alone, are in the great majority of cases, quite devoid of pathological significance.

There are, however, other murmurs unassociated with essential and incurable cardiac lesions, which are commonly considered in the same class as those already mentioned. This does not seem to the writer fitting. He prefers to consider them apart, as they are after all associated with definite though perhaps not serious disease. Among these are:

1. *Those murmurs associated with anæmias of all sorts.*

These are, on the one hand: (a) Soft systolic murmurs heard at the base, more commonly at the pulmonic than at the aortic orifice, but frequently at both. In these individuals the pulse is often large and soft, and the throbbing of the arteries is generally noticeable.

(b) Systolic murmurs at the mitral and tricuspid orifices. These murmurs are also soft and blowing, sometimes, however, largely replacing the first sound. They are not infrequently transmitted to the axilla or even to the back, and the second pulmonic may be somewhat accentuated, while commonly the heart is slightly large.

2. *Systolic apical murmurs occurring especially in the course of an acute infectious disease* (acute rheumatism and typhoid fever, especially), where, however, there may be relatively little anæmia. In these patients the first sound is usually dulled, and may be wholly replaced by the murmur. Here, again, there is generally a slight cardiac enlargement; the murmur may be transmitted to the axilla and the second pulmonic may be slightly accentuated. I have considered these two conditions in a separate class, because, although there may be no valvular disease, yet the slight enlargement of the heart, the enfeeblement of the first sound, the accentuation of the second pulmonic, the behavior of the heart on exertion, justify one in assuming the existence of a true weakness of the heart muscle with dilatation of the orifices and secondary mitral and perhaps tricuspid insufficiency. The general condition of cardiac weakness and secondary mitral and tricuspid insufficiency form a picture perfectly distinct from that presented by normal individuals with cardiac murmurs of the three first-mentioned types with which we are concerned.

Systolic murmurs are not uncommon at the apex in exophthalmic goitre. But here, again, there is generally a distinct cardiac enlargement, and there is much evidence to lead one to believe that these murmurs are the result of true insufficiency of the mitral ring, dependent upon dilatation.

TRANSIENT AORTIC AND PULMONARY INSUFFICIENCY.

Before discussing the *raison d'ètre* of these various functional murmurs, it may be well to say a word as to the occurrence of murmurs indicating aortic and pulmonary insufficiency in the absence of disease of the valves. Aortic insufficiency of muscular origin is only to be recognized by prolonged observation of the case. The writer has, however, met with a number of cases sufficient to convince him of its actual occurrence.

In two instances after typhoid fever, he has seen the development and disappearance, with complete convalescence, of a characteristic murmur of aortic insufficiency, associated with slight cardiac enlargement, and a noticeably collapsing quality of the pulse.

He has also met with a similar condition in two cases of exophthalmic goitre. Both of these cases are sufficiently remarkable to deserve a brief note.

The first case was that of a trained nurse, who, showing marked symptoms of exophthalmic goitre, consulted with me with regard to operation. As there was evidently double mitral valvular disease, together with an aortic insufficiency, operation was not advised. The wise patient, however, took matters in her own hands, and repaired to Dr. Olmstead, of Hamilton, who performed a thyroid dectomy, which resulted in complete recovery. On examination of the patient some six months later, I was surprised to find that all traces of aortic insufficiency had disappeared. This nurse has since then been doing active work for ten years. Last year I had the privilege of examining her again, and found evidence of old, double mitral disease in perfect compensation, but no signs of an aortic insufficiency.

The second case was that of Mrs. S., aged 38, who first entered the hospital in March, 1901, with distinct symptoms of exophthalmic goitre. No cardiac abnormality was noted. She returned in June, 1905. At this time there was some irregularity of the heart and a slight systolic murmur all over the area. The cardiac apex was 10 cm. from the median line. The urine showed a trace of albumen and a few hyaline and finely granular casts.

Two years later, in November, 1907, I saw the patient again. Dyspnea and œdema of the feet had come on nearly a year before, and had been gradually increasing. She was anæmic;

the pulse was collapsing and rather irregular, about 100. The heart was large, the apex impulse 12 cm. from the median line. There was a systolic murmur heard all over the cardiac area, loudest at the base and transmitted upwards into the cartoids. A slight diastolic murmur was distinctly heard along the left sternal margin. The second pulmonic sound was accentuated.

The patient entered the hospital, where she remained for nearly three months. Rest was followed by but little improvement. The heart increased in size, the apex impulse being recorded as 14½ cm. from the median line. The urine showed a trace of albumen and a few hyaline and granular casts.

In December and January a large part of the thyroid was removed in two operations. This was followed by some improvement, but the œdema never wholly disappeared. At the end of February she left for home improved, but in a condition far from satisfactory. At the time of departure the apex impulse was 14½ cm. from the mid-sternal line. The systolic murmur was still heard all over the area, but the diastolic murmur was no longer audible.

About nine months later I saw the patient again in Atlanta. She had improved in many ways, was able to walk about and was free from œdema. The heart was somewhat irregular, about 100. There were no cardiac murmurs, but there was a slight proto-diastolic gallop at the apex. In October, 1909, a year later, she walked into my consulting-room, apparently well. Her pulse was still a little rapid, about 100, and somewhat irregular. The apex was two or three cm. nearer the median line (11.5-12). There was a soft basic systolic murmur barely audible, but no murmur at the apex, and no trace of a diastolic murmur at the base or along the sternal border.

A most interesting case of similar character, following tonsilitis and polyarthritis, I met with last year. J. L., a colleague and friend, consulted me on Sept. 3, 1909. He had been in bed for two weeks with polyarthritis, following tonsilitis. He looked pale and worn-out. I had examined his heart about a year before and found no abnormalities. On this occasion the pulse was slightly abrupt, and the heart a little large. The apex impulse was in the fifth space, 9 cm. from the median line, while the dulness extended 4.2 cm. to the right. There was a slight diastolic murmur in the aortic area and along the left sternal border, although the second aortic sound was fairly sharp. An endocarditis was feared. A month later, however, the heart was somewhat smaller, the pulse no longer collapsing, and the aortic murmur was wholly gone. Six months after this he was in good

general condition. The apex was 8 cm. from the median line; a soft systolic murmur was heard all over the cardiac area in the recumbent position, disappearing at the apex in erect posture and at the base on deep inspiration. The diastolic murmur had remained absent.

The observations of Hugh A. Stewart* have proven the importance of the part played by the ring of muscle below the aortic valve in the closure of the orifice. And just as Stewart has been able to produce an aortic insufficiency by mechanical injury to this ring of muscle without lesion of the valves, so in some cases it is but natural that a weak and diseased heart muscle should result in aortic as well as mitral insufficiency.

Pulmonary insufficiency, independent of valvular disease, is also a condition commoner than has been generally recognized. It is met with, as Graham Steel has pointed out, in connection with cases of dilatation of the right ventricle, usually following old mitral disease, and is associated with a soft diastolic murmur heard along the left sternal margin, in much the same area as that occupied by the murmur of aortic insufficiency. The murmur has also a similar character. One may suspect the nature of such a murmur by the absence of other signs of aortic disease (character of the pulse and of the second aortic sound at the base and in the carotids), the presence of marked dilatation of the right ventricle, and sometimes by the disappearance of the sound with improvement in the patient's condition. That such murmurs may be associated with dilatation of the pulmonic orifice, in absence of aortic changes, has been proven frequently by necropsia. Two cases of this character have already been demonstrated at our clinical and pathological conference during this term. It goes, however, without saying that these murmurs are indicative of pathological changes in the heart muscle—changes from which there may be improvement, and perhaps, indeed, actual recovery, as in some cases of exophthalmic goitre or after acute infections. They do not, however, represent purely functional murmurs in normal individuals.

Let us then return to the commoner forms of truly functional murmurs in normal individuals, viz.:

1. The basic "pulmonary" systolic murmurs.
2. The apical systolic murmurs disappearing in the erect posture.
3. The cardio-respiratory murmurs.

From careful observation we know that these murmurs have

*As yet unpublished.

practically no pathological significance. Can we explain their appearance?

As to the first form—the basic systolic murmurs over the conus or pulmonary artery—there are various possibilities. As has been said, the structure of the pulmonary artery and orifice, as well as that of the aorta—a practically indistensible fibrous ring, with a highly distensible vessel beyond—is such that it is remarkable that systolic murmurs are not always present.

McCallum and I* have observed that in dogs it is extremely easy to produce a systolic murmur just beyond a pulmonic ring, following hæmorrhage. Here the excursions of the pulmonary artery were generally very large; in other words, the vessel was relaxed or the volume of blood thrown into the vessel with each systole was large. This was also true in cases where, after hæmorrhage, salt solution had been infused. Under these circumstances, also, the ventricular action appeared to be rather abrupt. Now, in anæmia, in general there is a rather low blood pressure. Furthermore, the changes in the blood itself might be expected to favor the appearance of murmurs (diminished specific gravity and viscosity). Especially important, however, the rate of blood flow per minute is greatly increased; more than this, the volume of blood thrown into the vessels with each ventricular contraction is larger than under normal circumstances. The conditions, then, which are present in anæmia—increased quantity of blood thrown with each systole through the aortic and pulmonary rings, which, as has been said, are more or less indistinguishable, the changes in the blood itself, and the relaxed condition of the vessels—are exactly those which one might postulate for the production of basic systolic murmurs.

The explanation, then, of systolic murmurs at aortic and pulmonic areas in anæmia is simple enough.

It is a question, however, whether any of these conditions play a part in the production of the basic murmurs so common in healthy young individuals. It is significant that these murmurs are heard on the left side of the sternum, and in the third space, rather below the pulmonary orifice. It is also remarkable that they are increased or induced by expiration, and diminished or obliterated by inspiration. These facts suggest another explanation.

Now McCallum and the writer observed that in dogs with

*Experimental studies on cardiac murmurs. Am. J. M. Sc., Phila. & N. Y., 1907, cxxxiii., 249.

†(Bestimmung des Herzschlag volumens. Deutsche med. Wchuschr.; 1909, xxxv., 239 Also Sauerstoff versorgung und Zirculation in ihren kompensatorischen Wacı selbeziehungen. Verhaude. d xxvi. Kong. f. inre. Med., Wiesb., 1909, 209.

an exposed heart it is extremely easy to produce a murmur by very light pressure on the conus anteriosus with the bell of the stethoscope. Such pressure resulted in a thrill and murmur beyond this point. May it not be, then, that the pressure exerted by the chest wall against the pulsating conus anteriosus may often be sufficient to result in such a murmur? With inspiration the interposition of a cushion of air-containing lung equalizes the pressure, removes the cause, and the murmur ceases. With age and increased volume of the lungs, the murmur is less frequent. This hypothesis, while unproven, has seemed to me that which is most applicable to the condition. Janeway,‡ in a discussion of our paper, calls attention to the frequency of expiratory systolic murmurs at the base of the heart, and suggests that they are due to pressure.

The cause of the *cardio-respiratory, inspiratory systolic murmurs* is obvious enough. The reinforcement of the inspiratory murmur with each systole is due to the accentuation of inspiration during the ventricular contractions, and the sound dependent on this ought to be more marked, the more forcible and abrupt the contraction and the larger the quantity of blood expelled. As has been said, exercise may and often does exaggerate this phenomenon markedly.

As to the cause of the *systolic apical murmurs* heard in the recumbent and left lateral posture, the writer can only express an opinion quite in agreement with that of Henschen,* but unsupported by experimental evidence. I have always regarded these murmurs as indicative of a true mitral insufficiency because of the location in which they are heard, because of their occasional transmission outward, and because of the general similarity of the sound to that heard in true mitral insufficiency. Such a mitral insufficiency, dependent on position alone, if it be a mitral insufficiency, is, however, a perfectly normal phenomenon.

Whatever the cause of these phenomena, it seems to me that these three forms of murmurs:

(a) The basic systolic murmurs increased on expiration;

(b) The apex systolic murmurs limited to the recumbent posture;

(c) The cardio-respiratory, inspiratory systolic murmurs;

form three clinical pictures which are fairly distinct, and apparently of no pathological significance.

‡Tr. Ass. Am. Phys., Phila., 1906, xxi., 61.

*Uber systolische functionelle Herzgeräusche. C. M. xvi. Cong. internat. de méd. Budapest, 1909, vi., med. interne, fasc. I., 221.

Frequency.—How frequent are these murmurs in normal individuals? Basic systolic murmurs are, as is known, extremely common. It would be interesting to know how often it might be possible to produce these murmurs by forced expiration in a given number of individuals. The writer, however, has no figures to offer based on any large number of observations.

Cardio-Respiratory Murmurs.—Cardio-respiratory murmurs, of the kind of which we have spoken, are not rare, but by no means as frequent as the last-mentioned class.

A point of particular interest and importance is the frequency with which systolic apical murmurs of undoubtedly functional character are audible in practically normal individuals.

Last year the writer had occasion to examine a large number of healthy young people in connection with studies on the third heart sound. In all these individuals, special note was made as to the presence of systolic murmurs disappearing in the erect posture. Of 218 cases in the first four decades of life, 73, or about one-third, showed systolic murmurs at the apex in the recumbent posture, murmurs which disappeared in the erect attitude. As a rule, these murmurs were heard all over the cardiac area, but loudest at the base in the pulmonary area.

The following table illustrates their frequency by decades:

TABLE SHOWING THE FREQUENCY OF APICAL SYSTOLIC MURMURS IN HEALTHY INDIVIDUALS.

Decades	1	2	3	4
Cases	39*	98	55	26
Murmurs present	22	35	12	5

It will be seen that in the first decade, 56 per cent. of these individuals showed systolic apical murmurs in the recumbent position; 35 per cent. in the second decade; 21 per cent. in the third; 19 per cent. in the fourth. These murmurs were, of course, usually associated with the common basic systolic murmur, of the presence of which no special note was made.

Especially interesting are the statistics of the examination of thirty robust boys, who were studied at one of the best-conducted of schools situated in the country just outside of Baltimore. These boys were all in the second decade and in apparently excellent physical condition. In none of them was there elicited the slightest evidence of cardiac involvement from subjective systems, from the size and action of the heart under ordinary tests, from the blood pressure or from other auscultatory signs.

