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No. 1.

PERICARDITIS: A CLINICAL ANALYSIS OF THIRTY-SIX CASES.

BY

W. F. HAMILTON M.D.
Montreal.

It is not the intention to discuss lengthily the various symptoms or physical signs of pericarditis, but rather to classify some of the cases which have been in the wards of the Royal Victoria Hospital and to emphasize certain interesting clinical features which have come under notice.

Before entering into this analysis, however, a brief note upon the relations which pericarditis bears to tuberculosis, and to pneumonia, may be recorded. Out of seventy-one cases of pericarditis found in 602 autopsies in the Royal Victoria Hospital, only eight were classed as tuberculous. Five of these were associated with miliary tuberculosis, one with a tuberculous broncho-pneumonia, one with chronic pulmonary tuberculosis in the stage of cavitation, and one with caries of one of the bones. (There were no cases with tuberculous peritonitis). While unable to indicate the number of cases of pulmonary tuberculosis found among these 602 autopsies, a comparison of the number of tuberculosis pericarditis cases with the total number examined, shows that as a cause tuberculosis is comparatively rare.

These records have also been asked to bear witness in the incidence of pericarditis with acute pneumonia of the lobar or lobular type, and the following numerical relationship has been established. Of 71 cases ten are found associated with pneumonia. Of these five were lobar, and five were lobular. In 282 cases of lobar pneumonia only six of these, or 2.1 per cent, showed clinical signs of pericarditis.

Read before the Montreal Medico Chirurgical Society. December, 1905.

The classification adopted in studying these cases serves to indicate the primary disease to which the pericarditis is related, rather than the bacteriology of the inflammation itself.

According to this principle the cases fall readily under the following five divisions:—

1. Pericarditis as a terminal complication of nephritis 10 cases
2. Pericarditis with acute pneumonia or pleurisy 3 “
3. Pericarditis secondary to acute rheumatism, endocarditis, chorea, or tonsillitis 20 “
4. Pericarditis with pulmonary tuberculosis 1 “
5. Pericarditis with other acute general infections (puerperal septicaemia, 1) (cerebro-spinal meningitis, 1) 2 “

Table showing Age and Employment of Patients in various Groups.

GROUP 1.—PERICARDITIS AS LATE EVENT IN NEPHRITIS.

F.—10—School girl.
M.—12—School boy.
M.—30—Painter.
M.—39—Painter.
F.—42—Shoe factory hand.
F.—47—Housework.
F.—48—Housework.
M.—50—Insurance agent.
M.—52—Book binder.
M.—54—Lumberman.

GROUP 2.—PERICARDITIS WITH PLEURISY OR PNEUMONIA.

F.—15—Servant.
F.—24—Servant.
M.—60—Machinist.

GROUP 3.—PERICARDITIS WITH RHEUMATIC FEVER, ENDOCARDITIS, CHOREA, OR TONSILLITIS.

F.—9—School girl.
F.—9—School girl.
M.—11—School boy.
M.—11—School boy.
F.—11—Factory hand.
M.—14—Messenger.

F.—15—Laundry hand.
M.—17—Labourer.
F.—17—House servant.
M.—17—Clerk.
M.—17—Confectioner.
M.—19—Farm Labourer.
M.—18—City labourer.
M.—19—Conductor street cars.
M.—21—Tramp.
M.—23—Machinist.
F.—26—Housework.
M.—28—Tobacco factory hand.
M.—29—Plumber.

GROUP 4.—TUBERCULOUS PERITONITIS.

M.—25—Tanner.

GROUP 5.—WITH OTHER ACUTE INFECTIONS.

F.—36—Housework.

- (a) *Puerperal Septicaemia.*
(b) *Cerebro-spinal meningitis.*

There were 13 females and 23 males.

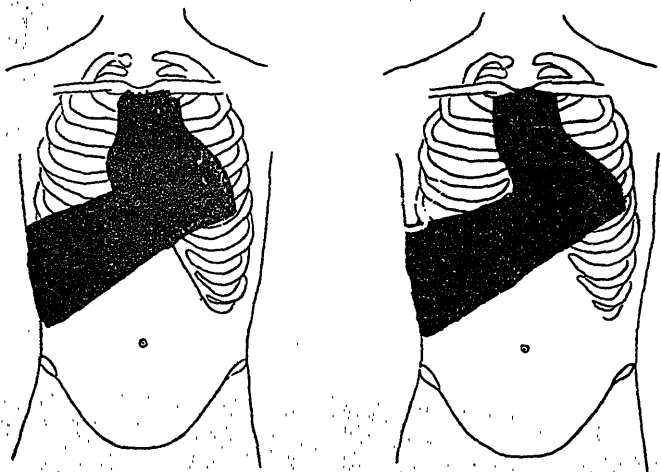
Of these twenty cases in group 3, fifteen gave a clear history of acute articular rheumatism. In nine cases the pericarditis and arthritis were concurrent. In only one of these (6896) is there evidence found of the pericardial inflammation showing itself before the signs in the joints. In all the cases having so-called concurrent arthritis there is found a clear history of previous attacks of rheumatism. There were nine patients giving a history of tonsillitis. Three of these gave no account whatever of joint pains. In one of these patients erythema no-

ANALYSIS OF RHEUMATIC GROUP OR GROUP 3.

CASE No.	AGE	RHEUMATISM	ENDOCARDITIS	SORE THROAT	CHOREA	ERYTHEMA NODOSUM	OTHER INFECTIONS	RESULT
6800	9	At 6 years,	Mitral.	10 days ago.	—	—	—	Death.
6932	9	—	Mitral.	—	At 6 years.	—	Measles in infancy.	Improved.
4758	11	At 8, 9, & 10 years.	Mitral.	—	—	—	Measles.	Death.
8136	11	At 8 years.	Mitral.	Yes.	—	—	—	Cured.
8388	14	—	Acute mitral.	4 days before.	No.	Intercurrent.	—	Cured
8395	14	—	Mitral.	Repeated attacks	—	—	Mumps 3 years before.	Died.
7973	15	At 2 and at 5 years.	Mitral.	—	—	—	—	Died.
9032	15	—	Mitral.	2 or 3 times.	—	—	Typhoid fever, Septicæmia 1 year ago.	Improved.
8956	17	At 15 & concurrently.	Mitral.	—	—	—	Measles at 8 years, Scarlatina at 15.	Improved.
8872	17	At 13, 14, 16 & concurrently.	Aortic & mitral.	—	—	—	Measles, Scarlatina, Varicella.	Died.
8485	17	At 14 & concurrently.	Mitral.	2 months before.	—	—	Diphtheria, Scarlet Fever, Measles, Pneumonia (?)	Improved.
2347	17	At 16 & concurrently.	Mitral.	Yes.	—	—	Pneumonia.	Improved
6896	18	At 12 & concurrently.	Mitral & aortic.	—	—	—	—	Improved.
5529	18	At 17 years.	Mitral.	—	—	—	Pneumonia, pleurisy (Concurrent).	Improved.
5882	19	At 11 & concurrently.	Mitral & aortic.	At age 7.	—	—	Scarlatina at 11 years.	Good.
5484	21	At 11 & concurrently.	Mitral & aortic.	—	—	—	Left pleurisy (concurrent).	Good.
7334	23	At 21 & concurrently.	Mitral & aortic.	—	—	—	Measles, Varicella, Whooping Cough.	Good.
6988	26	At 7, 14 & concurrently	Mitral & aortic.	—	—	—	Whooping cough, German measles, measles.	Died.
9375	28	At 21 years.	Mitral & aortic.	Tonsillitis.	—	—	Measles, Typhoid fever, gonorrhœa.	Improved.
6098	29	Not definitely.	Mitral & aortic.	—	—	—	—	Good.

dosum of characteristic type followed the throat and endocardial signs. The patient having chorea gave no history of arthritis, yet at the age of nine showed well marked mitral endocarditis.

Examining these rheumatic cases still further one finds that all have signs of mitral disease. In twelve cases the mitral valve alone is involved, while in the remaining eight both the mitral and aortic valves show evidence of disease. These statements are made upon clinical observations alone, and one recognizes that error may creep in, particularly as the signs at the mitral valve in the presence of aortic disease, and an acute pericarditis, may well exist without any endocarditis of this valve. It may in justice be said, however, that where a chance to verify this diagnosis unfortunately occurred, disease of the valves was



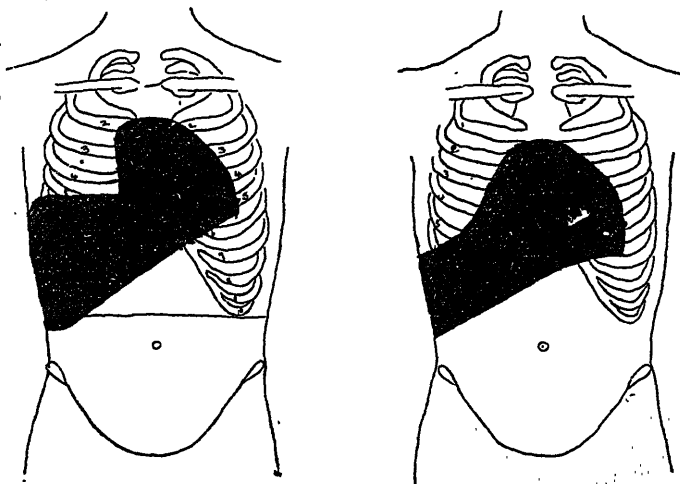
present, with but one exception. In this case a relative insufficiency was present at the mitral orifice.

The story of the early and recurrent attacks of rheumatism suffered by those in Group 3, when considered in relation to their occupation, speaks both of susceptibility of those in early life to severe cardiac complications, and of the influence of labour, privation and exposure in determining these complications.

Among the symptoms of pericarditis, two may claim our attention—pain, and dysphagia. There is no mention of pain in the records of 13 of our cases, particularly in those cases where pericarditis was a late event. In the remaining cases its severity and situation are alike variable. For the most part, however, the pain was severe, in some instances causing the patient to cry out, and in many instances requiring morphia for its relief. In 16 patients the pain was felt in greatest

intensity over the left præcordium, and beneath the sternum; in two cases the left shoulder, and in three cases the epigastrium were areas to which the pain was referred. "A paroxysmal character with extension through to the back" describes it in two other instances.

Dysphagia was marked in four of our cases, and in one of these considerable difficulty was experienced even with liquids. Another patient (5882) stated that swallowing induced pain opposite the 2nd and 3rd ribs. Some clinicians with wide experience have never found this sign; others again remark upon its presence among the signs of a large effusion. In these four patients it was an early sign, unattended with tonsillitis,—observed even before definite signs of fluid were detected.



The accompanying illustrations will serve to indicate the shape of the dulness in a few of our cases when effusion was present. Some years ago Shattuck remarked that he did not find "the dulness of the large effusion either pear-shaped, or pyramidal." In these illustrations one sees that the shapes are various. While each of the above-mentioned types is found, yet the semi-circular type or the "hut-type" is quite as frequently mapped out. Upon this point more may be said when speaking of the diagnosis.

In consideration of the fact that much has been made of the physical signs over the lower portion of the left pleura posteriorly, as indicating pericardial effusion, a few reports of autopsy findings at the left base, although they may not explain the signs in a given case, may yet afford suggestions of pathological conditions possible under similar circumstances. Take the following cases from among our groups:

9400—Compression of the left lower lobe, bilateral pleurisy.

8872—Left hydrothorax with pleural adhesions on the right.

3675—The left lower lobe was remarkably firm and oedematous.

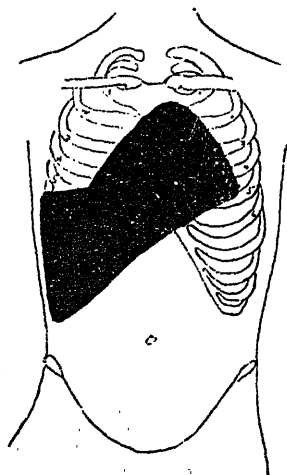
6656—Collapse and chronic pulmonary oedema, old infarct on the left lung.

7973—Bilateral hydrothorax.

9536—Oedema of the lungs.

7883—Bilateral pleurisy.

In 50 percent of our cases clinically examined abnormal signs were discovered over this region, while less than 30 per cent showed indifferent or slight signs at the right base. In four cases pleurisy with effusion at the left base was diagnosed, while in three other cases in the same region pneumonia was manifestly present. Over the right lower lung area signs of pneumonia were found twice, while signs of an effu-



sion into that pleura were found three times. In about ten cases (over 25 percent), slightly impaired resonance, blowing breathing and bronchophony, have been heard at the angle of the scapula. We have been able in but a few—not more than three—instances, to make out the quadrangular area of dulness below the 9th rib, described by Ewart, and explained by him as due to a downward displacement of the liver with altered dorsal relations.

A study of the posterior signs at the left base was carried on with a view of determining the relation they bore to pericardial effusion, that is to say, whether one found posterior signs over the left pleura only after a large effusion had taken place in the pericardium. From the clinical as well as from the anatomical standpoint we must return the answer that such signs as we have described have been found even without effusion, but in the presence of a dilated and hypertrophied heart.

To detect or discover Ewart's quadrangle of dulness, delimited, as he describes it, at the left base has been found difficult, while to accept his explanation of the sign is yet more difficult. It would appear from what has already been said that inflammatory pleural or pulmonary changes may account for this sign. In addition to this I would suggest as another cause those circulatory changes which may occur in the left pleura from pressure exerted upon the vena azygos minor as it crosses the spinal column behind the pericardium to join with the azygos major, into which it empties the blood normally drained from that part of the left pleura below the 6th rib.