*There were no cases under three years of age.

Eighteen of these thirty boys, however, showed cardiac murmurs of one sort or another. In thirteen a soft systolic murmur was heard all over the cardiac area when in the recumbent or left lateral posture.

Three showed basic systolic murmurs, disappearing on full inspiration.

One showed a basic systolic murmur present in the recumbent posture alone.

One showed a basic systolic with no evident change on respiration. This, from its character and position and from the absence of any other suggestion of cardiac involvement, was regarded as certainly functional.

To many, perhaps, the considerations which I have brought forward this evening may seem *altbekanntes,* and yet the number of men who are refused by insurance and mutual benefit organizations, whose career is cut short in army and navy because of a lack of appreciation by over-conscientious examiners of just these points, is really large.

In one year, the writer had had occasion to examine fourteen young men between the ages of eighteen and twenty-four, the condition of whose hearts had been questioned by the careful examiners of applicants for a certain well-conducted organization. In one of these subjects there were marked extra-systolic irregularities. One was a nervous young man with a rather rapid heart. All the others, twelve in number, showed various forms of the three types of functional murmurs of which we have spoken, without other serious evidence of cardiac defect.

Such experiences emphasize the fact that it is important to realize that cardiac murmurs are, in many instances, normal phenomena, that under some circumstances and conditions they are to be expected in normal individuals, and that certain of these truly functional murmurs are not difficult to recognize and to account for.

It is also important to distinguish these true functional murmurs from those other murmurs to which the same term is often applied, murmurs which depend on valvular insufficiencies due to pathological weakness of the heart muscle.

Lastly, it is well to remember that 'tis only when murmurs occur in certain localities or in more or less definite relation to the heart sounds, or when they are associated with evident anatomical or functional derangement, that they are necessarily of pathological significance.

In conclusion, then, the writer would urge:

(1) That a cardiac murmur is but one, and sometimes an unimportant one, of the links in the chain of evidence leading to the recognition of disease of the heart.

(2) That certain cardiac murmurs are present normally in a large proportion of healthy young people.

(3) That the commoner forms of these murmurs are:

(*a*) The basic systolic murmurs heard best in the 3rd left interspace and often all over the area in the recumbent posture, and disappearing on full inspiration.

(*b*) The systolic murmurs, sometimes limited to the apex, sometimes heard all over the cardiac area in the recumbent posture—disappearing in the erect posture.

(*c*) The cardio-respiratory-inspiratory murmurs.

(4) That the truly functional murmurs—those heard in healthy individuals—should be carefully distinguished from those other murmurs which may arise at various orifices without actual valvular disease, but, nevertheless, as a result of pathological changes in the heart muscles or in the blood: *i.e.*, the anæmic murmurs—the murmurs, systolic and diastolic, dependent upon weakness of the heart muscle.

(5) That a familiarity with the cardiac murmurs common in the normal individual is at least as important as an acquaintance with those murmurs which are associated with cardiac disease.

THE VAGARIES OF FIBRO-MYOMATOUS TUMORS.*

BY DR. MARQUIS, BRANTFORD.

I regret that, owing to the shortness of the notice, it was impossible to prepare such an address as befits the occasion, and I offer my apologies for the imperfect presentation of the subject. I decided to look back into the years that have gone, and endeavor to pick out some points that may prove of value in a consideration of the effects of fibro-myomatous tumors upon the life history of women.

It was my privilege, in 1878, to hold the position of house-surgeon at the Toronto General Hospital; that is now 32 years ago. It is interesting to watch the evolution of practice that has taken place in that time, and there is no department in surgery in which the changes have been more varied or the practice has been more improved than in the surgical treatment of fibro-myomatous tumors.

During a pilgrimage to the Mecca of abdominal surgery—Birmingham—about the year 1889, I had the privilege of assisting that great pioneer, Mr. Lawson Tait, with many of his operations during a period of some months. While ovariotomy for the removal of ovarian tumors had been perfected so that the mortality was greatly reduced, the operation of hysterectomy for the removal of myomatous tumors was still in its infancy, and was an operation accompanied by a very great mortality; the mortality was so great that one Edinburgh surgeon looked about him for some other remedy than the knife, and he began the use of the electric current, as advocated by Apostoli, of Paris. After much investigation and careful trial, this treatment was not satisfactory, and proved to be at times dangerous, owing to the degenerative changes that it was liable to set up in the tumors. Many of us looked about for some improvement of surgical technique, and eventually the operation at present adopted was evolved, and is now performed with as low a mortality, in skilled hands, as the operation of ovariotomy. It is my opinion that such operations should only be undertaken by men of special training, in well-equipped operating-rooms, under the most advantageous circumstances. About the year 1890 the operation was performed with the assistance of the Koeberle serre-noeud. Tait used, as a primary precaution against hæmorrhage, a rope clamp, of which the rope was made to encircle the tissues about the cervix, after the peritoneum,

*Read at Brant County Medical Association.

together with the bladder, had been stripped down off the tumor surface; the Koeberle serre-noeud was placed so as to constrict the cervical structures, taking care to avoid the ureters, and after a severance of the ovarian and uterine arteries. The serre-noeud produced constriction of the stump and gangrene of its distal portion, notwithstanding the tanning effect produced by the application of perchloride of iron dissolved in glycerine. The patient did well until about the sixteenth or seventeenth day, when a leakage took place from this foul mass into the general cavity of the peritoneum, and a general septic peritonitis resulted, followed very shortly by the death of the patient. Even after recovery from such an operation, an immense funnel-shaped granulated opening was left, through which a subsequent protrusion of the intestine took place. This was certainly anything but ideal surgery. We then became bolder and found that a direct dissection down on to the vessels enabled us to control the hæmorrhage, and that the use of catgut sutures to the stump controlled any little oozing that might be caused owing to a lack of ligation of the azygos vaginæ artery. The operation was then still further improved by a readjustment of the cut peritoneum over the surface of the stump, so that the stump became, with the ligatures applied, practically extra-peritoneal. At first it was considered desirable to place a drainage tube in the cul-de-sac of Douglas, but in later years even this was found to be unnecessary. In my hands and those of my assistants, these operations have now become entirely satisfactory, and the mortality is almost nil. It is essential, of course, that the operator should see to it that all hæmorrhage is properly controlled before the abdominal cavity is finally closed. There is another point in favor of operation, namely, the fact that the tumors are not now allowed to grow to the gigantic proportions of those tumors formerly met with, and, furthermore, we do not have such extensive adhesions to deal with. As a consequence of the great success of the modern operations, I fear the pendulum has swung rather too far to the other extreme, and that now young women are practically unsexed, and are denied the opportunities of motherhood owing to the rather ruthless use of the knife on fibroid tumors as soon as they make their appearance. As fibroid tumors have vagarious ways, it is desirable that we should be fully aware of these peculiar changes, in order that we may deal with these cases more intelligently. Let us take up the question systematically.

Position.—Fibroid tumors have been named according to their position. The classification adopted has been sub-peritoneal,

intramural, and submucous. We have also myomatous tumors, growing from the myomatous structures about the cul-de-sac of Douglas, in the broad ligament and in front towards the bladder. We have also fibroid tumors, growing in either the anterior or posterior lip of the cervix.

(a) *Sub-peritoneal Tumors.*—Sub-peritoneal tumors seem to have certain characteristics not met with as frequently as in the others; they have a tendency to become pedunculated, and may often be found roughened on the surface owing to calcareous degeneration, and, as a consequence of this, they may produce intraperitoneal dropsy that simulates the dropsy found accompanying malignant disease in the peritoneal cavity; they may become fixed to other organs, and may eventually derive their blood supply through the adhesions in the new situation; they may become twisted and gangrenous, or gangrenous owing to thrombosis of the vessels.

(b) *Intramural Tumors.*—Intramural tumors frequently give rise to menstrual pains and increased menstrual flow before they can be made out by the examining finger. When the uterus of a young unmarried woman is found somewhat enlarged, and when this enlargement is accompanied by menstrual pain and increased flow, we must suspect the presence of an intramural fibroid. The ultimate destiny of the intramural variety is generally subperitoneal or submucous, as the constant contraction during menstruation, producing the pain already spoken of, tends to force the little nodule outwards or inwards.

(c) *Submucous Tumors.*—The submucous variety may be very small, or may be large enough to simulate pregnancy at the fourth or fifth months, or even later. I have on two occasions been forced to dilate the cervix and introduce my finger into the uterus to satisfy my mind that the case was one of large submucous fibroid, filling the uterine cavity, before proceeding to amputate the uterus supravaginally through the abdomen. I have seen similar cases in the practice of others, and on two occasions they simulated a pregnancy at full time. In each of these the abdomen was closed, as the operators felt they had made a mistake, and that the cases were cases of pregnancy; and in each case, a few days later, the uterus was removed by a second operation, thus readily demonstrating how such submucous œdematous growths can simulate pregnancy. Many of the submucous growths cause alarming hæmorrhages and continued ill-health; eventually they may become polypoid, and may be extruded from the uterine cavity into the vagina, or forced

outside the labia. I removed, at intervals covering several years, three such polypi from one patient.

(d) *Other Varieties.*—Those growing in the neighborhood of the cul-de-sac of Douglas, either in front or behind the rectum, become a very serious bar to delivery, and I have performed Cæsarian section on three occasions owing to the presence of this condition. Growths growing in the cervix, either in front or behind, may also become a serious menace to delivery; I have, however, seen such large growths gradually compressed and pushed above the pelvic brim, and the patient delivered without mishap, when we were quite prepared to perform Cæsarian section. Tumors growing in the anterior lip of the cervix produce serious bladder disturbances, retention of urine being one of the most common of these. The removal of growths situated either in front or behind the cervix, or in the cervix itself, is necessarily fraught with much danger; in front, damage to the ureters; behind, damage to the pelvic vessels. On one occasion I was forced to remove a tumor growing in the anterior cervical lip and causing retention of urine, and after the removal there was an opening in the vagina large enough to admit a fist. The patient was prepared for death upon the table, but fortunately rallied from the shock and made a good recovery, contrary to the expectations of all those connected with the case.

CHANGES IN THE TUMOR.

Congestion.
Œdema.
Cystic degeneration.
Necrosis, with or without suppuration.
Calcareous change.
Malignant disease.
(*a*) Myxomatous degeneration.
(*b*) Sarcomatous degeneration.

Congestion.—No matter where situated in the pelvis, fibroid tumors are affected by the presence of an intra or an extra uterine pregnancy and by menstruation. In either of these conditions, the capsule of the tumor carrying the blood supply becomes much congested, and, as a consequence, for the time being, the tumors increase in size. Owing to the fact that pregnancy is continued over a period of nine months, the congestion remains continuous, and the growth of the tumors is much greater; the menstrual congestion coming on but for a short time, and ceasing, does not add so rapidly to the size. In cases of pregnancy, I have often considered that it is a race between

the fœtus and the growth as to which can grow the faster. It is well to remember that ovarian tumors frequently cause a temporary cessation of menstruation, and that when such a temporary cessation of menstruation occurs in the presence of a fibroid tumor before the menopause, it is always due to pregnancy. This is an important point, as under such circumstances the uterine sound should not be used. It is oftentimes the unexpected that happens, and a woman with a fibroid tumor may go for years without becoming pregnant, and may then suddenly miss a menstrual period. When examination is made, the tumor will be found softened and considerably enlarged.

Oedema.—The œdema of fibro-myomatous tumors is an extraordinary condition, not seen anywhere else in the body; fluid is poured out in the meshes of the myomatous tissue, and a separation of the long involuntary muscle fibres takes place; the tumor looks as if waterlogged, and on the surface has a sense of false fluctuation; this sense of fluctuation so closely simulates genuine fluctuation that the presence of disseminated and not encysted fluid can oftentimes only be made out by an incision into the tumor. The cause of this œdema, outside of that form that accompanies myxomatous degeneration is not very well understood unless it is due to an obstruction of the blood supply or a damming back of the venous circulation. I have seen one such tumor 60 pounds in weight. I saw another enormous tumor removed from a woman in England, where it seemed as if the woman was peeled away from the tumor, and I have myself removed a tumor of upwards of 40 pounds in weight. We do not see these œdematous tumors as frequently now as we did a few years ago, owing to the fact, as already stated, that hysterectomy and ablation of the growth is not fraught with such a high mortality, the mortality having now been reduced, in skilled hands, to equal that of ovariotomy. It is extremely difficult to say when the œdematous tumors are myxomatous and malignant and when they are simply myxomatous and innocent. I always feel suspicious of the malignancy of an œdematous fibro-myoma. In the cases in which I have seen the disease return in the form of pseudo-myxoma in the peritoneum, there is nothing to indicate that the tumor was malignant at the time of its removal. A microscopical examination should be made of all œdematous fibro-myomata removed.

Enormous œdematous fibro-myomatous tumors may entirely disappear, or almost entirely, subsequent to the onset of the menopause. I have a distinct recollection of two patients who

had such œdematous tumors; one of them declined to submit to surgical measures until after the marriage of her daughter. She was confined to the house for about two years with terribly swollen limbs and enormously distended abdomen. She subsequently recovered perfect health, and it is not long since I met her, a very active woman for her age. The other woman was an invalid for several years, and the tumor, in her case, similarly disappeared, and she was restored to health. Of course it is a terrible penalty to pay, and we do not always have such a favorable termination; but these patients were seen before the days when supravaginal amputation of the uterus had such a small mortality as at the present time, and surgeon and patient alike dreaded operative interference.

Cystic Degeneration.—The cystic degeneration of these tumors is not a true cystic degeneration originating in glandular structure. Small hæmorrhages take place here and there into the substance of the tumor, and these hæmorrhages are followed by the formation of cysts. There seems to be a difference between ordinary cystic degeneration of fibro-myomatous tumors and the true fibro-cystic tumors of the uterus. Cystic tumors of the uterus are very rarely met with, whereas cystic degeneration of fibroid tumors is not infrequent; in either case, these growths require to be removed, as they have a tendency to increase in size or to undergo necrotic change. I have seen but two cases of marked fibro-cystic tumors of the uterus, and we have not a single specimen in our Pathological Museum. I removed one such tumor from a negress in one of the hospitals in Pittsburg some years ago, and the other tumor I saw removed by Mr. Lawson Tait.

Necrosis, With or Without Suppuration.—This is a very serious condition, and imperils life. The first case of necrosis of a fibroid tumor I met with was one into which a hand and arm had to be introduced through the vagina and up into the tumor to dislodge the broken-down tissue. The patient made a very slow, but excellent, recovery. Necrosis occurs as a consequence of thrombosis of the blood vessels. This thrombosis seems to be produced by excessive congestion and increased coagulation of the blood, such as occurs in pregnancy; by pressure produced by uterine contractions subsequent to the administration of ergot; by constriction of the pedicle of a myomatous polypus; and by a disturbance of the parts such as is unavoidable in the performance of an abdominal operation. I have seen numbers of cases of gangrene and necrosis of fibro-myomatous tumors

before and after delivery. When it occurs before the delivery of the patient the condition is particularly dangerous. These patients are liable to become pyæmic and to lose their lives. If delivery has taken place, there is then a chance that the contents of the sloughing tumor may be extruded, and that the sloughing tumor may be reached by the surgeon. The treatment under such conditions should consist in as thorough a cleansing of the parts as possible, and a removal of as much of the necrotic tissue as possible. The antiseptic that is perhaps most serviceable is bichloride of mercury. This should be used as a douche into the uterine cavity once or twice a day, and perhaps it may be considered advisable to pack the uterine cavity with iodoform gauze. A hysterectomy under such circumstances is not to be thought of. To open up by incision a large area necessary in performing this operation, in the presence of a fœtid and extremely poisonous gangrene, is very unwise. When, during pregnancy, a tumor becomes necrotic, an abdominal hysterectomy will give the best results and is then indicated. Operation must not be long delayed if we hope to save the patient. Necrosis in such cases is generally indicated by a sudden tenderness over the tumor, accompanied by high elevation of temperature, and in all probability with chills, together with increased pulse rate and sudden rapid increase in the size of the growth. The necrosis of fibro-myomatous tumors is liable to occur after the removal of ovaries and tubes, or, in other words, after the operation of oophorectomy for fibroid; sometimes the tumor becomes inflamed under such circumstances, but does not become completely necrosed. After the removal of a fibroid tumor I have been surprised on a number of occasions to find evidence of old necrotic changes. When polypi are extruded from the cervix or from the vagina, they are liable to become gangrenous. In the early stages of such gangrene, the tumor simulates very closely malignant growth, and it is necessary for the surgeon to discriminate between the two. In either case, there is a very considerable malodorous discharge, frequently tinged with blood, poured out from ulcerated areas. When such tumors have been removed the differential diagnosis can readily be made by making an incision into the tumor substance, and by examining a section of the tumor under the microscope. These polypi can be very readily removed, as the thrombosis of the vessels at the pedicle prevents hæmorrhage, provided the pedicle is separated below the upper limit of the occlusion of the vessels. I have seen such black tumors as large as a man's head, between the thighs, entirely outside the labia. The so-called red

degeneration is nothing more nor less than the early stage of necrotic change; the tissue has the appearance of being acutely inflamed, and hence looks red.

Calcareous Degeneration.—Calcareous degeneration is more frequently found in the sub-peritoneal variety of fibro-myomatous growths. These growths become roughened on the surface, and, owing to the presence of intraperitoneal fluid, they are liable to simulate malignant disease. They may be found bobbing about in the fluid, and may, as a consequence, feel much like fœtal parts. I have several times operated on such growths when a diagnosis of probable malignancy had been made, and we were afraid that operative interference would be useless. Under such circumstances it is always wiser to open the abdomen. When the tumors are removed, often by means of ligatures around the pedicle, the peritoneal dropsy disappears and the patients resume a normal condition.

Malignant Change.—Myxomatous degeneration in fibro-myomatous tumors is, in my experience, fairly common in proportion to the number of cases that undergo malignant change. I have never seen any other malignant change than myxomatous degeneration and sarcomatous degeneration. Myxomatous degeneration is particularly prone to recur after removal of the tumor. This recurrence presents some interesting features: the peritoneal surface of the intestines and the parietal walls appear as if injected with gelatine; the bowels become stiffened and partly rigid as a consequence of this thickening of the coats; the disease has been called pseudo-myxoma-peritonei. The patients gradually become weaker and weaker, and finally die with some of the symptoms of intestinal obstruction. When sarcomatous degeneration occurs in the tumor, the tumor becomes rapidly enlarged; there may be some elevation of temperature, the patient's general health is not particularly affected, and there are no other changes to be noted; it is only after the tumor has been removed, and has been cut into, that the sarcomatous change is determined; the microscope then completes the diagnosis. After the removal of the tumor the patients may be free from recurrence for a considerable time, or the disease may recur at an early date. I have never seen carcinomatous degeneration of a fibroid tumor, but feel satisfied that when carcinomatous disease is met with in the presence of a fibroid tumor it is merely a coincidence, and has nothing to do with the presence of the fibroid. I have always found the carcinomatous growth growing definitely from the glandular structures of the endometrium.

In the presence of pregnancy, fibro-myomatous tumors do not seem to have any particular tendency to produce miscarriage. When it is considered desirable to empty the uterus owing to existing circumstances, it is usually necessary for the surgeon to procure an abortion. I have found it desirable, after one or more consultations, to produce miscarriage in a number of cases. If a young woman has had no children, and is troubled with a small myomatous tumor, I believe that, in most cases, when the tumor has reached an important size, miscarriage should be produced, and, as a consequence, she should be given the benefit of the subsequent involution. Many fibro-myomatous tumors disappear after the first miscarriage; I have seen them disappear after labor at full term; in fact, they disappear, or almost disappear, as a consequence of the process of involution. If a woman has not had progeny, and, on the other hand, is willing and anxious to submit to Cæsarian or Porro-Cæsarian operation at any time when it is found to be necessary or desirable in order that the life of the mother or of the mother and child shall be saved, her wish should be gratified. Under modern conditions, Cæsarian operation may be safely performed; but it must be remembered that it may be necessary, in the presence of fibroid tumors, to perform the Porro-Cæsarian operation in order to control hæmorrhage, and thus remove from the woman all chance of subsequent motherhood. I have advised young women with fibroid tumors of small size to become married, as a prophylactic measure, with the hope that either childbirth or miscarriage would be beneficial by checking the growth of the tumor. To illustrate my point, let me state further that my first experience was obtained by a rather rude awakening. A missionary lady from Africa, between 35 and 40 years of age, married. I saw her, in consultation with the late Dr. J. E. Graham, and we found a pregnancy nestled in between three large fibroid tumors. Miscarriage was produced, and I asked her to return at a subsequent date in order that I might remove the uterus. During the process of involution she was advised to take a certain treatment, and the treatment got the credit for what occurred. The tumors almost entirely disappeared; she again became pregnant and was delivered of a living child. Surely this should be a warning to those who advise the removal of small myomatous growths. It is argued that these growths should be removed for fear that they may become malignant. I consider that this is erroneous teaching, as the growths seldom become malignant, and to prevent carcinomatous disease of the

uterus by surgical intervention we would be forced to remove the organ from every woman. After the child-bearing period is passed, and after the growth has reached such proportions that the chances of motherhood are nil, then I believe the surgeon is justified in operating. In patients who have been suffering great loss of blood from time to time, I have been able to tide them over until the coming polypus has made its appearance, when its removal cures the patient, relieves her of her symptoms and restores her to health.

Selected Articles.

THE FAITH THAT HEALS.

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Nothing in life is more wonderful than faith—the one great moving force which we can neither weigh in the balance nor test in the crucible. Intangible as the ether, ineluctable as gravitation, the radium of the moral and mental spheres, mysterious, indefinable, known only by its effects, faith pours out an unfailing stream of energy while abating nor jot nor tittle of its potency. Well indeed did St. Paul break out into the well-known glorious panegyric, but even this scarcely does justice to the Hertha of the psychical world, distributing force as from a great storage battery, without money and without price, to the children of men.

Three of its relations concern us here. The most active manifestations are in the countless affiliations which man in his evolution has worked out with the unseen, with the invisible powers, whether of light or of darkness, to which from time immemorial he has erected altars and shrines. To each one of the religions, past or present, faith has been the Jacob's ladder. Creeds pass; an inexhaustible supply of faith remains, with which man proceeds to rebuild temples, churches, chapels and shrines. As Swinburne says in that wonderful poem. "The Altar of Righteousness":

> God by God flits past in thunder, till His glories turn to shades:
> God to God bears wondering witness how His gospel flames and fades.
> More was each of these, while yet they were, than man their servant seemed:
> Dead are all of these, and man survives who made them while he dreamed.

And all this has been done by faith, and faith alone. Christendom lives on it, and countless thousands are happy in the possession of that most touching of all confessions, "Lord! I believe; help Thou my unbelief." But, with its Greek infection, the Western mind is a poor transmitter of faith, the apotheosis of which must be sought in the religions of the East. The Nemesis

of faith is that neither in its intensity nor in its effects does man find any warrant of the worthiness of the object on which it is lavished—the followers of Joe Smith, the Mormon, are as earnest and believing as are those of Confucius!

Again, faith is the cement which binds man to man in every relation in life. Without faith in the editor of the *Journal*, I would not have accepted his invitation to write this brief note, and he had confidence that I would not write rubbish. Personally, I have battened on it these thirty-six years, ever since the McGill Medical Faculty gave me my first mount. I have had faith in the profession, the most unbounded confidence in it as one of the great factors in the progress of humanity; and one of the special satisfactions of my life has been that my brethren have in many practical ways shown faith in me, often much more than (as I know in my heart of hearts) I have deserved. I take this illustration of the practical value of the faith that worketh confidence, but there is not a human relationship which could not be used for the same purpose.

And a third aspect is one of very great importance to the question in hand—a man must have faith in himself to be of any use in the world. There may be very little on which to base it—no matter; but faith in one's powers, in one's mission, is essential to success. Confidence once won, the rest follows naturally; and with a strong faith in himself a man becomes a local centre for its radiation. St. Francis, St. Theresa, Ignatius Loyola, Florence Nightingale, the originator of every cult or sect or profession has possessed this infective faith. And in the ordinary everyday work of the doctor, confidence, assurance (in the proper sense of the word) is an asset without which it is very difficult to succeed. How often does one hear the remark, "Oh! he does not inspire confidence," or the reverse! How true it is, as wise old Burton says: "That the patient must have a sure hope in his physician. Damascen, the Arabian, requires likewise in the physician himself that he be confident he can cure him, otherwise his physic will not be effectual; and promise withal that he will certainly help him, make him believe so at least. Galeottus gives this reason because the form of health is contained in the physician's mind, and as Galen holds confidence and hope to be more good than physic, he cures most in whom most are confident"; and he quotes Paracelsus to the effect that Hippocrates was so fortunate in his cures not from any extraordinary skill, but because "the common people had a most strong conceit of his worth."

Faith is indeed one of the miracles of human nature which

science is as ready to accept as it is to study its marvellous effects. When we realize what a vast asset it has been in history, the part which it has played in the healing art seems insignificant, and yet there is no department of knowledge more favorable to an impartial study of its effects; and this brings me to my subject—the faith that heals.

Apart from the more specific methods to be dealt with, faith has always been an essential factor in the practice of medicine, as illustrated by the quotations just given from Burton. Literature is full of examples of remarkable cures through the influence of the imagination, which is only an active phase of faith. The late Daniel Hack Tuke's book, "The Influence of the Mind on the Body," is a storehouse of facts dealing with the subject. While in general use for centuries, one good result of the recent development of mental healing has been to call attention to its great value as a measure to be carefully and scientifically applied in suitable cases. My experience has been that of the unconscious rather than the deliberate faith healer. Phenomenal, even what could be called miraculous, cures are not very uncommon. Like others, I have had cases any one of which, under suitable conditions, could have been worthy of a shrine or made the germ of a pilgrimage. For more than ten years a girl lay paralysed in a New Jersey town. A devoted mother and loving sisters had worn out lives in her service. She had never been out of bed unless when lifted by one of her physicians, Dr. Longstreth and Dr. Shippen. The new surroundings of a hospital with the positive assurance that she could get well with a few simple measures sufficed, and within a fortnight she walked round the hospital square. This is a type of modern miracle that makes one appreciate how readily well-meaning people may be deceived as to the true nature of the cure effected at the shrine of a saint. Who could deny the miracle? And miracle it was, but not brought about by any supernatural means. I had the good fortune to be associated for five years with Weir Mitchell, and saw much of the workings of that master mind on the Sisters of Sir Galahad and the Brothers of Sir Percivale, who flocked to his clinics. His extraordinary success, partly due to the rest treatment, was more largely the result of a personal factor—the deep faith the people had in his power to cure. And it is in this group particularly that the strong man armed with good sense, and with faith in himself, may be a power for good. And the associations count for much. Without any special skill in these cases or special methods, our results at the Johns Hopkins Hospital were most gratifying. Faith in *St. Johns Hopkins,*

as we used to call him, an atmosphere of optimism, and cheerful nurses, worked just the same sort of cures as did Æsculapius at Epidaurus; and I really believe that had we had in hand that arch-neurasthenic of ancient history, Aelius Aristides, we could have made a more rapid cure than did Apollo and his son, who took seventeen years at the job!

Outside the profession, faith has always played a strong rôle as a popular measure of cure. There are at present four plans, all of which illustrate phases of an old-time practice.

1. In England a small sect, the Peculiar People, carry out a consistent gospel system of faith healing. A pious, simple folk, only heard of when in collision with the law of the land, they base their belief on the plain sayings of Scripture, "Whatsoever ye shall ask in My name," etc. The prayer of faith is all they need, and in consequence when one of their number dies there is an inquest, and someone is sent to prison for criminal negligence. One of the recent cases was very pathetic, as both father and mother expressed the most touching confidence that what God willed was best for their child with scarlet fever, and what they asked in prayer would be granted. This primitive Christian attitude towards disease has never lacked adherents in the Church, and mediæval literature is full of illustrations of a practice identical with that of the Peculiar People.