Diagnosis:—"Probably, no disease is so frequently overlooked by the practitioner." This remark of Dr. Osler's may be a justification for this paper. At the same time it emboldens me in the confession that in six of our cases the condition was undiagnosed, until the pathologist dealt with the subject. In the majority of these cases, however, the pericardium was involved as a late event, and the amount of fluid found was never very great. For instance, in Case No. 9400, death was due to an acute lobar pneumonia. There was a diplococcus pericarditis in which but a small amount of fluid was found. In No. 9283, a case of post-puerperal streptococcus infection, there was but little effusion. The same may be said of the effusion in No. 6968 with acute parenchymatous nephritis. In Nos. 6656 and 6763, adhesive pericarditis was found.

To leave to the pathologist the discovery of a pericardial effusion is in most instances, little more than an oversight, while the failure to detect a fibrinous pericarditis of but a few hours standing can scarcely be put down to negligence. But to fail to distinguish between cardiac dilatation and pericardial effusion speaks of the difficulty of the task, and in some instances of the lack of clinical experience on the part of the practitioner.

Those who may fail in differential diagnosis of such a case, after giving due attention to the symptoms and signs present, may still hope to have a place among that "number of excellent observers" mentioned by Osler, who, believing that a pericardial effusion was present were convinced to the contrary only after "paracentesis cordis, instead of paracentesis pericardii" was performed.

Such an experience has been ours. The case (No. 4758) was that of a boy of 11 years of age, who was the subject of rheumatic endocarditis, and had been under observation for upwards of four years. When last admitted to the hospital he complained of severe pain in the upper sternal region with shortness of breath. His pulse was 140 per minute, and there was a marked increase in precordial dullness, both to the right

and left, measuring transversely four inches, while the note in the 2nd left interspace was impaired. The angle of dulness between the liver and heart was obtuse. Posteriorly near the angle of the left scapula bronchophony and blowing breathing were heard. The transverse præcordial dulness increased from four inches to six, and in a few days to seven and a half inches. There was a to-and-fro friction murmur heard over the centre of the sternum at the base of the heart and along the left edge of the sternum. In the light of this evidence, and in the view of the imminence of death from what appeared to be pericardial effusion, it was decided after consultation with Dr. Garrow to perform paracentesis of the pericardium. The fourth right interspace close to the sternum was chosen, and three ounces of fluid not distinguishable from pure blood were withdrawn. The patient seemed in no way made worse by the operation but died after 22 hours. The immediate results of paracentesis showed that in all probability the heart was punctured and that the fluid withdrawn was from one of the cardiac chambers. The autopsy showed that such was the case; the right auricle had been tapped. There was no pericardial effusion, only a dry pericarditis with a heart greatly enlarged and dilated. Before leaving this case let me emphasize the following points upon which so much stress has been laid as helping to distinguish between pericarditis and cardiac dilatation; the pericardial friction rub, the increase of the dulness upwards into the second left interspace, the rapid increase of transverse præcordial dulness, the dulness in the 5th intercostal space, Rotch's sign, the obtuse angle between liver and heart, i.e. the dull cardio-hepatic angle, and the posterior signs at the angle of the left scapula, Ewart's sign—all speaking for pericardial effusion, and yet not an ounce of fluid in the pericardium! This case is one in which the difficulties of differential diagnosis, already referred to, were very great indeed.

A similar case occurred more recently, and a few observations may serve to show that one should not trust implicitly to valued signs. In this case there was præcordial pain. The dulness extended upward into the second left interspace, a friction rub persisted, which, as we all know, may be the case even in the presence of considerable effusion. The cardiac impulse was seen well inside the limit of dulness to the left. The extent of transverse præcordial dulness was marked both to the right and left of the sternum and occupied the greater part of the thorax. The outline on the right approached the liver dulness at an obtuse angle, and Traube's resonant space was obliterated. The friction disappeared, and the cardiac sounds became fainter. Our past experience helped us not a

little in interpreting these signs, and an effusion in the right pleura explained in part at least the dullness in the cardio-hepatic angle. There was no pericardial effusion, but an acute plastic pericarditis and cardiac hypertrophy with dilatation.

The fatality in these thirty-six cases is very high, and is expressed by 55 per cent, or 20 cases. Six patients died in Group No. 3, and three of those belonging to the nephritis group had chronic endocarditis with a history of rheumatism at comparatively early ages.

The Treatment.—The rheumatic cases were treated with the ordinary anti-rheumatic remedies, and all patients in severe pain were given morphia, either hypodermically, or by mouth. Locally, the ice bag, or Leiter's coil to the pericardium, gave relief to pain in certain cases. Paracentesis pericardii was not indicated in any other case than that already described. A left pleural effusion was aspirated in one case.

The main points which it is desired this study may bring out are:—

1. That the young rheumatic subject is very susceptible to pericarditis.
2. That tuberculosis is a comparatively rare cause of pericarditis.
3. That pericarditis with lobar pneumonia is comparatively rare. In a series of 282 cases only six showed signs clinically of pericarditis.
4. That Rotch's dull angle, or the cardio-hepatic angle is doubtless found dull with pericardial effusion, but it is found with marked dilatation of the heart as well, and hence loses its value as a diagnostic point between these two conditions.
5. Dullness on the left second interspace, upon which some have insisted as of diagnostic value in such conditions, may also be found with cardiac dilatation.

6. It appears that there may be other causes to account for the posterior dull quadrangle at the left base than that to which Ewart ascribes it.

In the wards of every large hospital in the course of even a few years there are found many clinical pictures of the same disease, a study of which is in the highest sense instructive and of much practical value. Those of us who have viewed these pictures at closest range have found them so. It is sincerely hoped that the mere glimpses of these clinical pictures, more than which, such an analysis can scarcely afford, may not be wholly devoid of interest.

Before closing this paper, I wish to express my thanks to Dr. Ballantyne who some years ago began the analysis of these cases, and especially to Drs. Scrimger and Tull, and Moffatt who more recently have been indefatigable in searching records, arranging facts and making diagrams.

A STUDY IN THE SO-CALLED INFANTILE PARALYSES.

BY

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The so-called Infantile Paralysis may be divided into two groups, the spastic, and the non-spastic. The most frequent cause of the non-spastic form is the affection described as Anterior Poliomyelitis.

Acute anterior poliomyelitis has been defined by Osler as "an affection occurring most commonly within the first three years of life, characterized by fever, loss of power in certain muscles, and rapid atrophy." By statistics it has been shown that next to rickets, poliomyelitis is the most prolific source of deformity, and of deformity which never disappears spontaneously.

Observations made at the Children's Memorial Hospital suggest that it is a disease which, although occurring most frequently within the first three years of life, is not extremely uncommon even up to adult life; that frequently there is a history of an acute febrile onset followed by paralysis and paresis in single muscles, or groups of muscles. These paralyzes usually attain their maximum intensity at once, or almost at once. Quite as frequently, however, there can be elicited no history of a premonitory febrile attack, but, rather, the history of a slight, perhaps progressive, loss of power in certain muscles, or groups of muscles, which has become noticeable to the friends of a patient who previously was supposed to be in perfect health and condition. In both classes of cases atrophy is soon noticed, and this accompanied quite frequently by deformities of various forms.

Etiology.—The cause of this disease is unknown. It has been attributed to dentition, over-exertion, cold, exposure and even traumatism. The occurrence of this disease after infective fevers may demonstrate either a toxic origin or that the infective fevers predispose to this affection.

Painter (1) of Boston, drawing his conclusions from his study made of the epidemic which occurred in Gloucester in the summer of 1900 states, that we have as good evidence of the infectiousness of anterior poliomyelitis as we have in the case of scarlet fever; that it is probable that there may be several organisms capable of producing this "symptom complex."

The pathological alterations found in the few early cases, where an examination has been possible, show that the latest lesions are dependent upon an acute inflammation causing a secondary destruction of nerve-

cells. This inflammation was, at one time, considered to be due to a selective action of the poison for the cells of the anterior cornua, but more recently the distribution of the inflammation has been said to depend upon the blood supply. Marie and others have thought the initial process is, embolism or thrombosis, the result of an acute infection.

Head and Campbell (6) deny that the disease is directly secondary to occlusion or interference with a vessel, and have strongly expressed the opinion that the thrombosis is secondary to an acute infection, probably of bacterial origin, but Batten (7) draws our attention, in his article on the Pathology of Infantile Paralysis, to the fact that exactly similar changes as are found in Infantile Paralysis, viz., hæmorrhages and small cell exudation, may be produced by obliteration of small vessels, and concludes:—

(1) That the condition is due to a primary thrombosis of a branch or branches of the anterior spinal artery supplying the grey matter of the anterior horn.

(2) That such thrombosis may be produced by many and various forms of infection, and the disease is not due to a special specific infection.

(3) That the condition is more likely to occur in the lumbar region owing to the blood supply of this portion of the cord being at a point more distal from the heart, and the long course of the reinforcing arteries.

Epidemics have been reported by Colmer in 1843, Bengenholtz in 1881 and by Oxholm about the same time; Media in 1887, by Cordier in 1885 and by Caverley (2), Brackett (3), Painter (4) and many others.

It sometimes attacks two or more children in the same house at, or about, the same time. W. Pasteur (5) reported in 1897 a family of seven children being attacked by this disease at the same time. The isolated cases are, however, by far the most frequent.

The epidemics reported, and those occasions upon which two or more members of the same family have been affected suggest a specific causation for this disease, but it is possible that epidemics and groups of cases may be attributed simply to atmospheric or other extraneous conditions increasing the liability to this affection in one particular locality or dwelling.

Morbid Anatomy.—Examinations have shown that the disease is due to an acute inflammation in the anterior cornua of the spinal cord. This inflammation causes, or is accompanied by, a large amount of small round-cell exudation, hæmorrhages and thrombosis of vessels. It is followed by necrosis, and finally by cicatrization.

Goldscheider, Siemerling and others have demonstrated that the disease is localized in the parts supplied by the ventral median branch of the ventral spinal artery.

Clinically the complete paralysis which occurs so often at first, and the rapid recovery of the majority of muscular groups, point to a pressure on nerve elements and cells rather than to a destructive inflammation.

The lesions are most frequently seen in the lumbar and cervical enlargement. The meninges may be involved in the inflammation.

Although there may be still some doubt as to the earliest pathological lesions found in the cord, as this affection is so rarely fatal, there is no doubt, however, that the persistent paralyses are the result of necrosis of the large motor cells in the anterior cornua, but it is necessary to note that our knowledge of the lesions seen on examination of the spinal cord after the termination of the acute stage of this affection may be insufficient to enable us to properly differentiate between cells atrophied, primarily through this affection, and those atrophied through disuse. It will, perhaps, be necessary to explain this by stating briefly a fact which will be accentuated in this paper, viz., that the paralyses, or often more correctly speaking the pseudo-paralyses following anterior poliomyelitis, can only be partly attributed to destruction of nerve cells; that loss of function in the muscles supplied by these cells is quite frequently due to stretching or to disuse, and conversely an atrophy of nerve cells may possibly be attributable to the loss of function in muscular fibres governed by these cells and condemned to disuse by the stretched condition of the muscle. This latter statement could, however, be verified, only, by comparisons made with similar spinal ganglia in the cords of those who had lost extremities, or in ankyloses, and, perhaps, in cerebral-palsies.

Symptoms.—With or without slight indisposition or feverishness the patient loses the use of one or more groups of muscles. Convulsions at the onset are rare, not usual, as in the acute infantile hemiplegias. Fever although often, or perhaps always, present may not be noticed. Pain and tenderness in the affected limbs are frequent in those cases with an acute onset, where, also, the paralysis soon reaches its maximum; usually in a few hours. The severity of the pain is said to depend upon the amount of involvement of the meninges. The distribution of the paralysis follows no rule. The lower extremities are most frequently affected; indeed in over eighty per cent of these cases one or both lower extremities are involved. The paralysis is, however, not necessarily confined to the limbs, but may affect the body, more especially

the muscles of the back. The muscles of the lower extremity are usually stated to be involved in the following order of frequency,—

(1) The Peronei, (2) The Extensors of the Toes, (3) The Quadriceps, (4) The Tibiales.

The hamstrings and the muscles of the calf are about equally attacked. The muscles which most frequently escape are the sartorius and ilio psoas. In the experience of the Children's Memorial Hospital the tibiales are more frequently affected than either the extensors of the toes or the quadriceps.

The muscles most frequently attacked in the arm are, in the order of frequency, the deltoid, the shoulder group, consisting of the deltoid and supra and infra spinatus, the biceps and supinators (these being generally conjointly affected). The flexors of the hand are more rarely affected. The sphincters are rarely involved, and there is no tendency to decubitus. In the early stages the reflexes and electrical excitability are said to be increased, but later both are diminished.

The paralysis is usually at its height in from a few hours to a week or ten days.

This early stage is followed about the end of the first week by a period of degeneration when not only the cells of the anterior cornua degenerate, as is shown by the gradual loss of reflexes, but the excentric nerves and muscles depending on the spinal ganglia whose function is irreparably gone begin to degenerate either through lack of spinal nutrition, disease or stretching. Accompanying these degenerative changes a period of regeneration gradually begins. The paralysis, which usually for a period varying from six weeks to three months has remained stationary, begins to improve, and at first rapidly, until gradually improvement ceases. After six months it is rare to see any improvement in untreated cases, but before this time has passed the functions of many muscles, or muscular fibres, which have weathered the storm returns, and consequently, we have degeneration accompanied by regeneration. The degeneration of the excentric nerves and the muscles, disuse, and stretching from unopposed muscular action together with the central lesion result in atrophy of the parts which become flaccid and the affected muscles soft and flabby. From this condition complete recovery is rare.

Sensation is unaffected after the earliest stage of this disease. The skin reflexes are absent and the deep reflexes in the affected muscles are usually lost. There is no response to either direct or indirect Faradization if the loss of power is complete. Duchenne has shown that faradic excitability completely vanishes by the seventh day or at the latest in the second week.

When the paralysis persists the wasting is often extreme. The growth of the bone is frequently affected and the ligaments of the joints may be so relaxed that subluxations are apt to occur.