2. The Christian Church began with a mission to the whole man—body as well as soul—and the apostolic ministry of health has never been wholly abandoned. Through the Middle Ages the priests had care of the sick; many of the most distinguished physicians were in holy orders, and even after the Reformation in this country much of the ordinary medical practice was in the hands of the clergy. But the most characteristic development of Christian faith healing has been in connection with certain saints and shrines. The early Church found the popular belief in Æsculapius so deeply engrained that many rites of the temples were deliberately adopted, such as incubation and the practice of votive offerings. The temple sleep, in which methods of cure were suggested in dreams, was continued until recent times, and indeed has not yet been abandoned. Certain saints had special powers—St. Cosmos and St. Damian became the patrons of surgery; St. Antony and St. Vitus had well-known virtues. Belief in the healing power of relics became universal. The Reformation made a small section hostile, but a large majority of all Christians still believe strongly in the power of the saints to cure disease. The votive offerings which cover the walls of

many Catholic churches on the Continent, accompanied with grateful inscriptions, are modern counterparts of the old practice in the Æsculapian temples. Miracles are still as common as blackberries, and new saints and new shrines are in active manufacture. The process may be studied in the history of Bernadette Soubirous, the 14-year-old ecstatic, who fifty years ago had visions of the Virgin at Lourdes, now the most popular faith resort in Europe. The cures are often genuine, and the miracles are of the same kind and as well attested as are those of Epidaurus. More people, it is said, frequent Lourdes than all the hospitals of France, and the same is true in Canada of the most popular shrine of the New World—St. Anne de Beaupré. In the English-speaking world and in Germany, faith has been chilled by the Reformation, and even among Catholics this mode of healing is not much in favor. I do not know of a single popular shrine in the United States, the country of all others in which Roman Catholicism presents the most rapid development. In England there has not been an active medical saint for 300 years.

3. History repeats itself, and we are to-day deep in the throes of an intellectual change quite as striking as that which came over the Græco-Roman world when disbelief in the gods, started by the philosophers, filtered into common life. Men sought other resting-places—some with Zeno and the Stoics, others with Epicurus, while thousands remained in the misty mid-region of uncertainty. The cults which had ministered to the religious wants gradually lost their hold on the people, while the new sects appealed chiefly to the intellectuals. Christianity came, and, winning its way from below upwards, swept away many cults, absorbed others, and gradually destroyed the sects. Once again old beliefs are in the melting-pot. Modernism, the culmination of the spirit of the Renaissance, has changed the fundamental aspects of humanity, and the new wine in the old bottles has had the usual effect. A great gulf has been opened between pastor and flock, and the shepherdless sheep at large upon the mountains have been at the mercy of anyone who could pipe new tunes. One result of this intellectual and spiritual unrest is of great practical interest to us as physicians, and of still greater interest to all students of psychology. A new cult has arisen, attractive and aggressive, unlike in many ways anything hitherto seen. It was only natural (and the punishment fits the crime!) that such a cult should come from the United States, the country which possesses a larger number of separate sects than any other in the world. That the founder should be

a woman profoundly ignorant of theology and of science, without, indeed, a single bond between the professors of the one or the practice of the other, was in itself a favoring element. A disciple of an American spiritualist, Mrs. Eddy had one strong conviction—the paramount importance of the things of the spirit. Never before in a history surcharged with examples of credulity has so monstrously puerile a belief been exploited. To deny the existence of disease, to deny the reality of pain, to disregard all physical measures of relief, to sweep away in a spiritual ecstasy the accumulated wisdom of centuries in a return to Oriental mysticism—these, indeed, expressed a revolt from the materialism of the latter half of the nineteenth century at once weird, perhaps not unexpected, and, to a student of human nature, just a bit comic. One cannot but smile to think that this has happened at the very time when the Goddess of Reason was priding herself on the brilliancy of the accomplishments of her devotees! It is, indeed, a salutary lesson in humility, and serves to remind us that our deliciously credulous human nature is still plastic and receptive. To some a sign of decadence, to me the growth of Christian Science and of Mormonism is among the hopeful indications that we are in the childhood of the race. Only in the welter of a new world, untrammelled by a past and by regard for authority, among a people too much absorbed in business to work out for themselves any mental salvation, could such a chaotic mass of rubbish have had any measure of successful acceptance. And, as I said, the punishment fits the crime. For generations the people of the United States have indulged in an orgie of drugging. Between polypharmacy in the profession and quack medicines, the American body had become saturated *ad nauseam*, and here indeed was a boon even greater than homœopathy! No wonder the American spirit, unquiet in a drug-soaked body, rose with joy at a new Evangel. In every county there were dyspeptics and neurasthenics in sufficient numbers to demonstrate the efficacy of the new gospel! But the real secret of the growth of Christian Science does not lie in the refusal of physical measures of relief or the efficacy of prayer, but in offering to people a way of life, a new Epicureanism which promises to free the soul (and body) from fear, care, and unrest; and its real lever is the optimism which discounts the worries of the daily round. It has done the profession good in awakening an interest in a too-much-neglected section of rational therapeutics. The tragic side of the story lies in the valuable lives sacrificed to the fanatical ignorance of so-called healers. The miracles of Chris-

tian Science are the faith cures which we all know so well. They are exclusively in the realm of functional disorders. I have not met with any case of organic disease permanently cured. I know of reputed cures of locomotor ataxia; two of these patients still take opium for the lightning pains.

4. And, lastly, there has arisen in the United States a form of faith healing known as the "Emmanuel Church Movement," which originated in Boston with the Rev. Dr. Worcester, an able and distinguished clergyman of the Episcopal Church, who had had a good training in psychology under Fechner at Leipzig Curiously, the idea arose out of the success which had attended the organization among the members of his church of classes for the home treatment of tuberculosis by my friend and former pupil, Dr. J. H. Pratt. It was suggested that the Church might undertake the treatment of nervous troubles by mental and spiritual agencies. As the Rev. Lyman Powell says: "The only magic known in the Emmanuel movement is the magic of a mind surcharged with faith, and operative within bounds set by the scientific doctor." Here, again, the success will depend in the individual character of the man conducting the movement. The class organization, the association with church services, and the confidence inspired by the co-operation of pastor and doctor have been favoring features. Only in existence for a few years, it is impossible to say what the future has in store, but it is an honest attempt to bring back that angelical conjunction, as Cotton Mather calls it, of physic with divinity.

Briefly stated, this is the status of the faith problem in medicine to-day. Others will analyze its workings, the relation to suggestion, to the subconscious self, etc. Not a psychologist but an ordinary clinical physician concerned in making strong the weak in mind and body, the whole subject is of intense interest to me. I feel that our attitude as a profession should not be hostile, and we must scan gently our brother man and sister woman who may be carried away in the winds of new doctrine. A group of active, earnest, capable young men are at work on the problem, which is of their generation and for them to solve. The angel of Bethesda is at the pool—it behooves us to jump in!—*British Medical Journal.*

FEVER WITHOUT PHYSICAL SIGNS.

By Thomas J. Horder, M.D., F.R.C.P.

Cases of fever fall into two groups. In one, certain physical signs more or less adequate to the diagnosis are present; in the other, they are not. An intermediate group of cases exists in which there are physical signs, but they are inadequate for diagnosis—ambiguous signs, admitting of more than one interpretation. The rose spots of typhoid fever constitute an adequate sign, pathognomonic of the disease; enlargement of the spleen is an ambiguous sign, which, though indicating the possibility of typhoid fever, may be caused by many other infections. The cases of no physical signs, or of signs that are equivocal as regards diagnosis, are usually due to infective lesions of organs or tissues more or less deep-seated, which yield signs less readily than superficial organs. Such are the blood, intestines, gall-bladder, pelvis of the kidney, pancreas, endocardium and spinal meninges. The cases may be divided into two groups, according as the signs are latent or difficult to find, or are absent.

I.—Physical Signs Overlooked or Latent.

(1) *Cholecystitis* is a not uncommon cause of fever, without obvious signs. The patients are usually the subjects of gall-stones, but not always. Often they are stout, making abdominal examination difficult. Pain is generally present, though it is often by no means severe; sometimes it is absent. Flatulent distension of the bowels is almost constant. Colic is not a feature. The attacks are prone to recur, sometimes after brief intervals, and the course of the disease may then suggest typhoid or Malta fever, with relapses. Repeated palpation may reveal a rounded elastic tumor in the right hypochondrium, and in this discovery the genu-pectoral position may give valuable help. This tumor may only be felt for a brief period of the disease. The urine should be tested for traces of bile, for it may be icteric before any jaundice is noticed in the skin or mucous membranes. Jaundice may be absent throughout the whole course of the disease. Even with an intermitting type of fever and rigors, the inflammation is not necessarily suppurative. And there may be no leucocytosis; indeed, the leucocyte count may be low—(4,000-6,000)—another fact which may suggest typhoid or Malta fever.

(2) *Pyelo-cystitis.*—The amount of pus in the urine may be small; and what is not seldom the sole sign of the disease may thus be overlooked. Sudden rises of temperature, often accompanied by rigors, in old men, or in patients suffering from diseases of the nervous system, leading to sphincter troubles, frequently are due to infections of the urinary tract. By far the commonest microbe at work is *B. coli,* admitting of ready isolation from the urine.

(3) *Pyorrhœa Alveolaris.*—A close inspection of the teeth and gums should never be omitted in cases of fever of obscure origin. Long-continued and marked pyrexia may be due to oral sepsis. The form of the fever is apt to be periodic, with intermissions lasting from one to several days.

(4) *Perigastritis and Subphrenic Abscess.*—In these complications of gastric ulcer, physical signs are often delayed, perhaps for a fortnight or more. When signs do appear, pleural friction is apt to be the first. The same conditions may follow gastro-enterostomy, or the suture of a perforated gastric or duodenal ulcer. A rising leucocyte count may suggest the sequence of events.

(5) The subjects of *acute rheumatism* are prone to develop bouts of fever with little or no physical signs. Sodium salicylate may have no effect upon the fever. Probably some serous membrane is in a state of smouldering inflammation. But signs of inflammation may not be forthcoming for these reasons: the presence of old valvular disease makes the diagnosis of a recurrence of acute endocarditis impossible; pericardial adhesion, ofttimes universal, prevents the appearance of the physical sign of pericarditis; and of acute myocardial disease there is no physical sign. The undoubted possibility of rheumatic pleurisy and rheumatic peritonitis must not be overlooked. These cases of rheumatic pyrexia, not seldom considerably prolonged, are always a source of anxiety, which is increased in the presence of vulvar disease. For the transition from rheumatic to malignant endocarditis, in which streptococci play so important and so fatal a part, may be very gradual and may deceive even the elect. However, a careful search for the cardinal signs of infective endocarditis, which includes bacteriological cultivation of the blood, will generally be helpful. The concurrence of chorea, or of nodules, is much in favor of the non-infective variety of the disease, though neither event excludes streptococcal endocarditis.

(6) *Localized tuberculosis* is probably the commonest cause of fever with latent physical signs, or with signs difficult to elicit.

There is sometimes a too-ready tendency to conclude that a patient is tuberculous because he is febrile over a long period. This should be resisted until several other causes that are more easily excluded have been reviewed. Nevertheless, the possibility of the disease must always be borne in mind, and it is useful to remember certain situations in which this infection is apt to lead to more or less disturbance of general health, with fever, usually mild and remittent. These situations include the lung, pleura, peritoneum, lymphatic glands, kidney and suprarenals, Fallopian tubes, and spine. Critical examination of all these organs and their functions must be made, and one or other of the tuberculin tests must be undertaken, remembering the limitations which the presence of fever imposes upon these investigations. Occasionally the febrile patient has given proof of active tuberculosis; this must be allowed great weight. The frequency of secondary pyrogenetic infections in tuberculosis must also be remembered; such a secondary infection may occasionally be demonstrated by blood culture.

(7) *Fever Following Operations.*—A physician is not infrequently asked to discover the cause of pyrexia arising soon after an operation. However confident (and justifiably so) the surgeon may be of his technique, his wound must be closely examined. A rising leucocyte count is an important indication of infection. Cultures should be taken from any fluid present, be it "blood-stained fluid," "serum," or obvious pus, and efficient drainage ensured. If a growth of any microbe is obtained from the cultures, an appropriate vaccine should be prepared and administered forthwith.

II.—Physical Signs Absent.

(1) *Influenza* is the commonest cause of a pyrexia without physical signs. Hence the doubt which always exists as to the accuracy of diagnosis; for there is nothing specific about any of the symptoms of influenza, nor about all of them taken together. They do but spell acute microbic poisoning. This doubt is naturally less during an epidemic. The fever in uncomplicated cases is usually over by the fifth or sixth day; if it lasts longer than this almost certainly some complication is present, or the disease is not influenza. If a complication exists, a focus of infection is probably present (bronchial, pulmonary, intestinal, biliary, endocardial, meningeal, etc.), and physical signs are usually forthcoming. In uncomplicated cases, leucopenia is of great service in diagnosis, especially in the absence of the typhoid agglutination reaction. Even with pulmonary complica-

tions, provided the infection remains pure, leucopenia is apt to occur. But a mixed infection, especially with the pneumococcus, is the rule in influenzal pneumonia, whether lobar or lobular, and a high leucocyte count is therefore by no means uncommon. Despite some earlier statements, it seems that in uncomplicated influenza the microbe is rarely, if ever, demonstrable in the blood.