When the upper portion of the cord is affected, cerebral symptoms may make their appearance in the adult. (8)

Diagnosis.—Although the diagnosis is often made without difficulty occasionally there are seen patients in whom great difficulty is experienced in making a diagnosis.

The paralysis of anterior poliomyelitis must be distinguished from the cerebral paralysis. This although sometimes difficult, is done by the history, the character of the paralysis, the age, the condition of the muscles, the rapid wasting, the absence of reflexes, the loss or partial loss of farado-muscular excitability. In other words, by the differences between a flaccid, and a spastic, paralysis.

Progressive muscular atrophy, rarely found in childhood, sometimes begins in the legs. This betrays no loss of reflexes while any muscular tissue remains.

Pseudo-hypertrophic paralysis is differentiated by its history and the excess of muscular tissue in the early stage.

Multiple Neuritis, which is extremely rare in children, is distinguished by its symmetry, by affecting the peripheral muscles and especially by the acute sensory disturbance.

The Pseudo-parosis of Rickets is a condition which is quite common amongst the children of foreigners in this country. In this there is little or no atrophy and the child always presents such characteristic symptoms of rickets that little difficulty should be experienced.

Disease of the joints and "limp-chorea" may also be confused with it. The paralysis and deformities resulting from a bifid spine may at first cause confusion. The characteristic deformities accompanying Friedreich's Ataxia are not unlikely to be confounded with the lesions due to poliomyelitis, but the history and accompanying characteristic lesions should always be sufficient to exclude these.

Paralysis from obstetrical operations is noticed immediately after birth while anterior poliomyelitis occurs rarely before the twelfth month.

Prognosis.—The prognosis for perfect recovery is always bad. The physician who sees the patient during the first two weeks, while feeling reasonably sure that improvement will occur, should impress upon the friends that the outlook for complete recovery is bad. The surgeon, however, who sees the patient at a later period, when contractures and deformities have occurred, can give a more cheerful prognosis. Experience has shown that in all cases by education and conservative surgery, improvement, and in many cases marked improvement, can be aimed at.

Treatment.—Treatment can be separated into (1) that for the primary stage, or the period of central degeneration; (2) the secondary stage, or the time when regeneration accompanies degeneration, and, (3) the tertiary stage, or the treatment of the deformities resulting.

Primary Stage:—The treatment of the acute stage usually falls to the physician. It is hardly necessary for me to argue either for or against treatment during the acute inflammatory stage. Protection of the parts controlled by the affected nerve cells should be assiduously carried out, and measures to stimulate absorption at the seat of the primary lesion would seem to be rational when there is evidence to show that the paralysis may be primarily due to pressure followed by atrophy of the large cells in the anterior cornua, further, in studying the pathology of this disease compared with the pathological findings in the cords of two patients, who suffered from herpes zoster, examined by Head and Campbell, we find that the lesions exactly correspond. Now it has been proven that in herpes, although certain of the ganglia cells are killed outright, others, however they may have been changed at the onset, rapidly recover, and clinically it would seem that in anterior Polio-myelitis cells which at first appeared to be paralyzed later resume their function.

The Primary Stage gradually subsides, and we have the secondary stage, viz., that of "degeneration and regeneration," which, at present, is certainly the most important time for treatment aiming at the prevention of deformity.

Secondary Stage:—The key-note to both the preventative treatment, and later the mechanical and operative treatment, is the recognition of two important facts:— first, if the limb is not completely paralyzed contraction of the non-paralyzed muscles act very harmfully on their opponents; secondly, cell destruction is not so extensive as would at first appear, and the affection as far as the majority of cells are concerned is a transient and a recoverable one.

Muscles lose their power, are affected with a pseudo-paralysis from stretching and disuse. This pseudo-paralysis must not be mistaken for that resulting from a cell destruction. As an example:— a whole arm may be paralyzed. The flexors may recover first and through their contraction, possibly aided by gravity, such flexion may be produced that the extensors will become over-stretched and lengthened, whilst the flexors will become shortened and contracted. In order to profit by this knowledge let us consider what are the common deformities which follow this affection, and which should be prevented. In a completely paralyzed arm the deformity to prevent is one of flexion of the wrist

and elbow, and partial flexion of the fingers; at the ankle it is extension and inversion or eversion; at the knee flexion, at the hip flexion, often with external rotation. These deformities are due to gravity, the shape of articular facets, and to unbalanced muscular action.

Immediately after the first stage of the affection under consideration most careful treatment should be persevered in to prevent deformities, and to conserve every force that remains. Massage, manipulation, and possibly electricity are the chief agents at our command during the period of "degeneration and regeneration." The first two agents are certainly of great value and the use of electricity is considered to be so by many. It is in this stage that temporary braces or supports are often necessary, although it is well to remember that we cannot hope for compensatory muscular development if we indiscriminately cage up all partially paralyzed limbs. If any branch of treatment has been neglected in the past it is this, the preventative treatment, the treatment which should be persevered in during the period of "degeneration and regeneration" that deformities may be prevented, that muscular power may be conserved.

The time for surgical intervention is as soon as possible after the attack. If this were generally recognized anterior poliomyelitis would not be followed by fixed deformities requiring tenotomy, and only those surgical procedures which aim at the restoration of power and stability would be required.

Whilst the fever lasts such medical treatment as offers a prospect of reducing its severity should be used, but when it is over the patient should remain under surgical care. The first endeavour of the surgeon should be to minimize the damage threatened to the parts governed by the nerve cells affected. In the earliest stages this is best accomplished by massage and warmth. Until one has had an opportunity of judging which group of muscles are affected, it is well to employ general massage of the parts affected. For similar purposes thick flannel or absorbent cotton should surround the extremity, but care should be taken that an already impeded circulation will not be affected. As soon as one is able to discover the amount of positive damage, massage should be mainly directed to the affected muscles, but even before this has been ascertained the limb is kept in a position opposed to the usual deformities which experience has proven are perhaps most subject to the laws of gravity. In the lower extremity the flexors are less frequently affected than the extensors, and hence the contraction will occur at the flexor aspect of the joints. This contraction not only causes the limb to assume an abnormal position, but it also overstretches the already

weakened extensor muscles, and so helps to prevent their recovery. To illustrate this statement let us take for example the treatment for this stage of an extensively paralyzed lower extremity. In such a case we would keep each joint in the position of equilibrium, say mid-way, between flexion and extension, at the same time carefully massaging to improve the circulation of the affected parts. That this treatment may best be carried out the patient should be placed in the recumbent position, and a long straight splint with a foot-piece should be fitted to the lower extremity. This should reach from the hip down to the foot and should be used with light extension. Perhaps the best splint for this purpose would be a modification of the Thomas Knee Splint. Two or three times a day this splint may be removed and thorough massage and manipulation performed, and later active and passive movements encouraged. This treatment must be continued until it is evident that no further recovery can be expected in the affected nerve-cells, when the patient should be provided with a suitable retentive apparatus and encouraged to walk. After six months it is rare for any untreated case to improve (Jones). It is now that the patient must be educated to compensate for his loss.

Tertiary Stage:—The measures at our disposal for the treatment of the deformities resulting from anterior poliomyelitis include not only education, i.e., the endeavour to educate nerve-cells not wholly degenerated to re-assume their governing function and muscle fibres their contractile powers, but operative and mechanical procedures; the former including tenotomy, tendon-grafting, arthrodesis, astraglectomy and allied procedures.

Education:—It is surprising how much can be done by educating the patient to use the muscles which are not wholly paralyzed, and in the case of deformity to use the muscles affected by a pseudo-paralysis. This is done by active movements combined with passive movements directed to lengthen contracted muscles and fascia and to shorten muscles contracted by mal-position. Perhaps here it may be well to again accentuate the fact that it is beyond peradventure that the most serious omission made in the treatment of anterior poliomyelitis and the deformities resulting has been our failure to recognize that loss of power in this affection is caused not only by destruction of motor cells, but by disuse, and the stretching due to gravity and the unopposed action of the unaffected muscles. This is not a new doctrine. It was demonstrated by Mr. H. O. Thomas many years ago. There are disabilities due to mechanical causes, and those due to central pathological changes. By a proper appreciation of this difference we need rarely encounter any paralytic deformity. Mr. Thomas was probably the first to demon-

strate this truth. The extensors of the fingers and wrists, for instance, are more frequently affected than are the flexors in an attack of anterior poliomyelitis affecting the upper extremity, and, in consequence, wrist-drop frequently results. In these cases two factors come into play. The first is gravity, which places the hand in a semi-flexed position; the second is inefficiently opposed muscular action, which allows the flexors to contract. No improvement can now be hoped for until the strain is entirely removed from the over-stretched extensor muscles; we must endeavour to weaken the strong muscles and to strengthen the weak ones. Improvement can be brought about by such procedures during many years after the original lesion. This has been demonstrated by both Mr. Thomas and Mr. Robert Jones. (10)

*Tenotomy.**—The most frequently employed operative procedure for the relief of deformities resulting from anterior poliomyelitis is tenotomy. It is performed both subcutaneously and by open incision. It is nearly always a most simple operation and can be done with little fear that union will not follow; in fact, two surgeons alone, Mr. Tubby of London and Mr. Robert Jones of Liverpool, report having performed over ten thousand tenotomies with only four failures to get union.

The history and description of the operation of tenotomy are of such interest that your attention is drawn to the words of the late Mr. Noble Smith (11), a surgeon greatly interested in the orthopaedic surgery of his day:—

“There is no operation in surgery which is more firmly established, as a sound method of treatment in suitable cases, than that of tenotomy. Before this method was practised the deformities produced by permanent contraction of muscles, chiefly the result of paralysis, were found by surgeons to be almost irremediable, and they were left, practically untreated. The case of Lord Byron, for instance, is one very generally known. He suffered from a deformity which, during almost any period of his life, could have been relieved by tenotomy, and which certainly could have been cured if he had been operated upon, and thoroughly treated, during childhood.

“The performance of tenotomy as a satisfactory operation dates from the year 1831, when Stromeyer, of Hanover, commenced to divide tendons subcutaneously through a minute opening in the skin. Previous to this date tendons had been divided through an open wound, with frequent bad results from suppuration. In recent years, since the introduction of antiseptic surgery, the open method has been revived, and may

* Those interested in this operation might refer to the Biographical Notes, published by A. B. Judson in the Transactions of the American Orthopaedic Association, Vol. XII, 1899.

be safely employed when absolutely necessary; but for the majority of cases the subcutaneous plan is satisfactory and more simple. The introduction of tenotomy into England, in 1837, was due to the pluck and determination of the late Dr. Little. He himself suffered from talipes equino-varus, and submitted to treatment at the hands of Stromeyer, in opposition to the advice of every English surgeon whom he had previously consulted.

“During the sixty-nine years, (now seventy-five,) which have passed since the establishment of this operation, many thousands of tendons have been divided in Great Britain alone, and the results which have followed have been so remarkably good, and attended by so few accidents, that it may be said that, with proper precautions and with a due amount of skill upon the part of the surgeon, subcutaneous tenotomy is practically free from risk.

I have just referred to ‘accidents’ as being ‘very few.’ With proper care and some experience they ought perhaps never to occur. I may, however, refer to these accidents which have been known to happen.

“1. The entrance of septic matter into the small wound, causing suppuration and possibly blood-poisoning, is an accident which, with antiseptic surgery, ought never to take place.

“2. The wound of an artery,—(when tenotomy is performed in the region of the foot) is not a serious matter, and only needs extra pressure and a prolongation of the after-treatment. Pricking an artery is worse than cutting it right through, as an aneurism may follow the former accident. Pressure for a prolonged period will, however, cure this latter complication.

“3. Injury to a nerve,—The peroneal nerve might be injured in the performance of tenotomy of the biceps femoris. If the biceps tendon is prominent, as usually happens when the muscle is contracted, there need be no fear of injuring the nerve; but if the surgeon has any doubt in the matter he had better approach the tendon by an open wound. The same remarks apply to operations in the region of nerves in the ankle and foot.

“4. Non-union of the cut tendon, weak union, and excessive length of new tendon.—I believe that these accidents, when they occur, are almost invariably due to improper or inefficient treatment after operation.

“Speaking generally, it may be said that the operation of tenotomy is less dangerous than the prick of a pin. The pin will probably be dirty, the surgeon’s knife scrupulously and surgically clean.

“However skillfully a tendon may have been divided, the ultimate result will depend upon the care and attention bestowed upon the after-treatment.”

“Fixation after operation.—A plaster of Paris bandage is frequently used to fix a limb after tenotomy; but although this method of fixation is simple and very effective at the time, there are serious objections to its employment. It is obvious that it is not practicable to remove a plaster bandage every few days, and yet it is of the greatest importance to watch thus closely the process of repair in the divided tendons. This repair differs considerably in different patients. In some it takes place very rapidly, in others very slowly. The gap between the cut ends may be filled up in three or four days, and the union be tolerably firm at the end of a week. Upon the other hand, there may be no apparent union at the end of ten days, or even a longer time may elapse before the gap is filled in. In some patients we find the cut ends of the tendon approximating too closely, while in others they recede too far. In the former case we must fix the foot so that the uniting material is more stretched, and in the latter we must approximate the divided ends.

“Several alterations in position may be necessary during the first fortnight or for longer after operation. In a patient upon whom I operated recently for paralytic equinus I could feel no uniting material for a long time, and I therefore gradually extended the foot so as to approximate the cut ends. At the end of the fourth week there was still a complete gap left. I then placed the foot in a position of extreme equinus. A week later a firm union could be felt, whereupon the foot was again brought up to a right angle with the leg. If this child's foot had been fixed in a plaster bandage and left for several weeks there would probably have been a very weak union, or possibly no union at all.

“To retain the foot in the desired position, small iron splints, which can be bent into any desired position by the surgeon, suffice. They should be softly padded, and fixed by adhesive strappings and bandages.”

It may be briefly stated that whereas tenotomies can usually be performed subcutaneously about the ankle, at the hip and knee the incisions should always be open: to this rule there is no exception.

Although it has been the custom on this side of the Atlantic to use plaster of Paris for fixation, a light splint is, as Mr. Noble Smith suggests, certainly safer, because while employing this the progress of the case may be continually watched, and that this is necessary has been demonstrated to most of those who have practised this operation. As an example, suppose the Tendo-Achillis has been divided because of contraction of the muscles of the calf,—union has resulted, but too great a recession of the divided ends having taken place a weak and deformed structure results.

Fasciomy.—This operation is required much less frequently for the relief of deformities resulting from anterior poliomyelitis than is

tenotomy, yet in some of the more or less characteristic deformities, such as talipes equinus, it is sometimes required. This deformity is not infrequently complicated by contraction of the plantar fascia, which may often be relieved by repeated wrenching with the Thomas wrench, but which sometimes requires subcutaneous section.

Tendon Transplantation:—This operation was first performed by Nicoladoni in 1882, Parish and Drobuik in 1892 reported cases. Since then Goldthwait and other American Orthopædic Surgeons have extensively practised it. Tubby and Jones have employed this procedure for relief of many hundreds of cases in England. In Europe Vulpius, Lange, Kunik, Glück, Kümmel and many other surgeons have adopted it.

The rationale of the operation of tendon-transplantation, to use the words of Tubby and Jones (12), is first, to utilize any ill-directed voluntary movement; and, secondly, to restore the balance of power, so far as possible, in the affected part. But it is evident that the joint can never be a fully strong one, since the amount of power at the disposal of the surgeon has been diminished by disease. Yet it must be conceded that a well-balanced joint is better than an ill-balanced and weak one.

Many have been the theories advanced as to how a central influence which has always been exerted to perform a certain definite function can be so affected that it will perform a function diametrically opposed to that which it originally performed; as, for instance, the conversion of extensors into flexors. But, putting aside theories, interesting though they be, it may safely be stated that even such radical change may frequently be made with benefit to our patient. Perhaps, in caution, it may be added by simply counter-balancing opposing forces or detracting from unopposed forces which are acting to the detriment of the patient.

Methods:—There are to-day three principal methods of tendon-transplantation.

(1) The transplantation of a strong tendon into a weak one, or vice versa.

(2) The direct transference of a strong tendon into a new and more favourable bony or periosteal insertion.

(3) The transference of a strong tendon into a new and more favourable insertion by the prolongation of the reinforcing tendon by silk cords.

The first method may be performed in numerous ways which are best understood by referring to the following scheme of Vulpius. (13)

1. Both the weak and the reinforcing tendons are completely divided, and the proximal end of the reinforcing tendon is united to the distal end of the weak.

2. The reinforcing tendon is totally divided, and a slip is partially detached from the distal end of the paralytic tendon, the proximal end of the reinforcing tendon being united to it.

3. Both tendons are divided, and the proximal end of the reinforcing tendon is united to the distal end of the paralytic tendon, and the proximal end of the paralytic tendon to the distal end of the reinforcing tendon, thus effecting a double transfer, crosswise.

This method is very useful in cases where a muscle is not entirely paralysed, and it is not desired, while reinforcing it, to entirely throw out of gear the remaining healthy fibres in the weakened muscle.

4. The paralysed tendon is left undivided. The reinforcing tendon is completely severed, and its proximal end is grafted into the paralytic tendon, the distal end of the reinforcing tendon being left free.

5. The paralytic tendon is divided, and its distal end pulled on tightly and inserted into the reinforcing tendon.

6. A slip is partially detached from the reinforcing tendon; the paralytic tendon is completely divided, and the reinforcing slip is joined to the distal part of the paralytic tendon.

7. A slip is partially detached from the paralytic tendon, and inserted into the reinforcing tendon.

8. Slips are partially detached from both tendons, and the slips are sutured together.

9. A slip is partially detached from the reinforcing tendon, and inserted into the paralytic tendon.

Of these methods numbers 4, 6 and 9 are generally considered to be most useful.

Of the three principal methods that of direct transplantation into periosteum or bone is, in the experience of the Children's Hospital, the most useful. As an example of this the operation devised for the relief of valgus due to paralysis of the Tibialis Anticus may be cited. The Long Extensor of the Great Toe is detached from its insertion and transplanted either into the periosteum over the Internal Cuneiform or base of the first Metatarsal, or, perhaps better, through a canal bored through either of these bones.

The third principal method, viz., that of Lange, must be spoken of at some length, as it has been proven to be of great service in certain conditions the most particular of which is that of the transplantation of the flexors of the knee into the patella in cases of paralysis of the Quadriceps muscles.

Goldthwait (14) in 1897, drew attention to the fact that in paralyzes of the extensors of the knee the Sartorius not only frequently escapes,

but often slipping backwards and losing the fulcrum which a fully developed quadriceps assures, becomes a strong flexor, and arguing that if this could be brought forward to the patella it would resume its normal function as an extensor, he operated in several cases most successfully. From this followed the attempt to convert certain of the ordinary flexors of the knee, viz., the biceps and semi-tendinosus into extensors by bringing them forward to the patella or the tibia, but this was found to be most difficult because of their insufficient length.

This difficulty has been, however, mastered by Fritz Lange (15) who bridged the interval between the cut end of the flexors and the periosteum of the tibia or the patella with strands of silk, and this with success, as fibrous tissue soon forms around these silken strands creating, indeed, a natural extension to the original tendon.

Tendon-grafting, (at least, theoretically) as an operative procedure is a distinct advance on all methods till lately employed, but to be of value it should not be resorted to too soon after the attack of anterior poliomyelitis. Whitman (16) says, "In general, a period of two years at least should intervene between the onset of the paralysis and the operation." We should not expect too much from this operation. "Practical cure is only possible in those cases in which the paralysis is restricted to one of the weaker muscles. "Some of the most satisfactory results are those in which the main object of the procedure has been primarily to remove a distorting force, the actual transplantation being of secondary importance." "The original operation of Nicoladoni, of transplanting the two peronei muscles into the tendo-Achilles is a useful procedure in the sense that it may lessen the tendency towards deformity, but one must indeed be credulous to believe that these two feeble muscles, working at a disadvantage, can actually replace the function of the great calf muscle."

The results of tendon-grafting at the Hospital for the Relief of the Ruptured and Crippled were given, four years ago, by Gibney. (17).

Good Results in	33 per cent
Fair Results in	53 per cent
Negative Results in	14 per cent

In no case has it been observed that the foot or limb is in a worse condition than before the operation.

In a study of the treatment of paralyzes from Anterior Poliomyelitis made by John Dane of Boston, and reported in 1904, the writer concluded with these words,— "While tendon-grafting may, in certain cases, yield a satisfactory result, the selection of cases for this operation should be much more careful than it was three or four years ago, and

for the great majority of hospital cases either astragalotomy or arthrodesis offers, by far, the greatest promise for obtaining a strong useful foot several years after operation." Dane had analyzed fifty consecutive cases operated at the Boston Children's Hospital for deformities resulting from Anterior Poliomyelitis, and arrived at this conclusion, which certainly demonstrates that the claims made by the friends of tendon-grafting were premature, and that the benefits of tendon transplantation have in some cases been shown by experience to be but transitory. This, however, has been suggested quite frequently. At the Montreal Medico-Chirurgical Society in 1903 a patient was shown who was a striking demonstration of the fact that, although, a tendon-grafting done, as in the case then before you, may be surgically a success from a practical stand-point, it may not be successful (18). At the same time it has been repeatedly proven that in selected cases tendon-grafting is one of our most valuable operative procedures for the relief of paralytic deformities in children. Experience at the Children's Memorial Hospital has demonstrated this fact, but further, although it is often wise to attempt to correct deformities by this means alone, tendon-grafting can often be more advantageously combined with other methods of treatment such as are about to be described.

Arthrodesis.—By arthrodesis is meant the denuding of a joint either completely or in part of its cartilaginous covering.

Arthrodesis was practised by Albert of Vienna in 1878. Twenty-six cases were reported by Mr. Robert Jones of Liverpool in 1894, and since that date the operation has been performed many hundreds, perhaps thousands, of times for the relief of deformities resulting from anterior poliomyelitis.

The aim of this operation is to secure fixation, or partial fixation at the joint.

The indications for the operation are,—

- (1) For the correction of a flail-like joint.
- (2) For the correction of a fixed deformity.
- (3) Where a mobile joint is deformed at the moment of pressure.
- (4) As an adjunct to tendon-transplantation.

The theoretical disadvantage is the possibility of retarding the growth of the extremity by interference with the epiphysis.

The only real disadvantage is that the limitation of movement, which necessarily results with the correction of deformity, is, as in the case of the knee-joint, often both a trial and a danger to the patient.

The possibility of retarding growth by this procedure has been proven by Dane (19) to be unlikely. Dane secured a series of X-ray photographs of the ankles of those in whom the operation had been performed.

In all of them spicules of new bone between the recently opposed bony surfaces were clearly seen. This confirmed the clinical examination which showed the two bones to be rigidly united, and, further, proved that the distance between the seat of operation and the epiphyseal junction is so great that the destruction of the epiphysis can only arise "from the grossest carelessness on the part of the operator."

In the opinion of Mr. Robert Jones this operation can be safely carried out at any age up to twenty-five years. This age limit is fixed presumably because after that age pain not infrequently follows. Many surgeons consider that arthrodesis should but rarely be performed in early life. Fifteen or sixteen years being what they consider the age of election. The advantages of an early arthrodesis are, however, thus enumerated by Dr. Dane:—

1. "By avoiding the use of costly apparatus for a period of years a considerable saving in money and a still greater saving in trouble is effected for the parents as well as the child.

2. "At an early stage in the trouble the bones are relatively normal, both as regards their shapes and their mutual articulations; nor are there marked malpositions of the foot as a whole, which so often have to be overcome in operations at a later stage.

3. "The tissues are then in a period of great plastic activity, when repair is both quicker and more perfect than in the older child. Cartilage is being changed into bone all through the foot, and we have less fear of a failure to secure bony union at the site of operation.

4. "When at an early age the foot is secured in a relatively normal position the statics of the lower limb are not so much disturbed, and growth goes on under more nearly normal conditions than can be possible when there is a constantly increasing tendency to the transmission of weight along abnormal lines.

5. "By avoiding mechanical support the unaffected and partially paralyzed muscles are not subjected to the injury inseparable from the use of constricting bands and straps. They have, in consequence, a freer blood supply and develop more rapidly. The improvement in muscular power in the two cases which I have to report was, however, in excess of what I can account for from this cause alone. Provisionally I would suggest that it may be due to the rigid fixation of the ankle-joint preventing abnormal movements from overextending the weakened muscles and exciting reflex action, and still more to its giving the child a sense of security which causes it to exercise more freely and naturally."

Arthrodesis is undoubtedly an operative procedure of great value when performed at the ankle. Its value at the knee-joint is question-

able, as this joint can be governed so well by apparatus and it seems doubtful whether it is wise to submit the patient to the discomfort of an immoveable knee-joint when it is remembered that this joint can be controlled by a double upright brace with a catch-joint under the patient's control; and, again, it is necessary to realize the increased liability to fracture in an extremity presenting so great a leverage. Further, it has been proven that in certain deformities about the ankle and especially that of calcaneus, the allied operation of astragalectomy will often be more satisfactory than will arthrodesis.

Astragalectomy.—Of all deformities of the foot that which has proved the most difficult to control is calcaneus. Its cause is the loss of the calf muscles. When those muscles which are attached to the posterior surface of the Os Calcis are paralyzed, the extensors being insufficiently opposed, dorsal flexion results and the posterior surface of the os calcis assumes the position of the inferior surface. To this condition a secondary deformity is added. The longitudinal arch becomes exaggerated through the action and retraction of the remaining unparalyzed muscles and the tissues.

Innumerable varieties of braces or supports have been suggested for the temporary rectification of this deformity, yet the general results of mechanical treatment have been unsatisfactory. Willett's operation of shortening the tendo-Achilles can hardly be expected to suffice.

Although tendon-transplantation was first performed by Nicoladoni for the relief of this deformity, the two peronei being drawn back and used to reinforce the tendo-Achilles, this condition, of all others, as Whitman (20) has pointed out, is where tendon-grafting is of least value, for how can the peronei be hoped to replace the calf-muscle which is stronger by ten times than the two muscles used to replace it?

Arthrodesis, in many cases, is quite sufficient to relieve this condition of calcaneus, but when we have a compound deformity, where lateral deformity is present, arthrodesis may not suffice, in which case astragalectomy will probably result in a useful foot for the patient. In performing this operation, however, it is best to follow Whitman who, perhaps best, described its usefulness for patients presenting the Calcaneus deformity, and to combine with it both tendon-grafting and arthrodesis.

Nerve Transplantation or Anastomosis.—This is an operative procedure which theoretically suggests many possibilities, but which practically has not yet been shown to be justifiable, except in a certain few conditions.

One of the first experiments made in the transplantation of a nerve was that of Faure in 1898, This was followed by that of Barrago-

Ciarella in 1901, as well as by Manasse in 1900. Harvey Cushing reported a case of nerve anastomosis in 1903, and since then many orthopaedic and other surgeons have reported operations with varied success.

Although such operations as the transplantation of the spinal accessory nerve into the facial in cases of paralysis of the latter nerve are certainly justifiable, as so little is sacrificed by these procedures, it is difficult to see what can, under ordinary circumstances, justify the transference of either a nerve whose function is of any importance into one whose function is lost, or the anastomosis of a nerve whose function is lost with a nerve of any importance, because of the danger of injury to the latter. Again, in orthopaedic practice, how rare it is to find a condition where the opportunity of relieving deformity by nerve anastomosis can be considered, although there is no possibility of improving our patient's condition by tendon grafting and the allied procedures already described as rarely followed by painful results.