(2) *Typhoid fever* is the most frequent and the most important cause of fever of longer duration than five days in Great Britain, physical signs being absent. As a possible cause of any case of obscure pyrexia, it must be perpetually borne in mind. Neither a sudden onset, nor absence of headache, nor the form of the temperature chart must prevent this. Diarrhœa is no longer regarded as an almost constant symptom. The manifestations of the disease are so protean that safety lies only in regarding every patient suffering from fever of undetermined cause as a suspect. In one case the first symptom was acute delirium, which continued during the first fortnight; there was no headache at any time. Both in this case and in another case of typhoid fever with marked delirium during the invasion period, there was a marked neuropathic family history. Before the immunity of any district from typhoid be accepted as evidence against the disease, it must be shown that the patient was continuously in that district during the two weeks preceding the illness; for the infection may have occurred during a sojourn elsewhere.

In the pathological investigation, sufficient importance is often not attached to the leucocyte count. The agglutination test should always receive this support, for the association of leucopenia with even an incomplete Widal reaction is a valuable indication of typhoid fever. A complete Widal reaction with leucopenia is diagnostic. If the agglutination reaction is not present, as it may not be during the first week, the diagnosis may often be established by blood-culture. Allied to typhoid fever, and often undistinguishable from it clinically, is "paratyphoid fever." These cases are even more liable than cases of true typhoid to present no physical signs. The diagnosis can be made only by isolation of the microbe from the blood-stream, urine or fæces.

(3) Certain cases of *septicæmia*, and especially septicæmia in the puerperium, may lead to marked fever without other signs. The most careful obstetrician may fail to discover aught amiss with the pelvic viscera; indeed, in fatal cases a careful

dissection of the uterus and uterine vessels after death may still reveal no macroscopic signs of disease. The diagnosis may turn almost entirely upon blood-culture.

A bone injury in a child suffering from sudden fever must always receive critical examination; and the skeleton (especially the long bones) must be carefully examined if high fever, abrupt in origin, exists in a child without ascertained cause. Unfortunately, cases of infective osteomyelitis, due to *Staphylococcus aureus,* become pyæmic so rapidly that even the early detection of the focus and its prompt treatment rarely saves the patient; but probably some cases are saved by early diagnosis, and do not run this fulminating course. If incisions are made into doubtful areas of inflammation, cultures of the exuding fluid should be made, however innocent it appears to the naked eye. Now and again a drop of serum will yield a copious growth of staphylococci in the warm incubator within six to eight hours; this should at once lead to further surgical procedure, if no fall has taken place in the temperature or in the leucocyte count, and if no alleviation has occurred in the general condition of the patient as the result of the first incision.

(4) *Malta Fever.*—Unless the attention is called to the possibility of this infection, it may be overlooked. Residence in a Malta fever district may have been of short duration, and no obvious illness may have occurred there. The patient may come under observation for general weakness, neuralgic joint pains, or the fever, some months or even years afterwards, and may give no history suggesting his infection. The diagnosis is made either from a positive blood-culture (rarely possible in such a case), or from a combination of leucopenia with agglutination of a strain of the micrococcus by the diluted serum.

(5) In *malaria* the diagnosis rests upon the discovery of the parasite in the blood; leucopenia ("relative lymphocytosis") is almost invariable. A markedly intermittent character of the fever, however, must never bias the observer unduly in favor of this diagnosis, even in the face of a clear history of ague in the past; for many pyogenetic infections, local and general, are accompanied by this form of fever. The occurrence of rigors calls for the same caution. If the patient has never lived out of England, malaria may be excluded.

(6) *Cerebro-spinal fever* may be met with in its sporadic form. Occasionally there may be an absence of the signs for some days, or even weeks; no stiffness of the neck or retraction of the head, no change in the "reflexes" and, indeed, no signs

of meningitis. A persistent headache, with pains in the back and limbs, and progressive loss of flesh—typhoid fever being excluded by a negative Widal and the presence of a leucocytosis —should lead to a lumbar puncture and a search for the meningococcus. A young adult suffering from this disease has been treated for two or three weeks for rheumatic fever on account of the severity of his pains. An intensely sour odor of the sweat, which was profuse, increased the simulation.

(7) *General tuberculosis* is a rare cause of fever in patients who show no physical signs. According to the text-books, this is not so, and the physician has not infrequently to discriminate between it and such a disease as typhoid fever. Undoubtedly cases do arise in which general tuberculosis occurs (for some days up to two or three weeks) without evidence of focal lesions, but these are very uncommon. Blood cultivated on ordinary media will not reveal the nature of the infection, and even if special media be used the growth of the bacillus will be too slow in most instances to prove of service. If the condition be suspected from the occurrence of leucopenia and the absence of agglutination reactions for the typhoid bacillus and the *micrococcus melitensis*, films should be prepared direct from the blood and carefully stained by the carbol-fuchsin method. One or other of the tuberculin tests should be applied; the subcutaneous test is not available on account of the fever.

(8) *Intestinal Intoxication.*—Under this heading there may be provisionally included a number of cases of fever which present no signs of a specific character, and ofttimes present no signs at all. No doubt the group contains cases differing widely in pathogeny.

(*a*) In infants and in young children, errors in diet, both quantitative and qualitative, are commonly associated with fever. According to some authorities, one form deserves the epithet "carbohydrate fever," because it is due to an excess of starchy food. The stools are unduly pale, fermented, and offensive. But excess of starch is, of course, by no means the only error which underlies the febrile dyspepsias of childhood. The prompt and good effect of small doses of mercury and chalk, or of calomel, in many cases, suggests that excessive or unusual microbic action is a dominant feature.

(*b*) Intestinal parasites contribute some of the cases. The fever may be due to direct absorption of the poisonous products of metabolism of the worm, aided possibly by the mechanical irritation set up by its presence and by its movements; or it may

be due to poisoning of a secondary nature, resulting from changes in the mucosa of the bowel. Thus, intestinal parasites cause colitis, often with the production of much mucus, which acts as a good nidus, not only for the parasite itself but for bacteria, such as streptococci and colon bacilli. In all cases of obscure fever, especially in children, the stools should be examined, not only for parasites, but for ova.

(*c*) Acute and subacute colitis. Physical signs may be confined entirely to the stools, which may contain mucus in variable quantities, casts of the bowel, and occasionally blood.

(*d*) In severe constipation bouts of fever are not uncommon, and occasionally these are so marked that the presence of some local inflammatory mischief (appendicitis, stercoral ulcer, pericolic suppuration) or typhoid fever is suspected. Leucocytosis is always present, which helps to exclude the last disease, and often the count is high.

(9) *Rat-bite Fever.*

(10) *Nervous Fever.*—After a thorough examination, in which no signs have been discovered, the question of nervous influence must be considered. Cases of nervous fever fall into two groups.

(*a*) Some persons develop pyrexia more easily than others, just as some become delirious with less provocation than others. Those who possess an unstable thermotaxic mechanism cause much anxiety. After an acute febrile illness their temperature, instead of settling down, is apt to remain irregularly raised, sometimes for several weeks, though convalescence proceeds. They are generally very nervous people, and not infrequently there is something worse than mere neurosis in the family history. Much discretion is necessary. One stands to lose, whether the fever owns a definite organic cause or not, if he takes too little heed of the pyrexia, and this proves to have been significant of some important complication of the original illness, he may be blamed for carelessness or ignorance; if he elaborates his investigations and the condition subsides without serious developments he may be blamed for unnecessary activity.

(*b*) *Neuromimesis.*—The patient is usually a young woman of a temperament recognizable by the experienced clinician, but difficult to describe. Her morbid nervous state shows itself not only by pyrexia without organic cause, but also by the simulation of other pathological processes—anorexia, vomiting, eruptions and contractures. Cured of one of these, another takes its place. Her disease belongs to that strange land which holds malinger-

ing at one pole and hysteria at the other; her symptoms betoken less naughtiness than deserves the slur of the former epithet, and less system than to merit their being classed as the latter. In younger patients precocity and "being spoilt" and in older ones a hopeless love affair are common factors. The temperature curve may reveal suggestive features. The morning rise may be greater than the evening rise, and with the pyrexia there may be no associated increase in the frequency of the pulse and respiration. The patient, however, is not always of the type described. Prolonged and obscure pyrexia occurred in a young married woman who had watched month after month the treatment of her phthisical husband in a sanatorium near by. The routine of sanatorium life, with its temperature takings, weighings, and dietings, brought about a state of nervous imitation of phthisis. She simulated her husband's disease closely, for to the pyrexia she added considerable loss of flesh and a troublesome barking cough, with hoarseness and aphonia. She was rapidly cured by six months' stay with convivial friends. So thin was she that physical examination of the chest was extremely easy; yet nothing could be found in the lungs, larynx, or elsewhere.—*St. Bartholomew's Hospital Journal.*

Progress of Medical Science.

MEDICINE.

IN CHARGE OF W. H. B. AIKINS, F. A. CLARKSON AND BREFNEY O'REILLY.

Treatment of Tuberculous Hemoptysis

The best position for a patient bleeding from a tuberculous focus in the lungs is the semi-recumbent one. The patient should be quieted as much as possible, and speaking is to be forbidden, unless the pulse demands it, nothing is to be given by mouth for several hours; later, small amounts of luke-warm drinks are in place. A mild cathartic, given early, will remove blood and infectious material from the gastro-intestinal tract and relieve the congestion of the lungs. The bladder and skin demand the same attention as they do in other seriously ill individuals. The most important drugs are narcotics and a dose of morphine and atropine is indicated unless there is anæmia of the brain or fear of aspiration. The atropine is not only an antidote for morphine, but also possesses hemostatic properties of its own. Morphine with scopolamine (0.0005 Gm.) may be tried.

In long-continued hæmorrhages, codeine, heroin, or dionin may be given. Amyl nitrate, 4 to 7 drops inhaled, will often check severe hæmorrhages without interfering with the cough. Gelatin may be used by mouth, rectum, or under the skin. Other drugs said to have hemostatic properties are calcium chloride, salt, and sterile horse-serum. Lead, iron, ergotin, stypticin, and styptol, the author claims, are virtually useless in pulmonary hæmorrhage, and adrenalin should be carefully avoided.

Among physical measures is the application of an ice-bag and the use of ice-pills internally. Hot water-bags and hot rectal injections draw the blood away from the lungs. The extremities may be tied off so that the venous return flow only is interfered with, and the affected side of the chest can be immobilized with adhesive plaster strips.

Attempts have been made to resect the first rib and compress the lung directly, but better results have been obtained from the artificial pneumothorax (inflation of the pleural sac with

nitrogen, to compress the lung). This applies, however, only to early cases of tuberculosis, where there are no adhesions. In severe cases, venesection, infusion, or heart stimulants may be required.—*Muench med. Woch.*

Treatment of Ringworm

The several antiseptics advocated for outward application in cases of ringworm are far from satisfactory, the prolonged duration of the disease proving their inefficiency. In dealing with the numerous cases of pediculosis in fever wards, E. Lynn Jenkins reports that he and his associates always employ the essential oil of sassafras, which, without exception, they find acts as a specific in such cases.

When both pediculosis and ringworm occurred in the same scalp, it was noticed that the latter disease also reacted favorably to this preparation.

This led them to test the possible usefulness of the oil for ordinary cases of ringworm, and so far the results have been most happy. The hair is cut closely around in order to identify the patches, the application of the oil being made twice a day by means of a camel-hair brush. This is continued for a few weeks, as the case indicates. No irritation is produced, while the preparation is most pleasant to use. Not only is the spread of the infection prevented, but that the fungus is being destroyed with certainty is recognized in two or three weeks, by commencing development of fine hairs.—*British Med. Jour.*

Gastric Pain

Leven (*La Clinique*) points out that pain in the region of the stomach may be of two kinds, solar and visceral, and he emphasizes the necessity of distinguishing between them, in the interests of diagnosis, prognosis and treatment. Solar pain is due to hyperæsthesia of the solar plexus, and is characterized by attacks varying in intensity and frequency, but always situated in the middle line between the xiphoid cartilage and the umbilicus. If the pain is dependent on pressure, the skin should be raised and pinched so as to distinguish between cutaneous hyperæsthesia and true solar pain. When this pain exists by itself, simple dyspepsia may safely be diagnosed, unaccom-

panied by any visceral lesion, such as ulcer, cancer, syphilis, or gastric tuberculosis. If a gastric lesion should co-exist, a special pain is present besides the solar pain, situated at a definite fixed point, shown, by radioscopic investigation, to be the seat of the local lesion. This is the visceral pain, situated always in some part of the stomach itself, and always more or less to the left of the middle line of the body. In one case cited by Leven the patient complained of serious gastric troubles, and X-ray examination showed a bilocular condition of the stomach, which, taken in connection with the cachectic condition and the gravity of the symptoms, seemed to point to an organic cancerous lesion. Suitable medication relieved the patient and cured the solar pain, but emaciation continued, and a fixed visceral pain persisted in the contracted portion indicated by the radioscope. Before resorting to operation a course of mercury and iodide was tried, with the result that the pain diminished after the second injection, and finally disappeared, the patient being definitely cured, putting on flesh and digesting her food thoroughly; proving that the case was one of a syphilitic lesion of the stomach, complicated by dyspepsia.—*British Med. Jour.*

Prof. L. Landouzy enlarges on the importance of the general practitioner "being able to make a diagnosis of even rare diseases, such as sporotrichosis, which is perfectly curable under proper treatment, but may go on indefinitely if no measures are taken to destroy the parasite, and may lead to useless and disfiguring operations. Such patients may be treated for syphilis and a bad prognosis made for final recovery, and the history may lead to the belief in congenital syphilis in the offspring of the patient. The author cites a case of sporotrichosis which had become generalized, there being many gummatous and ulcerative lesions occupying many different locations in the skin. The general health of the patient was good, and she was able to go about her daily work. There was no enlargement of the glands. The spores were cultivated on glycerinated gelatin with success, and characteristic colonies developed. The patient was treated with potassium iodide internally, and the local lesions washed with iodine solution. Cure was complete in eight weeks. This treatment is specific for the disease." Of course, Landouzy is right. It is, however, simply an axiom that the better educated the physician the better it is for the patient that he may be called upon to treat.—*The Post-Graduate.*

The Detection of Blood in the Stools. By DR. M. TRIBOULET (*Societe de Pediatrie.*)

The author finds the reaction to phenolphthalein superior to that with guaiacum and benzidine, the risk of error being less, and also because it facilitates the discovery of traces of blood of digestive origin and clinically unsuspected, as in cases of (1) old-standing purpura, Barlow's disease; (2) violent intestinal reactions with ecchymoses, acetonemic disorders in young children, entero-colitis in older children simulating appendicitis; (3) various intestinal complications in pneumonia, measles, scarlatina, and diphtheria. Intestinal discharges, like those met with in certain cases of uremia, connected with congestion of the digestive mucous membrane and bloody exudation mixed with the stools, are detected in most cases only by the red reaction with phenolphthalein.—*The Post-Graduate.*

Infectivity of Desquamation in Scarlatina. A. RENAUD. *Revue Médicale de la Suisse Romande.*

In 20 cultural examinations made of the desquamating scales from cases of scarlatina, at periods varying from the 8th to the 50th day after the onset, a streptococcus was only twice found to be present.