From a neurological point of view nerve anastomosis and the possibility of the transference of nerve impulses, through a new and artificial course, is of great interest, but as a practical surgical procedure the field of its usefulness seems to be most limited.

Conclusion.—In discussing the treatment of the deformities resulting from anterior poliomyelitis very little has been said about the use of mechanical apparatus. This omission is in keeping with the purpose of the paper, because rarely has experience demonstrated that the application of a brace is followed by improvement. It is true that progressive deformity is often prevented by the application of a brace; but yet how often, coincidentally, has a clumsy and imprisoning apparatus prevented the freedom necessary to the natural development of unparalyzed and but slightly paralyzed muscles! It is certain that we must continue to use mechanical supports in many conditions, but we should rarely advise such means of control unless all other methods have failed; or, again, unless we are dealing with inoperable conditions; or as a useful adjunct to more scientific surgical procedures.

EXAMPLES OF TREATMENT.

Paralysis about the Ankle Joint.—The most common deformities resulting from paralyzes at the ankle are:—

Talipes Equinus, due to paralysis of the Extensors.

Talipes Calcaneus, due to paralysis of the *Calf Muscle*.

Talipes Varus, due to paralysis of the *Peronei*.

Talipes Valgus, due to paralysis of the *Tibiales*.

There may be compound deformities. Either of the first two may coexist with either or the second two, i.e., an anterior-posterior deformity may coexist with a lateral deformity.

In the treatment of any of these deformities the first consideration must always be whether the condition is a fixed-deformity, i.e., where the deformity is the result of persistent malposition acting on the bony structures and deforming them, or whether the deformity is the result of a stretching, a contraction, or a stretching and a contraction, of any group of muscles or opposing groups of muscles.

In the first class of cases it is very doubtful whether any operation or means of treatment which falls short of an osteotomy or arthrodesis will suffice; but in the second group it is quite frequently unnecessary to do more than tenotomize or transplant, or, perhaps, combine the two procedures. As an example, quoting from the words of Messrs. Tubby and Jones:—It is quite evident that a case of simple talipes, or of the compound form may be efficiently treated in either of two ways, less scientifically, by dividing and lengthening the tendons of the sound muscles and maintaining the foot in the corrected position by apparatus for an indefinite period; or, more scientifically, by distributing around the joint some portion of the power possessed by the sound muscles running to waste. And in the latter method lies the principle of tendon-grafting. If however we are not dealing with a case of simple talipes, but one where the bones have been displaced and deformed, it is most probable that nothing but the removal of part of the deformed bone, or even the whole bone, will be satisfactory.

Talipes, Equinus, Equino-Varus and Equino-Valgus.—This deformity is usually complicated by flexion at the toes with yielding at the medio-tarsal joint and a compensatory shortening of the plantar fascia. It is due to a paralysis of the extensors with a compensatory contraction of the muscles of the calf.

Our first procedure should be to stretch, or divide, the plantar fascia. The condition of varus or valgus should then be rectified. It is then necessary to tenotomize the Tendo Achilles, which procedure should be followed by a carefully selected posture assuring the adoptive shortening of the extensors in cases where it is certain that these only are affected with a pseudo-paralysis due to stretching. This position can best be maintained by either plaster of Paris or a suitable iron-brace, which latter method is to be preferred as the brace is easily removeable and allows of massage and other methods for the revivifying of muscular fibres. In obstinate cases osteotomies and arthrodesis must be considered.

Talipes Cancaneus.—This deformity is due to paralysis of the muscles of the calf. On account of this fact that neither tenotomy, nor mechanical treatment ever could be expected to give satisfactory results Whitman (21) proposed the removal of the astragalus. This operation

he has performed with success, and it has been in the past the practise in the Children's Hospital to follow him in this, as in many other methods of treatment. There are, however, certain dependant deformities, such as the contraction of the plantar fascia, which must previously be dealt with, and others such as valgus and varus which are dealt with concurrently. Tendon-transplantation may be tried in this form of deformity either in conjunction with the more radical operation suggested above, or it may be tried previously, although as Whitman has pointed out this procedure is of less value in this condition than in all others because the muscles of the calf are nearly double the strength of all the other muscles of the foot combined. If this procedure is decided upon the Peroneus Longus and the Flexor Longus Hallucis are usually grafted into the Tendo Achilles, but it has been noted by Tubby and Jones, surgeons who are more favourable to less radical procedures in the treatment of this condition than is Whitman, that at least the removal of a wedge-shaped piece of the astragalus is often advantageous, indeed necessary, if calcaneus be accompanied by either varus or valgus. These English surgeons recommend that an arthrodesis be performed when the paralysis is severe, but this may be disappointing if lateral deformity be present.

Hoffa (22) recommends an oblique osteotomy of the calcaneus so as to bring the tuber calcanei upwards and thus obtain "a real shortening of the tendon;" but it is difficult to see that Hoffa's procedure is any better than that of Walsham or even Willett, which consisted essentially of shortening the Tendo Achilles which experience has shown to be frequently of little more than temporary value.

In the Children's Hospital arthrodesis, with tendon-transplantation, is preferred, but experience has demonstrated that not infrequently it has been found necessary to remove the astragalus to obtain a satisfactory result.

Talipes, Varus and Valgus.—In severe cases these are treated by either tendon-transplantation or by arthrodesis. In the treatment of valgus the experience of the Children's Hospital has shown that the transference of the Extensor Longus Pollicis into the Internal Cuneiform, or base of the first Metatarsal, via a tunnel drilled through such bone, is of great value. Others may bring the Peroneus Longus across the dorsal aspect of the foot and fix it into the Tibialis Anticus or such similar operation. Apparatus is often quite sufficient in the milder forms of this deformity.

Complete Paralysis of the Muscles about the Ankle Joint would suggest an arthrodesis. This operation often proves to be most helpful in the treatment of patients afflicted with this deformity.

Paralysis of the Muscles Controlling the Knee Joint.—In this condition the surgeon must first assure himself that no contraction of the flexors is present, because if these be contracted they must either be lengthened by extension or tenotomized by the open method. If no contraction remains to be dealt with the surgeon must ascertain what muscles retain sufficient strength to be made use of. As has been mentioned previously, Goldthwait has drawn attention to the fact that in paralysees of the Extensors the Sartorius often escapes, and further, sometimes acts deleteriously as a flexor. Consequently, the transference of this tendon may change what was a power for harm into a power for good. If the Sartorius be paralyzed, but the flexors remain, an attempt may be made to convert these flexors into extensors. This may be done by the method usually ascribed to Fritz Lange. For a short time, at least, after either of these operations, or in the case of inoperable conditions, the caliper knee splint of H. O. Thomas is suggested, although many other controlling agents may be of equal benefit.

Before leaving the subject of the paralysis of the muscles about the knee joint it may be well to state that what is called genu recurvatum sometimes accompanies these conditions. This, however, is usually relieved by the operation suggested to relieve the deformities resulting from the paralysees.

Paralysees about the Hip.—In the study of paralysees of the muscles in relation to the hip-joint the frequent escape of the Psoas and Iliacus will be noticed. This is fortunate, because if even these muscles alone retain their function it seems possible to assure some means of voluntary locomotion in the majority of cases.

In paralysees of muscles about the hip-joint contractures must first be dealt with. After this a suitable splint, such as what is known as a double upright with a pelvic band, or the caliper splint of Mr. Thomas should be secured. The patient should then be educated to walk with one of these and the aid of crutches if necessary.

A paralytic dislocation of the head of the femur may accompany an extensive paralysis of the muscles about the hip-joint. It is often best not to attempt a reduction in such condition.

Paralysees of the Muscles of the Upper Extremity.—Many of the deformities resulting from these conditions can be improved by Mr. Thomas' method of muscle-shortening, as has been already described. For others, tendon-transplantation is indicated, and has been employed with success. The Triceps has been transplanted into the Biceps, and the Pectoralis Major into the Deltoid by both Mr. Tubby and Mr. Jones. Hoffa (23) has transplanted the Trapezius "to the position of a paralyzed Deltoid." Mr. Robt. Jones describes a method for the fixation of a

flail-like elbow by the removal of a diamond-shaped piece of skin from the front of this joint. In some cases most power could be placed at the disposal of the patient by excising the head of the humerus.

REFERENCES.

1. Painter. Trans. American Orthopædic Association, Vol. XV.
2. Caverly. Trans. American Medical Association, 1896.
Andrew Macphall. The Medical News, December 1894.
3. Brackett. Trans. American Orthopædic Association, Vol. XI.
4. Painter. Trans. American Orthopædic Association, Vol. XV.
5. W. Pasteur. Trans. Clinical Society of London, 1897.
6. Head & Campbell. Brain, Vol. XIII, p. 391.
7. Batten. Brain, Vol. XVII, p. 384.
8. Julius Althaus, An Essay on Infantile Paralysis.
9. Osler. The Cerebral Palsies of Children, Cases 25 & 86 of this series.
10. Robert Jones. British Medical Journal, February 1903.
11. Noble Smith. Paralytic Deformities of the Lower Extremity.
12. Tubby & Jones. Surgery of Paralysis.
13. Tubby & Jones. Surgery of Paralysis.
14. Goldthwait. Boston Medical & Surgical Journal, November 1897.
15. Fritz Lange. Munch. Med. Woch. January 1902.
16. Whitman. New York Medical Journal, May 1902.
17. Gibney. New York Medical Journal, May 1902.
18. Forbes. Montreal Medical Journal, April 1903.
19. Dane. American Medicine, August 16th, 1902.
20. Whitman. American Journal of the Medical Sciences, Nov. 1901.
21. Whitman. American Journal of the Medical Sciences, Nov. 1901.
22. Hoffa. American Journal Orthopædic Surgery, August 1904.
23. Hoffa. American Journal Orthopædic Surgery, August 1904.

TWO CASES OF CÆSAREAN SECTION.

BY

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At the outset of this short report the writer wishes to frankly confess that he was formerly much opposed to the growing frequency with which the operation was being resorted to, not so much in the cases of contracted pelvis, as in those of puerperal eclampsia and placenta previa. If he has changed his opinion, it is largely due to the brilliant series of cases reported by Dr. H. L. Reddy, the Director of the Montreal Women's Hospital.

The writer's objection, however, was only relative, and not absolute; for, as long as the operation had a higher mortality than the condition it was intended to relieve, he felt that it should only be resorted to in extreme cases. As soon as the technique had been so improved that there was almost no death rate to the operation he became an ardent con-

¹ Read before the Medico Chirurgical Society of Montreal, 16th November, 1906.

vert. And now we have found out that even the high death rate which used to follow was not due so much to the operation as to the delay in performing it. Any operation will have a high death rate when performed on infected and dying women, but if Cæsaréan section is performed early enough it is almost the safest of all abdominal sections. These two cases are reported in the hope that other desperate cases may have the advantage of this benign treatment. The word "benign" is used, because the operation is free from the lacerations and bruises which are inevitable in the accouchement forcé especially when the Bossi dilators are employed. These have a high death rate from hæmorrhage and infection. Case I. Mrs. B., age 23, came under the writer's care, 6th November, 1905, complaining of leucorrhœa, and saying that she had had two miscarriages, and was anxious to have a living child. She had first menstruated at 13; but it did not appear again until she was sixteen. She was married at 21, and had two pregnancies, miscarrying the first time at three months, and the second at two months. On examination the uterus was found subinvolted and retroverted to the third degree. It was easily replaced, and a pessary was inserted. This however, was removed at her next visit as it hurt her; so medicated tampons were inserted in the knee-chest position, which kept the uterus up, and soon relieved the leucorrhœa. She had some nausea and constipation, but they disappeared under laxatives. It was supposed that the miscarriages were due to the retroversion and when she became pregnant about the end of January care was taken that the uterus was kept in good position. As she was very anæmic she was put on iron tonics, when her general condition improved. She was not seen again until April, when she was judged to be about two months pregnant, the uterus being in good condition, and there being no albumen in the urine.

She was told to come at the end of the sixth, seventh and eighth months, to have the urine examined. She was not seen again until the early morning of 5th August, the day before she was to have come to have her urine examined, when the writer was called to her home to find her in a profound coma, having had three convulsions in rapid succession. She was examined with a view to rapid delivery, but the cervix was long and absolutely undilated. She was given a hypodermic of morphine, and a salt enema, but her pulse being slow and weak *veratrum viride*, the writer's favorite remedy was contra-indicated. Bromides in 40 grain doses were given by rectum but no chloral or chloroform. As the convulsions were less frequent, it was thought that labour might soon begin, so we waited until four in the afternoon, when there still being no attempt at dilatation she was taken to the Samaritan Hospital

for Cæsarean section. Her urine drawn by catheter at 7 a.m. was found to be loaded with albumen and very scanty. She was somewhat hastily prepared, and Dr. Reddy kindly gave the writer the benefit of his assistance. The incision was made in the abdominal wall and uterus, and the child was removed, still covered with the unruptured membranes, which were at once ruptured by one of the staff who took care of the child.

It was surprising how quickly the small incision in the uterus could be enlarged by tearing up and down with the two forefingers, and the feet caught, and the whole ovum, placenta and all, could be extracted. There was almost no bleeding as Dr. Reddy controlled it by holding the broad ligaments. What took the time was the sewing up of the opening in the uterus with interrupted silk sutures to the number of about twenty, and then a second row of running catgut sutures over them. The abdominal wall was closed with through and through silkworm gut. The whole operation took forty minutes, but could have been done in twenty if the uterus had been closed with two rows of running chroma-cized catgut. The infant appeared to be less than seven months, and was sent at once to the incubator. It did well, and is now a healthy normal child. The mother lived for three days after the operation but although her urine improved very much she never regained consciousness.