In one of the two positive cases a good deal of scratching had occurred, and it is probable that the skin became infected from the patient's nails soiled with nasal discharge. Simultaneous examinations of the pharyngeal secretions showed streptococci to be invariably present even after desquamation had ended. If as is generally admitted a streptococcus is the cause of the disease, these results indicate that the skin plays a very subordinate part, if any, in conveying the contagion, while at the end of the ordinary isolation period the throat may be still capable of giving rise to infection.—*The Medical Chronicle.*

Spirochaeta Pallida. —The following method is suggested by J. E. R. McDonagh for use in the staining of the spirochæta pallida: Drive a fine glass pipette through the skin at the border of the chancre and along underneath it; keep tube vertical until the serum has separated; break off the portion containing the clot and allow the serum to fall on a glass slide; around the drop of serum place six or seven platinum loopfuls of distilled water and the same quantity of India-ink (Günther and Wagner);

mix thoroughly, smear out in a thin layer on the slide, allow to dry, and examine with oil-immersion lens. The organisms show white against the dark background; a few blood cells will also be visible, their diameter being roughly one-half that of the spirochæta. (Proceedings of Royal Society of Medicine, April, 1910.)

Pericardial Effusion. —Samuel West, in the Medical Section of the Royal Society of Medicine, in an address on the above subject, drew attention to a number of points, of which the following are the more important. As regards the physical signs of serous effusions, he believes that the earliest are those of general cardiac dilatation, due to myocarditis, and are found in an increase in dulness outwards and upwards along the third left space, or rib, in other words, is the disappearance of Sibson's Notch, which phenomena he believes to be due to a dilatation of the left auricle. Another early sign is the obliteration of Rotch's cardio-hepatic angle, probably due to dilatation of the right auricle. He finds that in large effusions bulging of the epigastric region, in which pulsation may be felt (Auenbrugger's sign), may be present, but he has also observed systolic epigastric recession. As regards friction rubs, West has heard basal friction over large collections of fluid, even in the recumbent posture, he believes the pulsus paradoxus to be rarely met with, unless mediastinal adhesions be present; also that when distress is marked, that it is due, not to the mechanical effect of the fluid, but rather to a concomitant myocarditis. West sees no objection to paracentesis, but considers it rarely necessary. For purulent effusions, however, he relies on incision.

Cammidge's Reaction in Cases of Ulcer of the Duodenum.— George Herschell, in the *Medical Press* of April 20th, 1910, suggests the application of Cammidge's pancreatic reaction in cases showing symptoms suggestive of duodenal ulceration as a means of differentiating the disease from simple functional disturbances. He believes that hyperacidity alone cannot produce pain, but that hyperæsthesia of the gastric or duodenal mucosa is the essential factor. Now, in cases showing hyperæsthesia, Moynihan and others believe that the great majority of these cases show evidences of some definite cause, such as gall-stones

or duodenal ulceration. Any clinical sign, therefore, that would show definite duodenal irritation must be of value, especially in the differentiation of functional hyperchlorhydria from duodenal ulcer, and since duodenal catarrh frequently extends by the pancreatic duct and produces a chronic pancreatic inflammatory action, Herschell believes the presence of a positive Cammidge reaction to be of the greatest value in the diagnosis of duodenal ulcer, and gives notes on some twenty-five cases as proof of his supposition.

Oxaluria — Maguire in several papers published in the *Lancet* and Proceedings of the Royal Society of Medicine has maintained that calcium oxalate calculi may be dissolved in the urinary passages by means of acid, phosphate of sodium administered per os. He recommends that the pure salts be given in solution in divided doses, in quantities of from one to two ounces per diem, preferably on an empty stomach. He also recommends the same treatment for simple oxaluria, and in proof of his contention refers to certain clinical cases in which satisfactory results were obtained.

LARYNGOLOGY AND R HINOLOGY.

IN CHARGE OF J. PRICE-BROWN.

Transplantation of Cartilage in the Correction of Deformities of the Nose. CROSBY D. GREENE. *Boston Med. and Surg. Journal,* March, 1910.

The author gives a *resumé* of literature as to the transplantation of cartilage and perichondrium. He reports two cases of destruction of the quadrangular cartilage resulting from septal abscess. In both cases he used cartilage removed in submucous resection from other patients.

Total Atresia of the Naso-Pharynx Following Removal of Adenoids. WOLFF FRUDENTHAL. *Laryngoscope,* May, 1910.

A young woman suffering from nasal insufficiency due to the presence of large adenoids had them removed by her physician. This was followed at once by commencing atresia. The case being referred to Frudenthal, he advised operation. This was declined. In a short time the closure became complete, and in May, 1909, she consented to operation. An incision was made through the adhesion, and a strip of gauze was passed through the nose into the mouth and the ends attached over the lips. This was left for three days, when sloughing commenced, and fearing extensive destruction of tissue the gauze was removed. Subsequent treatment consisted of dilatation twice a day with the probe or finger. When reported six months later the pharynx was perfectly free and the patient's voice normal.

In discussing this case, Dr. Harris drew attention to one reported in the French journals, in which the adenoids were removed so vigorously that total atresia followed as a result of the operation.

Pemphigus of the Throat. Report of a Case. L. M. HURD. *Jour. of Laryngology,* March, 1910.

The remarkable thing about this case was that the disease was entirely limited to mucous membranes. The patient was a woman, aged 33. On examination, bullæ, vesicles and superficial ulcers were seen on the velum, posterior pharyngeal wall and base of the tongue. Four years later a similar condition occurred on the conjunctiva of the left eye, destroying the vision on that side. At no time was there any eruption on the skin.

Removal of Tumors of the Pituitary Body by an Intra-Nasal Route. A. B. KANAVEL. *Jour. of the Amer. Med. Assoc.* November, 1909.

Kanavel advocates the operation of elevating the nose, cutting the cartilaginous septum, removing the middle turbinates, deflecting the septum, locating the sphenoidal foramina, biting off the attachment of the perpendicular plate of the ethmoid and vomer, entering the sphenoid sinus, and thus reaching the floor of the sella turcica, to remove pituitary tumors.

A Case of Excision of the Entire Tongue with its Results. H. A. DAVIS. *Journal of Laryngology,* June, 1910.

The case was that of a man aged 45, suffering from a cancerous growth at the base of the tongue. The movements of the tongue were never impaired. It was nowhere adherent, and no glands were detected. But the growth extended completely across the tongue from side to side. Several microscopical examinations were made of sections. The latter ones proved the case to be malignant, and in August, 1909, the jaw was divided in mid-line and the entire tongue removed. There was no recurrence; but nine months later the following conditions presented themselves: The patient was well but thin. He spoke volubly, but was not easy to follow, every "f" being pronounced as "th." He could not bite properly. In eating he did not know where the food was located in his mouth. In swallowing, although the epiglottis was visible, standing vertically upright three-quarters of an inch, food never entered the larynx. The anterior surface of the epiglottis was very insensitive when compared to the posterior surface. In front of this organ the large buccal cavity without any appearance of tongue was very noticeable.

Epithelioma of Larynx in a Man Aged Sixty-nine. Successful Operation. No Return in Fourteen Months. CHICHELE NOURSE. *Jour. of Lar.,* June, 1910.

Previous to operation patient had been troubled with hoarseness and partial loss of voice for five months. Larynx inflamed. Sausage-shaped, red growth occupied the anterior two-thirds of left vocal cord. Thyrotomy was then performed, and the left vocal cord, the left ventricular band and the left arytenoid removed. The thyroid cartilage was found to be completely ossified and could not be sutured after the operation. The parts were brought together by suturing the perichondrium. Recovery

was rapid and permanent. Microscopical examinations of a specimen before operation, and also of the tumor after, proved that the case was one of epithelioma.

Multiple Papillomata of the Larynx. HARMAN SMITH. *Laryngoscope,* May, 1910.

A boy aged five, suffering from hoarseness, had adenoids and tonsils removed. A few days later, under an anesthetic, tracheotomy was done; and later many papillomata were removed through a Jackson tube. Still, as fast as they were taken away they would reappear. Wherever the mucous membrane was injured the papillomata would spring up; so that, notwithstanding frequent operations, at the end of a year the larynx was still filled with papillomata. Operations were then discontinued, and various local and internal measures resorted to. This treatment proved to be equally unavailing. Then, as the tracheotomy tube was still *in situ,* it was decided at last to leave the larynx alone for a while, giving it complete rest. As a result, after leaving the tube in the trachea in all for eighteen months, the growths had disappeared and the child was well again.

Larynx, Four Rings of Trachea, and Part of Thyroid Gland and Gullet Removed during act of Suicide. T. A. PETERS. *Journal of Laryngology,* April, 1910.

The specimen was shown to the Laryngological Section of the Royal Society. A painter, aged 29, in a fit of hallucination caused by alcoholism, cut his throat when sober at 5 in the morning. He made a transverse cut down to the spine and two or three vertical cuts, one of which opened the larynx in the middle line. The suicide then seized the larynx and cut away the adherent gullet and trachea at the fifth ring. He then threw the fragment away and walked 200 yards to a friend's house. The doctors summoned found no bleeding vessels; but it was impossible to bring the trachea to the skin. The man died five hours later of suffocation.

Case of Death on the Operating Table. J. C. BECK. *Laryngoscope,* May, 1910.

Man, aged 35, admitted into hospital in a drowsy condition. Owing to the presence of a running ear, stationary pupils, slight rise of temperature, vomiting, and absence of other general symptoms, meningitis was diagnosed and a mastoid operation

decided on. The patient was prepared, ether was administered, and in twelve minutes the man was dead.

Autopsy: The brain was normal. Temporal bone showed a necrosing ethmoiditis. Chest and abdomen negative. Right kidney cystic. Left kidney small, with shortened ureter. It was concluded that the patient might have had uræmia on admission, although examination of the urine had been negative as regards albumen, and that the small quantity of ether administered aggravated the process, and, increasing the coma, caused death.

OPHTHALMOLOGY AND OTOLOGY

IN CHARGE OF J. T. DUNCAN.

Examination of School Children's Eyes

Before the Chicago Ophthalmological Society, Dr. A. E. Bulson read an excellent paper on the above subject. In part he says:

The importance of systematic examination of the eyes of school children is now appreciated by medical men and many educators, and in a number of States the Boards of Health and Education have endorsed and recommended the general adoption of the tests proposed. In Vermont, Massachusetts, Connecticut and Colorado the tests are made in compliance with laws requiring their use. In many localities teachers are testing the vision of school children of their own volition, without suggestion or recommendation of their superiors. But there is still much work to be done before eye tests are generally adopted in our schools.

In those schools where the tests have received practical application the revelations are astonishing in showing to what an extent the so-called mental defectives and incorrigibles are due to remediable eye defects. In Philadelphia, for instance, it was found that 60 per cent. of the school children had eye strain or defective vision, and in many of these instances children were thought to be backward or mentally deficient, whereas the correction of the defects by properly adjusted glasses was followed by remarkable improvement in the work and conduct of these pupils. The Director of the Department of Public Health, in making his report concerning this work, says that the tests have demonstrated that many so-called mental defectives and incorrigibles do not really belong to that category, and he emphasizes the fact that the expense incurred in making the tests and supplying glasses to those too poor to pay for them has been more than counterbalanced by the increased worth of an educated citizen over an illiterate one who may become a public charge, or whose earning capacity is so curtailed that he can contribute but a small amount to the support of the State. He further believes that in many cases such children would have joined the criminal class or in some way would have become a burden on the community.

The subject should be discussed in all its details before

numerous organizations, and particularly the various women's clubs and teachers' associations.

The task of educating the public logically falls to the specialist, who, by training and experience, is best fitted to present the subject in a comprehensive manner, and if one or more specialists in every community will take an active interest in the work it will not be long before the eye tests of school children will be a part of the curriculum of every school in the country.

Dr. Bulson favored the Allport plan, which provides that the tests be made by school teachers, or, if not by the teachers, by regularly appointed members of the Board of Health. If oculists make the tests it is sometimes looked upon as an interference with private affairs, or it is charged that the oculist is working in his own interest (sometimes true), and the charge is reiterated by envious fellow-oculists who have not been selected to make the examinations. If the examinations are made by teachers, there is seldom any serious objection, and for practical purposes the teachers in our schools can be readily taught to recognize the pronounced eye defects, and the latent errors of refraction will be noticed by the observing teacher if she notes the manifestations common to such conditions. Few teachers will be found who are not willing to go to the trouble of making the examinations when they once understand what can be accomplished in making their school work easier by raising the mental and physical standard of a large percentage of defectives, who are a source of annoyance and extra work because of their defects. Every parent whose child has been benefited by the eye tests immediately becomes an ardent champion of the plan to make eye tests a regular feature in the schools. When public sentiment sanctions the plan, and the more progressive schools have put the plan into operation and demonstrated its value, then and then only will it be possible to secure general legislative enforcement of eye tests in our public schools.

Inspection of Eyes in School

In the course of a series of articles to a lay paper, Dr. J. Grimshaw urges that examination of children's eyesight must be done by specialists. Some extracts may be given:

Systematic examination of children's eyesight is revealing the existence of optical errors in vast numbers of children. These errors cause either defective vision or eye-strain. To prevent physical deterioration and educational waste, it is necessary, by means of spectacles, to relieve the one and cure the

other. The practice of the medical inspector, on the discovery of such a case in the school, is to notify the parent or guardian of the child that it is suffering from defective vision. Then printed advice is given, and the legend on the sheet (Liverpool) runs thus:

"You are, therefore, recommended to consult your doctor with regard to the treatment of the child's eyes. If he considers spectacles to be necessary, you are particularly cautioned against buying them without his prescription. The sight of many children has been ruined by neglecting this precaution."

This piece of satire is worthy of Dean Swift. It is scarcely necessary for me to say that such advice is printed for distribution as a sop to the susceptibilities of the general practitioner. For medical men in general practice are seldom able to prescribe spectacles. As a result of our present system of qualifying and post-graduate medical education, the practitioner gets no training in refraction as part of his medical curriculum. Even if the accomplishment is acquired later, very few men in general practice have the chance of preserving their skill in refraction or eye diseases.

It is necessary in the children's interest that they should be properly examined by a competent specialist. It follows, therefore, that this work must be undertaken by those who have special experience and skill, and the only part the average general practitioner can play is to act as a sort of distributing agent of the children who consult him to have their eyes "tested for spectacles."

In the Annual Report of the Chief Medical Officer for England, in the section devoted to ear disease and hearing, the following occurs:

As regards defective hearing, the approximate average is given as 5 per cent. of school children; the actual returns vary between 12.9 per cent. for Worcester and 1.0 per cent. for Leicester. The Report insists upon the examination of all children backward in speech, inattentive, dull, or backward at lessons, and of those whose parents give a history of deafness in the child. We are glad to read, in connection with testing, that "the ability of the child to hear the ticking of the watch at varying distances from the ear, though a very convenient method, is frequently fallacious, especially in the case of younger children. The test by means of the forced whisper is probably the most suitable one to adopt generally."

The foregoing remarks will show the enormous importance of school medical inspection to otologists and laryngologists, and the great promise it gives as to the prophylaxis of ear and nose diseases in future generations. It is sincerely to be hoped that this promise will be fulfilled, that medical inspection will grow and prosper, and that future governments will be manly enough, and far-sighted enough, to withstand the comment of ignorant parents, whose votes they wish to retain, and will not, for party reasons, sacrifice it and with it the future good of the nation. In a word, it is devoutly to be trusted that compulsory medical inspection may never meet the fate of compulsory vaccination.

Editorials.

THE CANADIAN GOVERNMENT ANNUITIES SCHEME

Our city dailies recently contained a report of a most interesting address which was delivered by the Superintendent of the Department of Annuities at a banquet held under the auspices of the Employers' Association of Toronto. The subject should be of vital interest to the medical profession, and it seems fitting, therefore, that reference to the scheme might properly be made in these columns, for the physician, of all men, is the one with whom the fact of mortality is ever present. Called and commissioned to wage war on the powers that lie in wait to overthrow human life, he is constantly being reminded of the risks men run from exposure to hostile elements or still more hostile germs, of what "pricks and cracks

> Befall the flesh through too much stress and strain,
> Whereby the wily vapor fain would slip
> Back and rejoin its source before its term."

He sees the shadow on the dial ever advancing, and the clouds that come to blot out the dial's usefulness before the sun is set. It is on that account that we write, for the information of members of our profession, of the other side of things, to give them some account of this scheme that is based on the fact of the relative permanence of human life; a scheme that provides not so much for the calamity that may fall in the days of one's youth as for the disability that comes when the "almond tree shall flourish and the grasshopper shall become a burden."

* * * * * * * *

Life insurance is concerned with the probability of dying, but the function that figures in the annuity business, especially in that section devoted to deferred annuities, is the probability of old age. The relative importance of these functions may be obtained by a study of any mortality table. If we selected one hundred healthy doctors at age 30, we should find that seventy-five of them would be alive a quarter of a century later; that

66 would survive 30 years, 56 would survive 35 years, and not till 38 years had passed would their number be cut down to 50. If the selection of the hundred men were made at age 40, we would find 81 of them alive at age 55, 72 of them alive at age 60, 61 of them alive at age 65, and nearly one-half of them surviving until age 70. It is regarded as almost necessary for a man to guard against the risk of his dying before 70; in fact, the protection of life insurance is rather intended for the years before 65; but a consideration of the figures here given will show that the chance for the man in the prime of life dying before his usefulness is impaired is not quite so great as of his reaching the years when it will be expedient or necessary to retire from active work. The inevitable question is then: How shall we provide for this contingency? We are carrying insurance against death; is there not need for insurance against old age?

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A physician's capital is locked within his brain. It is well for him to insure that wealth against the stroke of fate that may leave his family without its income. But if death for him is analogous to a fire or flood that on a sudden destroys his property and leaves him penniless, old age is no less analogous to the culmination of the wear-and-tear processes that lead to superannuation. The day of "new men, strange faces, other minds" will come, when we must yield our tools, be they scythes, or swords, or scalpels, to the younger hands. We feel then that we "can't come back," and it is for this period of life that the Government Annuities Scheme is intended.

It is a generous scheme, but not a charity provision. The rate of interest involved in the calculation of the benefits is a fair one, viz., 4 per cent., and no charge is made on the purchasers of annuities for any of the expenses of administration. The security is, of course, ample, being the wealth and resources of the state. The forms of contract under which annuities may be purchased are, we gather, varied enough to suit any need, and beyond this Parliament has granted the administrative power to make special contracts so long as these do not conflict with sound actuarial principles. A description of some of the plans may be in place here.

Plan "A" would naturally appear to be the more common form of contract sold. This provides for an annuity to begin at age 55, or some later age, the payments for which are made in the period between the date of application and the date when the annuity becomes due, with the condition that, should the purchaser die during this period of deferment, all his premiums will be returned to his heirs, with 3 per cent. compound interest. These premiums may be paid periodically, in yearly, half-yearly, down to weekly instalments, or may be paid in a lump sum at the date of application, or under a combination of these methods. In short, the annuity he will receive at any specified age depends simply on how much a man pays and when he pays it; the earlier the payment is made, the greater, of course, the benefit derived for the actual sum paid when the contract matures. Under Plan "B," there is no return of premiums in case of death, but the survivor who takes the chances receives the same annuity for much smaller payments.

These two plans work as follows for a man now aged 30 or 40:

	—Annuity of $100 at Age—		
Male aged 30.	55	60	65
Annual premium, Plan "A"....	$ 27.33	$ 17.40	$ 10.91
Annual premium, Plan "B"....	22.75	13.35	7.47
Single payment, Plan "A".....	427.96	296.38	195.26
Single payment, Plan "B".....	333.03	211.75	125.00
Male aged 40.			
Annual premium, Plan "A"....	$ 57.56	$ 33.42	$ 19.92
Annual premium, Plan "B"....	50.62	27.14	14.41
Single payment, Plan "A".....	649.29	454.90	304.72
Single payment, Plan "B".....	536.88	341.36	201.51

The Government has also afforded facilities for those who wish to buy "dead sure" things in forming a contract by which the annuity is partly withdrawn from the operation of the laws of mortality, so that the annuity payments are guaranteed for specified terms of years should the annuity age be reached; and there are also several forms of contract under which a man and his wife may enjoy together, or during the lifetime of the survivor of them, an income in old age.

The Annuities Branch of the Government does not profess

to be a life-saving institution, but it is safe to say that in planning to provide against the disabilities of old age it is doing work that will not only help the physician himself, but that will help him, through the elimination of some of the worries which eat out life, to build up a race of men with sound minds in sound bodies.

THE RESULTS OF THE EXAMINATION—COLLEGE OF PHYSICIANS AND SURGEONS OF ONTARIO

The general impression has been gaining ground that there has been much "cramming" by the students before coming up for examination, and this has been accentuated in the memorandum sent to the President of the College prior to the last meeting of the Council, by the examiners for the Intermediate Examination of May, 1910, who reported on the standards adopted by them, and on the standing of the candidates who presented themselves for this examination.

Their standards were based mainly upon three points: First, the safety of the candidate; that is, that he should neither poison his patient, nor by neglect or malpractice endanger life; and while they felt that such candidates would be unsafe and should be rejected, yet, in consideration of the coming fifth year, and the lack of emphasis definitely placed upon this in the past, they decided that those answers which showed such gross ignorance or carelessness should have nothing allowed in the way of marks; but if during the oral examination the candidate was purposely careless or reckless, he should be marked down to 50 per cent. or less, according to his general knowledge. Second, thoroughness and the breadth of the candidate's knowledge. The candidate to have sufficient knowledge of the common diseases, affections and emergencies that he could intelligently carry out treatment. Third, that the candidate should have sufficient knowledge of practice to carry out in a practical way accepted treatment, and show a sense of proportion in selecting the order in which the different measures should be employed.

They fully realized that no hard-and-fast standard should be put up for "pass," and that a certain amount of variation in the standards of individual examiners must necessarily exist, but the candidates were "sized up" at almost the same value by all the examiners at the oral examination, and such exceptions as existed could usually be explained by the candidates having either neglected or laid stress upon a certain subject or group of subjects.

The view is also expressed that no candidate securing less than 40 per cent. on his paper should be allowed to present himself for oral examination.

The report further states that the candidates presenting themselves for examination were of good standard in bearing and physique. But a number, by reason of mental incapacity or of defective preliminary training, should never have been allowed to enter the course of studies for medicine, or should have been weeded out in the first years. If the teaching bodies could put in force a means by which these few unfit would be discouraged early in their course, they would in reality be benefiting such students. Many of the candidates are unable to spell the ordinary words or to use freely the English language. The most noticeable defect of the candidates was the inability of the student to apply his knowledge—apparently assimilation had not taken place. One is reminded of the sentence, "As if sheep, after they have been feeding, should present their shepherds with the very grass itself which they had cropped and swallowed, to show how much they had eaten, instead of converting it into wol and milk." * * * * *

The following are the results of the examinations in Primary, Intermediate and Final, at London, Kingston and Toronto:

LONDON.

	Tried.	Passed.	Failed.
Primary	15	9	6
Intermediate	17	9	8
Final	13	6	7
	45	24	21

KINGSTON.

	Tried.	Passed.	Failed.
Primary	33	26	7
Intermediate	28	15	13
Final	22	13	9
	83	54	29

TORONTO.

	Tried.	Passed.	Failed.
Primary	65	22	43
Intermediate	151	75	76
Final	95	76	19
	311	173	138

The above list of figures does not convey the fullest information possible, as many of the details, such as the number of candidates presenting themselves for re-examination, and the number of candidates coming from other than Ontario colleges, are not included; but surely this high percentage of failure, nearly 50 per cent. of the Intermediate candidates, is a startling comment on the want of proficiency of the candidates or the lack of efficiency of their teachers.

The examiners' report stated that some of the candidates who presented themselves for examination had not the necessary mental capacity for the work, but we understand they were few in number. Is the standard, as stated in the report of the examiners, too high? Surely not; and we hope the examiners may live up to the moderate standard of the last examination, for it is not one demanding knowledge of the uncommon, but merely that the candidate should show that he is safe to be allowed to start the practice of medicine, having in view the fifth year for clinical study prior to his obtaining the license.

Are the students defective in their practical work? The examiners report in the affirmative, and the institution of the fifth year by the Council supports this view, and conversation with the teachers convinces us that it is so.

Is the grave failure because there is not sufficient clinical material, or is it that the students are not taught the practical nor trained to practice?

Is it that the student is not encouraged to use the material at hand, or is it that his teaching is defective because his time is taken up, not with observations and practical training, but with "talks" from his teachers, of little interest except from an academic standpoint?

Are the professors—sometimes styled teachers—competent, or are some of them "inebriated with the exuberance of their own verbosity and egotistical imaginations"?

The student pays a good price for a practical and thorough medical education, and the Government should see that he gets it.

THE MEETING OF THE ONTARIO MEDICAL COUNCIL

The last session of the Medical Council, *1906-1910*, assembled in Toronto, Tuesday, July 5th, and continued in session until Saturday, July 9th.

During this time good work was accomplished. The Committee on By-Laws had held several meetings and consolidated the by-laws into fourteen, which was considered sufficient for the purposes of the Council, eliminating many by-laws that were ineffective and obsolete. As a result, the proceedings of the Council were very considerably simplified.

On account of severe criticism concerning some of the methods adopted by the Council, a special committee on finance was appointed, which thoroughly investigated financial matters and reported many changes, defining the hours members were expected to travel and draw pay, and defining the pay by half days. These same arrangements are to govern examiners and members of committees.

It has never been considered by the profession at large that members of the Council were overpaid for their services, notwithstanding certain members of the College have seen fit to seriously criticise that remuneration. The examiners have never been well enough paid for the amount of sacrifice they make in conducting these examinations. The time the examinations take, the close application required during the hours of examination,

and the tedious toil of reading several hundred papers, demands better remuneration, and it was felt by many that the honorarium to be given for the coming year was not sufficient.

After some years of effort, a chartered accountant has been appointed auditor. This is in no way a reflection on the gentleman who for a number of years officiated as auditor for the Council, but it is in accord with the most advanced business methods, and it was the desire of the Council that the best business methods should prevail.

An innovation this year was the report submitted by the intermediate examiners: an exhaustive report, which contained valuable suggestions for the conducting of future examinations. A suggestion was offered that the primary examination be held by the teaching bodies under censorship. This was a very serious question, yet a majority of the Council was in favor of a change in this respect, but it was thought that, as the elections were coming on this year, it would be an opportune time to secure the views of the electors in this matter.

The Dominion Registration Bill, or what has been known as the Roddick Bill, was submitted to the Council in its changed form, and the approval of the Council to the proposed changes in the Canada Medical Act was granted. In its present form, it is, no doubt, more acceptable to the different provinces than in any of its previous modifications, but it is still far from an ideal Act. Considerable discussion took place on the clauses referring to examinations, and the great difficulty and expense necessary to conduct these examinations in so numerous and diverse portions of the Dominion. The cost would be enormous, the time taken up would be great, and, altogether, this feature of the Act appeared to many at least to be impracticable. The subject of reciprocity with Great Britain was left in abeyance for the time being particularly owing to the clause in the Roddick Act, which provides for Dominion reciprocity with Great Britain.