Case II. Mrs. K., 38 years of age first came under the writer's care eight years ago, saying that she had been pregnant twice, but that each time she had to have the child destroyed by crantomy. She was told by her physician that, owing to a contracted pelvis, she would never be able to have a living child. Dr. Reddy kindly measured the pelvis for me, and reported an antero posterior diameter of $9\frac{1}{2}$ centimeters or $3\frac{3}{4}$ inch. At that time symphysiotomy was much in vogue, so the writer told her that he would take her to the hospital as soon as labour began, and deliver her by dividing the symphysis pubis, with a good chance of the child being born alive. In due time labour began, and she entered my private hospital, and as soon as dilatation was complete preparations were made for the operation. Just before resorting to it, it was thought well to have one try with the long forceps. By drawing well down something was felt to crackle like stiff parchment, after which the head came down quite easily. That child is now a well-developed girl about eight years old. The crackling was thought to be the parietal bone being indented enough to let it pass the promontory. The mother was warned if she ever became pregnant again to eat very little, so that she might have a small child. The result was that she had a boy and a girl after

that by the aid of the forceps, the boy, however, requiring great force to extract the head. She got through these two so well that she forgot about the difficulties with the first three, and began to eat more heartily than ever, so that the writer was rather dismayed when she appealed to him again this summer looking as if she had been feasting during the whole of her pregnancy, for it was feared that the child's head would be correspondingly large. In due time labour began and was allowed to go on for fully twenty-four hours in the hope that the head would engage. As it had not done so at the end of that time efforts were made for nearly an hour with the help of Dr. McGovern to get the head through, without being able to get it to enter the brim of the pelvis. As the writer was somewhat worn out with the exertions during a very hot night, and as her pulse was beginning to show the effects of the prolonged anaesthesia, he decided to send her to Dr. Reddy for Cæsarean section, but finding that he was at the seaside, she was brought to the Samaritan Hospital, the staff was hastily summoned, and about 11 p.m. Dr. Johnson assisted the writer to open the abdomen. The incision in the uterus went through the placenta, and was enlarged by tearing with the fingers as in the previous case, although in that one the placenta was not cut through but taken out whole with the membrane. Everyone present was struck with the ease with which the child was pulled out, the placenta peeled off, and with how slight a loss of blood. The hæmorrhage was prevented by Dr. Johnson compressing the broad ligament, and no blood was allowed to get into the abdomen. What took most of the forty-five minutes was closing the tear in the uterus. The child which was alive a few minutes before, was born dead and could not be revived, its head having been considerably compressed by the forceps. Another time it would be better not to use them at all but to do the Cæsarean section at first instead of at last. The woman herself was considerably bruised, but as she was kept aseptic, no harm came of it, her temperature being normal all through. On account of domestic troubles she went home in two weeks but the through and through stitches were only taken out a week later.

The first thing she asked when she recovered consciousness was whether the operation had been done in such a way that she would not have to undergo it again. It was intended to remove a piece of the tubes so as to sterilize her, but this was forgotten during the exciting interest of the operation. Naturally the woman was disappointed, but the writer no longer considers the operation, a serious one if done before much bruising has been caused by prolonged attempts to deliver with the forceps. Certainly in any case where the antero posterior diameter is over 9 centi-

meters the forceps should be tried with moderate force, for this woman was delivered three times out of six by their aid. The writer is convinced that an expert operator could do a hundred Casarean sections without a death from the operation, although a certain number would be lost from the disease for which the operation was performed too late. As a result of his experience in the first case the writer will in future urge every pregnant woman to have the urine examined every month from the beginning of pregnancy and not only during the last three months; and if he has a case of eclampsia where the pulse is slow and weak and the os undilated he will not again wait for ten hours before operating.

TWO CASES OF PERFORATED DUODENAL ULCER.

BY

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The following two cases of perforated ulcer of the duodenum have come within my experience during the last year:

Case I.—On October 13th, 1905, Mr. G., aged 36, consulted me in my office for dyspepsia. He complained of a "belching up of wind," together with a feeling of discomfort and pain, coming on soon after eating; he had no vomiting. As he looked thin and pale I advised him to take a holiday in the country, especially as he had been overworked and had taken no vacation during the summer. At this time, I prescribed a bismuth and soda mixture.

A fortnight later he called to see me upon his return to the city, and told me he was feeling much better.

On December 2nd, 1905, six weeks later, I was sent for in the early morning. At 3 p.m. the day before, whilst standing at a desk down town, he was seized with a sudden severe pain in the upper part of the abdomen. The pain was so severe that it made him feel faint and nauseated. He immediately walked to the street car and from the street car to his house, a distance of 300 yards. There were no other symptoms at the time, neither vomiting, nor diarrhoea.

Upon inquiry into his condition since consulting me in October, I learnt the following:—Upon his return to work the old symptoms of indigestion returned, especially the "belching up of gas," which usually took place two or three hours after food. This occurred no matter what food was taken, and for two weeks he lived upon fluids, lactoglobulin, thin gruel, milk and broths, but without relief. For the

week immediately preceding, he was under the care of an osteopath of this city, who ordered a test breakfast of two boiled eggs, some toast and coffee. Three hours later he withdrew the contents of the stomach and reported that the stomach was perfectly healthy and advised massage. He massaged the abdomen three times before the onset of the acute symptoms, the last time being the night before their onset.

As soon as the patient arrived at home he sent for this osteopath, who massaged him for a considerable time but without relief. Shortly before midnight he telephoned for him again, when he advised his sending for a regular physician to give a hypodermic injection of morphine as that would relieve him.

On examination, the patient is a man of about age stated, somewhat thin, mucous membranes, pale. Face has a most anxious, drawn expression and shows evidence of much pain. P. 84, R. 24, T. 98.

Lymphatic, respiratory and circulatory symptoms negative.

Digestive System.—Subjective: a great deal of sharp pain in upper part of abdomen and some nausea; objective: Tongue somewhat dry and coated on dorsum with whitish fur, edge and tip clear.

Abdomen.—On inspection, very little movement on respiration; distinct fulness in epigastric region. On palpation, there is tenderness over the whole of the abdomen, especially marked in the upper half, muscles tense in upper portion. There is a tympanitic note over the whole abdomen with the exception of the right flank, where there was definite dullness. Liver dullness was obliterated and replaced by a tympanitic note.

From the history and the condition of the patient, I was of the opinion that the man's dyspepsia was due to an ulcer of the stomach and that at the onset of the acute pain it had perforated.

Dr. F. G. Finley, who saw the case with me, concurred in the diagnosis, but suggested that owing to the symptoms returning in two or three hours after food, that the ulcer was probably duodenal.

The patient was removed to the General Hospital and operated on at 12 noon, twenty-one hours after the supposed time of perforation. The duodenum was found perforated in its anterior wall about half an inch outside the pylorus. An ordinary lead pencil could easily be inserted into the opening.

The patient made an uninterrupted recovery, and a few days ago, when I saw him, he told me he could eat anything; he feels better and weighs more than he has for years.

Case II.—On the morning of June 20, 1906, when in camp with the militia, Gunner G., *et. 44*, was brought into the Field Hospital

on a stretcher. He complained of a sudden, severe pain in the right upper portion of the abdomen. The patient said he was standing by his horse when he was suddenly seized with severe pain in the stomach. He told a friend standing near that he felt weak and dizzy, and this man held him and so prevented him from falling. He was brought at once to the hospital. He had no vomiting and no diarrhoea. On admission, the patient is a large-framed, well-built, bulky-looking man; no anxious expression of face, but he complained of great pain in the right upper quadrant of the abdomen: pulse 68, regular, of good volume and tension, temperature 98, respiration 24. There was nothing to be noticed on examination except that there was tenderness over the right upper quadrant of the abdomen just below the ribs. I thought at once of the possibility of gall stone colic, and as the man appeared to be suffering a great deal, I ordered $\frac{1}{2}$ gr. morphine hypodermically.

About two hours later one of the hospital orderlies came to me, reporting that the man seemed to be suffering a great deal and appeared to be no better. I went to see him, and upon inquiry, obtained this history:

For the last three or four years he had suffered much from indigestion, with pain and gas in the stomach, coming on two or three hours after food. At times he said this was so severe that he was almost afraid to eat. Solids caused much more pain than liquids. For the past three or four months, however, he said he had felt better than he had for years and had practically no indigestion. He had never had a similar attack of acute pain and was never jaundiced.

The case which I have previously reported having been so recently under my care, the symptoms and history being so similar, I came to the conclusion that this man was suffering from the same condition, and, upon discussing the case with Dr. Hill who was with me at the time, he agreed with the diagnosis. We advised immediate operation, but the man would not hear of it. All he wanted was a cup of tea and then he would be ready to leave the hospital. I gave him a second hypodermic of morphia gr. $\frac{1}{2}$, and forbade all food, only allowing occasional sips of water or a little ice. During the rest of the day the patient felt much better and complained of very little pain.

In the evening his temperature was 98°, pulse 80, respiration 24; he had no vomiting; an enema was given with good result. The next morning his chief complaints were of pain in the right back, at about the level of the 10th spine, and up the neck, which made me think the perforation was posterior. His condition was otherwise unchanged,

and he grumbled a great deal at his deprivation of food; he would not hear of an operation and wished to be allowed to get up. His temperature was still normal, and he had practically no distension of the abdomen, and only a little tenderness in the right upper quadrant. I had him at once transferred to the Sherbrooke Hospital, but he would not consent to operation until the following morning, when a large perforating posterior duodenal ulcer was found the size of a five cent piece just outside the pylorus. A quantity of bile-stained fluid was found in the peritoneal cavity. The patient died shortly after the operation, which was not performed until 48 hours after perforation.

THE UNIVERSITY MAGAZINE.

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In the main hall, of the South Kensington Museum, there are some models illustrating malarial and trypanosome diseases. The tsetse fly is upon a colossal scale, and looks like a dragon two feet long. A coster, after gazing at the model said, "It ain't much wonder as them 'orses in South Africa 'ad a thin time, if ther's many o' them flyin' round" *The Boston Medical and Surgical Journal*.

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No. 1.

MORTALITY IN MONTREAL.

The report of the Medical Health officer for 1905 has been issued, and bad as our statistical figures are, the daily press has not dealt as gently with them as they deserve. In a sub-title we find the remarkable statement that "last year the death rate amongst those under five years of age was 56.31 per cent." Truly, this out-herods Herod. We venture to think that the figure is 56.31 per 1000, and, while this is doubtless not small, it must be remembered that we are in the habit of speaking of death-rates of about 20 per 1000 of population in many cities, even when those of all ages are included. The heaviest mortality, even of those under five years, is comprised in the children under 6 months, and this is 30.42 per 1000. We must admit that hygienic factors, or rather the lack of them, may be at work, and the question of milk supply is by no means an unconsidered one. Of those children between six months and five years a considerable number die from infectious diseases, and in this direction

the mortality can and must be lowered. It is a melancholy consolation that seven cities, (one only of them in America) are no better off in general mortality than we: it is a matter of conjecture whether or not all causes of death are allowed to figure in Moscow and St. Petersburg, which are two of the seven. Against their bombs we have somewhat to set ourselves, in the ready knife and pistol, but this also we trust will soon prove a preventable cause.

The report excludes from our mortality illegitimate births, because the greater portion of the illegitimate children do not belong to the city—a statement we would make bold to question. In any case, we are no worse off than are other cities of like size, and it seems rather unfair to alter our statistics in this way, when the children actually died in the city; there is no use in shutting our eyes to mortality that exists within our confines, merely that we may not appear to disadvantage.

On the other side of the ledger, our birth rate, thanks to the French-Canadian population, is a high one, and since the years of childhood are those which show the highest death rate, it is perfectly right to avail ourselves of this slight advantage, and to point out that a high birth rate of necessity means a slightly higher death rate.

A MODERN SIALAGOGUE.

There are some who are inclined to laughter, because the committee of the new Students' Union has found itself debating the question, shall we, or shall we not, have cuspidors? Yet here is a question of considerable importance, and one that has a wide physiological bearing. Without making the statement that supply regulates demand, we may point out that the cuspidor is actually a sialagogue, which suggests afar off the little bottles that Wonderland Alice used to find with a convenient label attached: "Drink me!"

A cuspidor in the middle of a room is an instant outstanding invitation which, thanks to ancestry and inherited habits, compels attention. Nor should it be overlooked that the day of the ptyalic marksman has gone, though the village hotel does even yet ring with the noise of his prowess. In the matter of cuspidorial markmanship nothing but a bull's eye will do: an inner is annoying; a magpie or an outer, disgusting, for, is not secretion of saliva a stage in the physiology of nausea?—and a miss is appalling.

Besides, on the sialic range, if many misses are recorded, the marker, who is the janitor, may give notice. Of course it has been already been suggested that the "shots" should be classified; the nursery match for green shots, a more advanced larger range for second-class shots, where-

as first-class shots would be allowed in the main living rooms. The position this leads us to is this: if a cuspidor induces a man to spit who had no thought or intention of doing so, and if one man in ten misses the mark, the city by-law is at once infringed, and the public health hindered, to say nothing of the public taste being outraged. To guard against the possibility of bad marksmanship, the only recourse is to increase the size of the target; and whereas a small dainty cuspidor, nickelled, six inches in diameter is an article of vertu; the blatant brass of twice its size, is a suggestion of a bar room, a sawdust floor, and a row of bottles.

We have hitherto not spoken of this matter in its relation to smoking, because it really does not specially relate to that art. The secretary effect of tobacco, in the form of smoking at least, depends upon whether a man has learned to smoke out of doors, or indoors: in the matter of chewing, also, it is said to depend upon whether or not the habit has been practised in the schoolroom during schools hours or otherwise. In any case, the time has come when mankind, unless he drive a dray or a cab, is face-to-face with the early divorcement of tobacco and saliva.

In a difficult matter such as this, we can see nothing but the following solution: that a certain part of the Union kitchen should be set apart, where after 6.30 p.m. the boots could be removed, sock-feet being *de rigueur*, a commodious woodbox might be provided, and a few tilting chairs supplied. Should, however, the cuspidor win the day, we would suggest in addition, that each article be provided with the legend "The gift of the League for the Prevention of —."

ADVERTISEMENT BY CABLE.

Truly, the progress in medicine is by leaps and bounds. On December 11th—memorable day—the newspapers contained two messages by cable, the one from Paris, the other from London, announcing a cure for pneumonia, and for suppuration of the middle ear. The remedy for pneumonia is the subcutaneous injection of a metallic element. The discoverer, Dr. Robin, announces that "the kind of metal used seemed to make little difference, although heavier metals and gold and silver appear to have stronger action."

The originator of the important advance in aural surgery is "Dr. Heath" who is described as "a keen Irishman, well known to Americans, many of whom come to London to study under him." The operation, we are informed, consists in draining the middle ear without mutilation of the mastoid bone. It is further described as a variation of the mastoid operation and makes possible the preservation of, and in many cases the restoration of hearing.

A pleasant little anecdote is added which runs as follows:—One time a young American met Dr. Heath as he was leaving the operating theatre, where he had just concluded seven operations. On hearing this the American said: “Well, we are pretty quick in the United States, but that beats us.”

As soon as the despatch was published telephone bells began to ring. Probably that was the object in its publication—people have now grown so wise in all matters pertaining to medicine. We are further informed in the despatch that the “Otolological Society recently discussed Dr. Heath’s methods.” We wish to bear testimony to the fact that the Society did discuss them, and in pretty plain terms too, if the despatch refers to Charles J. Heath, surgeon to the Golden Square Throat Hospital. The circulation of this JOURNAL is limited, and it does not aspire to set the whole world right. Yet we purpose stating a few facts in connexion with this revelation in surgery.

More than two years ago—to be exact, December 5th, 1904—a paper was read by Charles Heath, entitled: “A paper, founded upon an experience of 400 operations, on the restoration of hearing after removal of drum and ossicles by a modification of the radical mastoid operation for suppurative ear disease.” The writer referred to a meeting of the Society a year previously, at which he had shown “a large number of cases with restored and excellent hearing.” In the *Lancet*, August 11th, 1906, a paper with a similar title appeared from the hand of the same author, so that the thing is not as new as it would seem to be from the urgency of a cable message.

The matter appeared so important that discussion was postponed till the meeting of February 6th, 1905. Dr. Urban Pritchard described the paper as an unfortunate one. He thought from the greatness of the number, that many of the patients did not require operation, and that the modification in the method was so slight that it was not in reality a new operation. Finally he thought it a pity that the paper had been published, as it was, in the *Lancet* December 24th, 1904. Mr. Macleod Yearsley said that the cases appeared to him as examples of Stacke’s operation, and that one woman at least might have recovered her hearing without any interference. Mr. Chichele Nourse was of opinion that Mr. Heath’s procedure differed from the usual operation not in principle, but simply in attention to certain details. Dr. William Milligan thought that in many respects it was an unfortunate paper, and that Mr. Heath had started from premises which were entirely wrong. This speaker went so far as to question the reliability of the statements as put forward. Mr. Ballance remarked that the enthusiastic way in which the paper was written was the only thing which appealed to him. Dr.

Macnaughton-Jones also doubted the validity of the statistics in plain terms, and the president, in conclusion, lamented the absence of precise scientific details in the paper.

No one pretends that Mr. Heath is responsible for sending out this absurd report as news of an incident which happened two years ago. Probably he would wish that the thing had been left to the oblivion of the official transactions. It is the fashion of English writers to amuse themselves with the vagaries of obscure American practitioners. We undertake to remind them that the greatest offenders are not in the United States, and that they are not obscure.

The league for the prevention of Tuberculosis in Montreal offers a prize of twenty-five dollars for "a short, intelligent and readable catechism dealing in concise, clear, direct and non-technical terms with the subject of hygiene in its relation, especially to the prevention and cure of consumption." This sum does not seem excessive for such a marvel of the literary art. No catechism is short; few are "intelligent," and none are readable. One question proposed is: "Why is consumption called the white plague?" It would be worth twenty-five dollars to obtain an adequate explanation of that curiosity in metaphor. It would be worth another twenty-five dollars if the employment of the simile could be stopped.

The Provincial Board of Health is one of the most enlightened bodies in the country. According to the most recent regulations dealers are prohibited from offering for sale any bird from which the entrails have not been drawn when the bird was killed. The offal which was previously left in the carcase imparted to the flesh a faecal odour which was disgusting, and unwholesome. In extreme cases the dinner-table became redolent of the farm-yard. The use of the chicken fell into disfavour amongst persons of cleanly habits in eating. Now, it is likely that the dainty bird will regain the popularity which it deserves.

Canadian Outdoor Life has appeared, as a new magazine. It is published monthly by the National Sanitarium Association, and the editor is J. S. Robertson, who is also the Secretary of the Association. All profits from the magazine will be devoted to the maintenance of patients in the Muskoka Free Hospital for consumption. The subscription price is one dollar a year, and the address 28 Adelaide Street West, Toronto. We give the new magazine a good welcome.

According to the *Globe* of 8th December, there are great doings in the Toronto General Hospital.

Medical Science Revolutionized: Epoch-making Discovery in the Treatment of Germ Disease: Mathematical Medicine: The Greatest Advance Step made in Years: Successful Experiments Conducted at Toronto General Hospital with the New Treatment of All Diseases Due to Microbes: A Cure for Tuberculosis: The Oposonic Theory. Such is the heading of the article which contains many famous names, chiefly of younger men. We wish the thing was true: but it is not.

Here is an extract from a letter which makes glad the Editorial heart: "Enclosed you will find my cheque for three dollars, amount of subscription: for fifty-three years I have been a subscriber to your JOURNAL."

BLOOD PRESSURE.

One of the most profitable discussions at the British Medical meeting in Toronto was that on "Blood Pressure in Relation to Disease."

In opening the discussion, Prof. Percy M. Dawson, of Johns Hopkins, stated that, for practical purposes, we want to know two things about the circulation of our patients: 1. Are their tissues receiving a normal amount of blood. 2. Are their hearts being over-taxed in keeping up this supply. He then proceeded to show how a study of Blood Pressures may help us to answer these questions. The first step is to determine by means of an appropriate instrument the pressures in one of the larger arteries during both the systole and the diastole of the heart.

The difference between the systolic and diastolic pressures is known as the pulse pressure. The pulse pressure varies directly as the output of the heart and is a fairly reliable indication of the amount of blood being pumped out to the tissues at each heart beat.

With the data which we have now obtained it is possible to estimate pretty accurately the work that the heart is called upon to do. At each beat it has to force a certain amount of blood out into the aorta against the pressure existing there. In other words, to get the work of the heart at each beat we multiply the output by the average pressure in the aorta; but the output is proportional to the pulse pressure, and the average pressure in the aorta can be shown to equal the diastolic pressure *plus* one third of the pulse pressure. We can thus determine approximately how much work the heart is being called upon to do. Prof. Dawson was careful to point out that the results obtained by these methods as yet are only relative or approximate. Further improvements in our methods are necessary before we shall be able to attain perfect accuracy.

Dr. G. A. Gibson, of Edinburgh, was the second speaker. In the study of blood pressure he claimed that we should keep the following objects in view. 1. To ascertain the height of the blood pressure. 2. To analyse the factors concerned in its maintenance. 3. To assess the relative importance of each.

He pointed out the relative influence on blood pressure of the heart-beat, the condition of the smaller arterics as to constriction or relaxation, the dependance of these on the vaso motor nerves, the state of elasticity of the vessel walls, the amount of blood in the body and its viscosity. He ridiculed those who pretend to estimate the blood pressure by their "trained finger," and cited instances where the finger had proved very unreliable, and misleading.

He described the principles involved in the various instruments for measuring blood pressure, and recommended those that act by obliterating the pulse at the wrist by a constricting band around the upper arm. Of these he particularly recommended the instruments of Riva Rocci, Janeway, and Erlanger. These may all be employed so as to give both the systolic and the diastolic pressures. The diastolic pressure is especially well shown by Erlanger's apparatus. He gave as normal for young adults, a systolic pressure of from 90 to 140 millimeters of mercury, and a diastolic pressure of from 60 to 110. After middle life there is a steady rise.

He discussed briefly the changes in blood pressure at different times of the day, and the influence of posture and occupation. He drew special attention to the marked rise accompanying strenuous effort mental or physical. He advised the use of a chart for recording daily changes in blood pressure, and deplored the difficulty that is experienced in allotting to the heart and peripheral vessels their respective share in deviations from the normal pressure.

Sir William Broadbent who spoke next proved to be a more than worthy representative of the old school. He said that the results obtained by the examination of the pulse by a trained finger might be just as reliable as those obtained by complicated instruments. He described the characters of a normal pulse, and maintained that, when those are felt, we need not doubt that the circulation is being efficiently carried on without undue strain upon the heart. He emphasised the importance, however, of a careful examination of the heart to corroborate the results obtained by the examination of the pulse. At the same time he admitted that, in cases of high blood pressure, the immediate cause will usually be found in the increased resistance of the peripheral vessels brought about by faulty metabolism, or deficient elimination. He pointed out how, in getting at the essential cause of variations in blood

pressure, we must constantly bear in mind the conditions present in the tissues where a change in the relations between the blood and the tissue cells or an altered permeability of the capillary walls may be responsible for great alterations in the general blood pressure.

He then referred to the benefit to be derived from various therapeutic measures. After mentioning the temporary benefit to be derived from the nitrites, he advocated more radical methods of treatment. Among these he favoured limitation of diet, copious draughts of water, Turkish and other baths, exercise, and mineral waters. In closing he bore testimony to the great benefit he had seen from the administration of mercurials.

Professor T. Clifford Allbutt discussed the relations between arterio-sclerosis and blood pressure. He divided arterio sclerosis into three forms. 1. The toxic class. 2. The hyperpietic. 3. The involutionary. The toxic class is caused especially by poisons introduced from without, such as typhoid, influenza, diphtheria, scarlatina and especially syphilis, very similar effects are produced by diabetes and some forms of gouty disease. Lead poisoning in some ways acts like the poisons mentioned above but it also acts indirectly by raising blood-pressure, and thus represents a transition from the toxic to the next or hyperpietic form.

The second, or hyperpietic, form of arterio-sclerosis is that secondary to excessive arterial blood pressure. It is to be ascribed to the influence of poisons generated within the body by some variety of faulty metabolism. Among the diseases which are accompanied by such a faulty metabolism are various forms of renal disease, and gout, but there are other varieties which are not so well recognised. The connexion between high blood pressure and arterio-sclerosis is not as close as many believe, for either condition may exist for a long time without the other.

The third, or involutionary, form of arterio sclerosis is that incident to the changes of advancing age. In the hyperpietic form we have often much less deformity of the vessels than in the involutionary but the former is the more dangerous of the two. In the hyperpietic form the heart struggles long, and manfully, to overtake its increased work, but at last breaks down more or less suddenly under the strain, and the end is not long delayed. In the involutionary form the work of the heart is not necessarily much increased. If it gives way it is from "intrinsic decay" but the end more frequently results from the giving way of an artery in the brain or elsewhere. In the toxic class of arterio-sclerosis the state of the heart varies, but in too many cases it undergoes concurrent deterioration.

Dr. James Mackenzie enumerated the various properties of heart muscle, contractility, stimulus production, conductivity, excitability and

tenicity. He said that it was a common error to look upon failure of tonicity or dilatation, as the essential sign of heart failure, but he maintained that some of the other functions often showed signs of failure first, notably the contractility. He pointed out the signs of failure of contractility, irregularity in the size of the pulse waves, and pulsus *alternans*, and showed a number of tracings illustrating these conditions. He also showed how these signs of failing contractility often disappear when means are taken to lower the blood pressure, and give the heart a chance to recover itself.

Dr. John Lindsay Steven expressed the view that arterio-sclerosis and high blood pressure are not produced the one by the other, but are often both dependant on the same cause, namely toxic substances circulating in the blood.

Professor McPhedran bore testimony to the value of estimation of the blood pressure by the use of instruments of precision, and said, by their means, it was possible to estimate the action of the nitrites which showed how far the musculature of the vessels was still active.

Prof. G. W. McCaskey emphasised the great importance of the peripheral vessels in the production of variations in blood pressure, and spoke highly of the value of the nitrites as an aid to diagnosis, and as a successful method of treatment.

W. S. M.

MUNICH AS A PLACE FOR STUDY.

There is scarcely any city in Europe that has so many attractions for a visitor as Munich, situated as it is in the beautiful valley of the Isar, within sight of the snow-capped Bavarian Alps, and easy of access to numerous excursions. Art flourishes in Munich, as is shown by the picture galleries which contain some of the most celebrated paintings in Europe, and by the music, which is excellent, the opera being second only to that of Wien. The rate of living is moderate, the *pensions* numerous, and for the most part comfortable, the people, polite, sympathetic and—to use a favourite expression of their own—*gemütlich*. Lastly, for one who has yet to learn the language, Munich has exceptional advantages, because the English-speaking people are not so numerous that one cannot escape them—a statement which cannot be made of Berlin or Wien—hence one can, if one so desires, associate with a German-speaking “*Kreis*.” Yet one is in a city of nearly 600,000 people, with good theatres, concerts, art galleries and other diversions for the home-sick “*Ausländer*.”

As to Medicine: The “*Königliche Ludwig-Maximilians Universität*” has a medical faculty, of which it has a just right to feel proud,

and one that lives up to the high standards set by its former teachers—Pettenkofer, Ziemsen, etc. It includes at present such men as Voit in physiology; Rückert in anatomy; Bollinger and Dürck in pathology; Gruber in hygiene; Angerer in general surgery; Lange in orthopædics; Winckel in gynæcology and obstetrics; Bauer, Müller, and May, in medicine; and Kraepelin in psychiatry. For the "course-crazed" student Munich offers no facilities when compared with Berlin or Wien; but one can occupy his day very well with a schedule, which would include the majority of the above-mentioned teachers.