The Committee on complaints and registration had a large number to consider, and wherever possible the petitions were allowed.

The Education Committee had a serious amount of work

before it owing to a misunderstanding on the subject of chemistry, which was taken from the primary examinations, and passed into the preliminaries; also with two of the subjects that had been amalgamated by a change in the curriculum last year, but this difficulty was removed.

A deputation from the Medical Faculty of the University of Toronto waited on the Council to suggest the holding of the examination at a much later date. The suggestion was accepted and the examination will be held about two weeks later. This will necessitate holding the next meeting of the Council in July. The change is made for the benefit of the student, and the results of the next examination may show its value.

The Council adjourned after a vote of thanks to the retiring President for his hard work during the year.

NOTES.

The honorary degree of D.Sc. has been conferred on Professor W. Osler, M.D., F.R.S., by the University of Leeds.

The Manitoba Sanatorium for Consumptives was formally opened near Ninette on June 22, 1910. The institution as it now stands cost $65,000, and will, when fully equipped, accommodate 80 patients.

According to newspaper despatches, the Radium Institute of London finds it hard to obtain the 5½ grammes of radium needed to equip the Institute properly for its therapeutic work. The firm which undertook to supply that amount is unable to live up to the contract.

The first woman who ever became a fully qualified medical practitioner was Dr. Elizabeth Blackwell, who died recently in England, although she was an American by birth. She studied medicine at the University of Geneva, New York. She went to London in 1849, and although finding much opposition, entered St. Bartholomew's Hospital as a student. In Paris she contracted ophthalmia from a patient, with the result that she lost an eye. Then her hopes were blasted of making surgery a specialty. In 1851 she returned to America and established a dispensary, which afterwards grew into the New York Infirmary for Women.

PRESS COMMENTS ON THE REPORT OF THE CARNEGIE FOUNDATION

Any movement directed toward the securing of better-trained physicians will usually meet with public approval. Hence it is not surprising that almost universally the newspapers have made favorable comment on the report on medical education recently issued by the Carnegie Foundation for the Advancement of Teaching.* Some of the few adverse comments still show concern for the "poor boy who wants to study medicine" and for the "sparsely settled country districts," which, according to the argument, would be without physicians if fair educational standards were maintained. That even the country districts have no reason to be alarmed regarding physicians is shown by the Knoxville (Tenn.) *Sentinel:*

"The more compact settlement of the country, the spread of good roads, the telephone and the automobile will in time make it possible for the distant farmer to summon from the city doctors learned in all the lore of the German, the Austrian, the French and of the American universities. When that time comes, doctors will have to seek the best schools or risk having no patients. Even now unnecessary multiplication of medical schools should be avoided and many of those in existence might be merged with advantage to all concerned, except the doctors who get valued advertising from their position as teachers."

As to the "poor boy" argument, the Omaha *Bee* says:

"It is not narrowing the lines of opportunity to the poor but ambitious young man and woman to reduce the number of medical schools by raising the standard of efficiency. There are always ample opportunities for those who make good in medicine as elsewhere, and for the physician who has the making of success the best medical school preparation is none too good."

That the profession is at present overcrowded and that higher standards of medical education and licensure are needed are recognized in the following from the El Paso (Texas) *News:*

"It is extremely deplorable that so many doctors and lawyers are every year turned loose on the public, many of whom are utterly unfit to render the service demanded of them. The efficiency and capableness of both doctors and lawyers depend on the standard of the schools from which they graduate. And the

*This report should be read by every physician. While it is a book of 346 pages, it may be obtained by merely sending 17 cents for postage to the Carnegie Foundation, 576 Fifth Avenue, New York City.

standard of the schools, law or medical, depends in many instances on the regulations prescribed by the state laws. Where the state does not require a very high standard of efficiency and is willing to grant licenses on a mediocre basis, schools of inferior rank are bound to spring into existence, and it is from such schools as these that hundreds of badly and improperly trained doctors and lawyers are annually turned out."

Regarding the statement that higher standards will tend to reduce the number of physicians to fewer but better prepared men, the New York *Times* says:

"On the face of it, a plan to restrict the physician's career may seem a wrong one to those seeking to enter it, may savor of the denial of the individual freedom to which we Americans are devoted—and addicted. But there will remain complete liberty for the more competent, and that the competent only shall be allowed to practice is one of the plain, universal, unalienable rights of the whole community."

The New York *Globe* draws a pointed comparison between the St. Louis college which brought suit for damages against the Foundation for publishing its shortcomings and the action taken by an Iowa college which did not raise a cry of "slander," but began an energetic campaign, whereby sufficient funds were obtained to put it on the right basis. Regarding the continuance of low standards, it also adds:

"If the doors of the state university, rich in educational opportunities, qualified to turn out real doctors, lawyers, engineers, and the like, are open to all, why should the manufacture of feebly qualified professional men or other be tolerated at all?"

Although there may be statements of detail which might be criticized in the Foundation's report, generally speaking the statements made are recognized as the truth by those who are in position to judge. While the truth sometimes hurts, nevertheless, any presentation of the actual facts cannot result otherwise than in good to the cause of medical education. The need of improvement has long been recognized by the majority of medical colleges, and these schools, rather than decry the Foundation's criticisms, will earnestly endeavor to correct their faults and thereby obtain real benefit from the Foundation's investigation.—*Jour. A. M. A.*

The *Medical Record* comments on the report as follows:

"The most recent publication, entitled 'Bulletin Number Four,' of the Carnegie Foundation for the Advancement of

Teaching, treating of medical education in the United States, makes what Horace Greeley used to call 'mighty interestin' readin'.' Whether it is also entertaining depends largely upon the direction of the reader's sympathies and college associations. Very naturally, those who are connected directly or indirectly with the schools so fiercely and contemptuously flayed by Mr. Flexner, the writer of the report, resent his attack bitterly; while those connected with the institutions receiving his faint praise—there is but one perfect school in the eyes of this investigator—whatever they think, say little.

"The report professes to be based on a thorough and most painstaking personal investigation of every medical school in this country and Canada, made by Mr. Abraham Flexner, a professional critic of educators, or student of systems of education. In order to correct a very current misconception, we may say, in parenthesis, that this is not Dr. Simon Flexner of the Rockefeller Institute, but his brother. The doctor has troubles of his own with the antis of various ilks, and should not lose professional support through being made to answer for the sins of his brother. Neither, may we add, should the brother be judged by the essay which the president of the Foundation contributes by way of introduction to the report.

"As a result of this investigation Mr. Flexner concludes that the country is suffering from a great plethora of medical schools—a fact which medical men have well known and deplored these many years; that many of the medical schools have not a sufficiently high standard either of admission or of graduation—another fact long well known; and that the facilities for teaching, in the way of apparatus, subjects for dissection, etc., are lacking in a number of schools—likewise a matter of common knowledge. What the writer of the report does not seem to have discovered is that all these schools, with the exception of a very small and practically negligible number, are in process of betterment, and that several associations of medical men and medical educators are working constantly to encourage and force the poorer schools to raise their standards and improve their teaching methods. When one realizes what the best of the medical schools were twenty-five or thirty years ago, and what tremendous progress has been made during the past twenty, and especially the past ten years, and when one remembers that all this uplift has come from within, without the help of any outside 'Foundation,' the work of Mr. Flexner seems somewhat a waste of effort and a needless expenditure of Mr. Carnegie's hard-

earned money. All reforms, worthy of the name and lasting, come from within, and the interference of outsiders serves only to bewilder and irritate. The facts gathered and tabulated in this Bulletin of the Carnegie Foundation will perhaps be useful for reference by the real reformers, and had nothing yet been attempted or accomplished in the way of raising standards, the comments and admonitions of these self-appointed critics might have been useful as a goad. As it is, they will be very properly resented as uncalled for. The writers of the Bulletin are unfair in that they ignore what has already been accomplished and are silent as to the agencies at work in raising the standard of medical education. Whether this omission of a fact which, if properly presented, would prove the work of the Foundation to have been one of supererogation, was intentional or whether it is only evidence of a superficial and one-sided investigation, we do not know."

It is not our intention at present to discuss the Carnegie Report. To be appreciated, it should be read from cover to cover. The information it contains is astounding, in some instances amusing, and is a sad commentary upon American medical education as it was in the year 1909.

It is not an exaggeration to say that the publication of this Report will result in numerous medical college funerals, in an improvement of many institutions which were thought to be high-grade, and in an aroused public sentiment which will remove the cloak of secrecy from our medical schools.—*St. Louis Medical Review.*

CHANGES IN THE PERSONNEL OF THE MEDICAL FACULTY AT THE UNIVERSITY OF PENNSYLVANIA

The Trustees of the University of Pennsylvania have announced recently certain changes in the personnel of the teaching staff, to go into effect at the beginning of the next academic session, September 1st, 1910.

To fill the Chair of Theory and Practice of Medicine, made vacant by the resignation of Dr. James Tyson, Dr. David L. Edsall has been transferred from the Chair of Pharmocology and Therapeutics, and the vacancy in the latter will be filled by the

appointment of Dr. A. N. Richards, now Professor of Pharmacology in the Medical School of the Northwestern University.

One hundred thousand dollars has been received for the endowment of a Chair of Physiological Chemistry, and Dr. Alonzo Englebert Taylor of the University of California will be its first occupant.

Dr. Richard M. Pearce of the University and Bellevue Hospital Medical College of New York has been appointed Professor of Pathology. Dr. Pearce will also direct the work of the Department of Research Medicine recently established by an endowment of $200,000.

Dr. Allen J. Smith, the present Dean of the Medical School, will be the occupant of the new Chair of Comparative Pathology and be at the head of the newly instituted courses in Tropical Medicine.

Dr. Paul Lewis, who will have charge of the laboratory of the Phipps Institute for the Study, Prevention and Treatment of Tuberculosis, now an integral part of the University, has been elected Assistant Professor of Pathology.

Obituary.

MIHRAN K. KASSABIAN

Dr. Mihran K. Kassabian, an eminent specialist in X-ray work, died in the Jefferson Hospital, on July 12th, of burns received from the mysterious rays during years of continuous research.

Dr. Kassabian, who had experimented with the X-ray for many years, received his first injury in 1902, when the finger nails on his hands were burned. He placed himself in the care of physicians, who noticed that the burns produced an effect on the skin similar to that of cancer. Two years ago his hands were so badly affected that it was found necessary to amputate two fingers, Dr. W. W. Keen performing the operation in the Jefferson Hospital. The operation, however, did not check the progress of the cancer-like affliction, and a year ago it was found to be extending up his left arm, causing an enlargement of the glands under the arm-pit. This became so serious that it was found necessary to remove the glands, Dr. J. Chambers DaCosta operating.

The second operation proved as futile as the first, and it was considered urgent to subject the patient to a third operation, consisting of the removal of certain muscles on the left side of his chest. This was accomplished about four months ago, and, serious though it was, Dr. Kassabian appeared to some extent to rally from it. Indeed, he continued his work with almost the same vigor as if he had been in the best of health.

Dr. Kassabian, who was an Armenian, was born in Caesarea, Asia Minor, forty-two years ago, and in 1894 came to the United States to study medicine. He entered the Medico-Chirurgical College in 1898, and in the same year, while the Spanish-American war was in progress, served in the Hospital Corps of the army.

The doctor was a member of the Philadelphia County Medical Society, the Roentgen Society, and the Medical Club of Philadelphia. About eighteen months ago he went to Constantinople to marry Miss Virginia Giragosian, of that city. Besides his widow, he leaves three brothers, jewellers, in Smyrna.

Book Reviews

Insanity in Every-Day Practice. By E. G. Younger, M.D. Brux, M.R.C.P. Lond., D.P.H., etc. Senior Physician, Finsbury Dispensary; late Senior Assistant Medical Officer, London County Asylum, Hanwell; formerly Assistant Medical Superintendent Metropolitan District Asylum, Caterham; Fellow of the Medical Society of London; Member of the Medico-Psychological Association of Great Britain. Second edition, revised and enlarged. Published by Ballière, Tindall & Cox, 8 Henrietta Street, Covent Garden, London, 1910. (All rights reserved.)

The above volume, which contains only about 115 pages, covers exactly the subject matter referred to in the title. The work is one eminently useful to the young practitioner; he will find in it precisely the information he requires when confronted with a case of insanity, and many useful hints as to the manner in which he must approach the patient. Appended are reproductions of the various certificates required by the Lunacy Commission of Great Britain.

The author has not seen fit to discuss the subject of the psychoneuroses, or mention it in any way, nor has he made reference to hysterical states. We think that, although the book is only intended to cover insanity, it would have been advantageous to have some light thrown on these diseases.

Modern Medicine: Its Theory and Practice, in Original Contributions by American and Foreign Authors. Edited by William Osler, M.D., Regius Professor of Medicine in Oxford University, England; Honorary Professor of Medicine in the Johns Hopkins University, Baltimore; formerly Professor of Clinical Medicine in the University of Pennsylvania, Philadelphia; and of the Institutes of Medicine in McGill University, Montreal, Canada; assisted by Thomas McCrae, M.D., Associate Professor of Medicine and Clinical Therapeutics in the Johns Hopkins University, Baltimore; Fellow of the Royal College of Physicians, London. Vol. VII. Diseases of the Nervous System. Illustrated. Published by Lea & Fabiger: Philadelphia and New York. 1910.

We have much pleasure in reviewing the above volume, which

in every way is well up to the standard of its predecessors. The introduction to the Diseases of the Nervous System has been undertaken by Llewellys F. Barker, of Baltimore, who discusses the senses and their symptomatology, disturbances of sensation, the various complex psychic processes, etc. Joseph Collins, of New York, deals with topical diagnosis, while the various system diseases, tumors, functional disturbances, etc., are taken up in a complete and systematic manner by such men as Gordon Holmes, Harvey Cushing, and a number of other equally prominent neurologists. The illustrations and plates leave nothing to be desired, the photographs from life being particularly good.