It is especially to those interested in Internal Medicine that Munich is to be highly recommended. For one who has just graduated from the medical school; but above all for one who, having served two or three years as an "interne" in a general hospital, wishes to specialize in internal medicine, Munich is the place *par excellence*. In the morning he can hear lectures on morbid anatomy by Bollinger, and Dürck, attend the theatre clinic of Friedrich Müller, work in the Poliklinik with May, and in the afternoon study psychiatry with Kraepelin.

A man, who has a moderately good training, and speaks and writes German, may procure a "Volontärship" in the wards of Professor Müller, the value of which can only be realized by a visit to the two-hundred-and-fifty public beds which comprise the service of the "second Klinik." If one does not write and speak German sufficiently fluently, or does not wish to do "clinical routine," one can obtain work in the laboratory where, under the guidance of Professor Müller, and his assistants, an original "Arbeit" in chemistry, bacteriology or pathological-histology may be undertaken. Professor Müller has surrounded himself with an unusually capable group of assistants, each of whom is a specialist in some experimental line of work, and, therefore, best fitted to investigate certain series of cases. Naturally the room in the laboratory is limited, and a man desiring such work must satisfy professor Müller as to his qualifications, and undertake to stay a definite length of time—three to six months.

A word as to Müller as a teacher. He ranks among the first three men in clinical medicine in Germany, and is considered by many the best teacher. His lectures are simple, thorough, and painstaking. His cases are carefully prepared, and honestly presented, and a student, no matter how advanced, never leaves his lecture room without having acquired some new fact or thought, even though the text be a time-worn one, as typhoid or pneumonia. He is an inspiring teacher, a practical physician, and a scientist in the best sense of the term.

His great interest in the chemical side of medicine is especially stimulating, and his lectures on the Diseases of Metabolism are most instructive. By the teacher of clinical medicine his methods of teaching are well worth careful consideration and imitation, and a visit of a week or two in his Klinik will never be regretted.

C. P. H.

Reviews and Notices of Books.

STUDIES IN THE PSYCHOLOGY OF SEX—EROTIC SYMBOLISM, THE MECHANISM OF DETUMESCENCE, THE PSYCHIC STATE OF PREGNANCY. By HAVELOCK ELLIS. Pages 285. Extra Cloth \$2.00, net. Sold only by subscription to Physicians, Lawyers, and Scientists. F. A. Davis Company, Publishers, 1914-16 Cherry street, Philadelphia.

If there were anything particularly new in this book, it might appeal to "scientists." If there were anything freshly obscene, it would surely be welcomed by those degenerate individuals who enjoy a contemplation of the baser passions. Both classes will be disappointed in the present case. The parade of learning, the citation of cases from medical journals, the pseudo-scientific terminology, do not lift the subject into the cold atmosphere of science. One cannot refrain from wonder at an intelligence which gives itself up unreservedly to a consideration of such a theme, and one lays down the book with a fresh loathing of the Beast which yet lurks in humanity. Even obscenity may be handled artistically, but this author does the business coarsely, stupidly, without taste.

CONSUMPTION, ITS RELATION TO MAN AND HIS CIVILIZATION. ITS PREVENTION AND CURE. By John Bessner Huber, M.A., M.D. J. B. Lippincott, Philadelphia, and London.

This book is at once a work on medicine, a narrative of fact, and a philosophical treatise. Dr. Huber has viewed the subject broadly, and aims to give an exposition of the effect of consumption upon society as well as upon the individual. The book will therefore appeal to the educated layman who is interested in economics, as well as to the physician who devotes himself chiefly to the medical aspects of the disease. Much of the material which the book contains has appeared in medical journals, and in periodicals of a semi-scientific nature. It is here gathered together attractively in a form which makes it readily accessible. The book is a document of great sociological value.

ELEMENTS OF PRACTICAL MEDICINE. By ALFRED H. CARTER, M.D., M.Sc. Ninth edition. H. K. Lewis, London, 1906.

"Carter's Medicine" which is redolent with memories of one's childhood continues to appear in new editions. The present is the ninth, and apparently the book is as well liked as ever by students. It has grown to 600 pages and yet retains its simplicity, and fulness of presentation, its easy narrative, and explicit statement of fact. A student who follows this guide will not be far astray in the end.

A SYLLABUS OF MATERIA MEDICA. Compiled by Warren Coleman, M.D. Third Edition, New York, William Wood, 1906. Price \$1.00.

"An experience of several years has convinced the author that Materia Medica is one of the most difficult subject [*sic*] to acquire in the field of medicine." This book does not improve matters. It is merely an index, of not so much value as a manufacturer's catalogue, because the prices of the drugs are not given.

THE PRACTICAL MEDICINE SERIES. Edited by GUSTAVE P. HEAD M.D. Vol. vii. PEDIATRICS. Edited by ISAAC A. ABT, M.D. ORTHOPAEDIC SURGERY. Edited by JOHN RIDLON, M.D. and GILBERT L. BAILEY, M.D. The Year Book Publishers, Chicago, 1906.

This book is a useful addition to the series of which we have spoken so often, and always with commendation.

THE CHCL₃ PROBLEM. By RICHARD GILL, B.Sc., M.B., London University, Chief Chloroformist to St. Bartholomew's Hospital. William Blackwood and Sons, Edinburgh and London, 1906.

This work, in two volumes, apparently has for its objects the revision of present day teaching with reference to the action of chloroform on the respiratory and circulatory functions of the body, and of the almost universally accepted theory of the cause of death by this anæsthetic. Vol. I. is devoted especially to a critical analysis of the "commonly received CHCL₃ hypothesis," and of "all the factors, extrinsic and intrinsic, which are concerned in the solution of the CHCL₃ problem." In this critical analysis the author seeks to destroy the commonly accepted hypothesis, and to build up one of his own based upon entirely new theories with reference to the action of chloroform on the respiratory centre and on the heart. In Vol. II the question of the physiological action of CHCL₃ is taken up, and towards the end of the volume a few pages are devoted to "experimental investigation." Little is advanced

in these few pages in support of the author's view upon the subject of the physiological action of CHCl_3 . The work is interesting and worth the reading, though there is much useless repetition, and the arguments advanced savour too much of the chloroformist, and not enough of the physiologist or the pharmacologist.

A SYLLABUS OF MATERIA MEDICA. Compiled by WARREN COLEMAN, M.D., Professor of Clinical Medicine and Instructor in Materia Medica and Therapeutics in Cornell University Medical College. Third edition. William Wood and Company, New York, 1906.

This little work is designed as an aid to memory, and as such should be of distinct value to the student. The general plan of the book is good with the exception of the section on the "classification of drugs on the basis of physiological action." The very common mistake is made of classifying a drug as a "hypnotic" or a "diuretic" when it produces these effects only when given in toxic doses or under abnormal conditions. The study of materia medica is essentially a question of memory, and while we cannot recommend to the student the use generally, of memory aids and get-wise-quick schemes, the use of a work of this kind is quite justifiable.

MODERN OPHTHALMOLOGY. A Practical Treatise on the Anatomy, Physiology, and diseases of the Eye. By JAMES MOORES BALL, M.D., Professor of Ophthalmology in the St. Louis College of Physicians and Surgeons. With 417 illustrations in the text and numerous figures on 21 coloured plates, nearly all original. 820 pages. Imperial octavo. Price, extra cloth, \$6.00 net; half-morocco, \$8.50 net. F. A. Davis Co.

This admirable work is one of the best of the large modern text books on the subject. It is an exhaustive treatise. The descriptions are remarkably full, and clear, and it is indeed a difficult matter to find anything to criticise adversely. There is an absence of prolixity. There is hardly any ocular condition which has not been touched upon. The operations are clearly described, and profusely illustrated. The differential diagnosis of various ocular diseases is most exactly presented. The book is intended for students and general practitioners, but it is really more a valuable reference work.

J. W. S.

A TREATISE ON THE MOTOR APPARATUS OF THE EYES. By GEORGE T. STEVENS, M.D., Ph.D. Illustrated with 184 engravings, some in colours. 496 pages, royal octavo. \$4.50 net. F. A. Davis Company, Publishers, 1914-16 Cherry Street, Philadelphia.

This is an exhaustive resume of the ocular deviations by an author who has already contributed greatly to our knowledge of these conditions.

The introduction of the work deals with the history of our knowledge of the various muscular anomalies of the eye. This is followed by a description of the anatomy of the extra-ocular muscles, which includes a very interesting section on the comparative anatomy of the eye muscles in fishes, reptiles, birds, and mammals.

The second part is a lucid dissertation on the physiology of the eye movements in which the author's admirable style clearly shines out. In this section Dr. Stevens deals very fully in his own theories anent the anomalies of the motor apparatus of the eyes. These theories have been already described in his previous works which have been reviewed in this JOURNAL, but as in all writers with a special hobby, the author seems to carry his theories to extremes, and more especially does this show up in the relations which, he holds, these anomalies invariably have to nervous troubles generally. This was fully demonstrated a few years ago in the controversy raised in New York over this matter, when the Academy of Medicine instituted a series of investigations into the results obtained by partial tenotomy in cases of heterophoria. Whatever may be the final decision as to the advisability of the operations of partial tenotomy advised by Dr. Stevens, he can certainly be congratulated on his elucidation of an abstruse subject.

In part III of the work he deals in *extenso* with the theory of the declinations of the retinal meridians, and the possible corrections of any abnormal condition of it. But this requires further experience, before any definite conclusion can be arrived at. The book itself is an admirable specimen of the printer's craft. The illustrations are good and the typography clear.

J. W. S.

PREVALENT DISEASES OF THE EYE. A reference hand book, especially adapted to the needs of the general practitioner and the medical student. By SAMUEL THEOBALD, M.D. W. B. Saunders, Philadelphia. J. A. Carveth Co. Toronto.

"Prevalent Diseases of the Eye" is a title of a new reference handbook, written by Dr. Theobald, the talented professor of Ophthalmology in Johns Hopkins University. The opening chapters, and the methods of examining the eye, are delightfully clear, and the following ones on the diseases of the eye are admirable on account of their succinctness and lucidity.

The diseases of the lachrymal apparatus, one of the strong subjects of Dr. Theobald, are elaborately described, as also his methods of treatment of stricture by large probes. Many authorities are greatly at variance with Dr. Theobald in this method of treatment. The illustrations are

many, but the majority of the uncoloured ones are not original. The coloured ones, on the other hand, are original and very good.

J. W. S.

HANDBOOK OF GENITO-URINARY DISEASES. By DR. LEOPOLD CASPER, Berlin. Translated by Dr. Charles W. Bonney, Demonstrator in Anatomy, Jefferson Medical College, Philadelphia, P. Blakiston's Son & Co., Philadelphia.

A great number of medical men from this side of the water, who have followed Dr. Casper's clinics, will be pleased to see his teachings in a more or less permanent form, and made readily available in this translation. As to the translation itself we welcome a work which is expressed in decent English, and not in a hybrid of English words, and German structure. With the exception of a few grammatical errors, such as "different than," the translation is excellently well done. In the book itself coming as it does from a German source, there is a welcome lack of illustrations as compared with the extravagance of American publications. The dominant note of the book is the authority of a large personal experience which leans apparently rather to the practical and clinical side than to the pathological. At all events, it may be from lack of space, one misses the evidence of the intimate acquaintance with the pathological side of the subject, such as is usually so evident in German works. Such pathology as is given, though somewhat meagre is sound. One notes the Continental use of the term "carcinoma" to include epithelioma. The translator might have altered this without harm, and made things clearer to English readers. It would be impossible to pass in review all the various chapters, and we must content ourselves with calling attention to a few points taken at random. Posterior urethroscopy is condemned as useless, inasmuch as the necessary distortion of the parts may simulate disease in a healthy urethra. The technique of the differentiation between the tubercle and smegma bacilli would be considered subject to criticism by many workers as being inaccurate. Careful work goes against Casper's idea that the use of absolute alcohol is useless. The chapter upon hypertrophy of the prostate represents rather the continental view which is comparatively conservative than the American view. Fortunately the translator has been allowed to make large additions to this chapter, additions which represent, more or less adequately, the general procedure and the good results of American work. Young's technique of perineal prosectomy is reproduced perhaps with too great brevity, and also the same author's operation for the radical cure of

prostatic cancer. One expected something fuller upon cystoscopic ureteral catheterization, and the functional diagnosis of renal sufficiency from a man of Casper's standing. Apparently he has preferred to leave these things to be read in his other publications. The translator has made numerous small additions throughout the work. Many of them it must be said are necessary; all of them worth while. As a whole the book is highly to be recommended.

E. W. A.

THE PRACTICE OF GYNAECOLOGY, in original contributions by American authors. Edited by J. WESLEY BOVÉR, M.D., Professor of Gynaecology, George Washington University, Washington, D.C. Lea Brothers & Co., Philadelphia and New York, 1906.

This is a book belonging to the so-called systems in which the editor has associated with him six other writers, each one being a specialist in gynaecology, and a teacher of the subject in some medical school. There can be no doubt that this method of book making has many advantages, while perhaps open to some objections. Besides the distinguished editing professor each of the other contributors has achieved more or less distinction in his speciality. The list includes such well known names as J. Riddle Goffe, Thomas J. Watkins and N. O. Werder. In his preface the editor states that the book in "its scope is intentionally made broader than the technical definition of gynaecology." So that it includes a consideration of the diseases and injuries of the bladder, urethra, ureters, and rectum. This is not only an advantage and a necessity to the specialist, but also to the general practitioner. A considerable, and in many respects important part of the work in this volume of over eight hundred pages has been done by the editor. The articles he has chosen are those on developmental anomalies of the female generative organs; sterility; diseases of the rectum and anus; and the abnormal surgical conditions of the whole urinary tract from the kidney to the urethra both inclusive.

In the article on menstruation, Dr. Riddle Goffe insists on the importance of the young girl being sufficiently early instructed regarding this function, what it means, and the care necessary to avoid arrest or disorder. It is, or ought to be, part of the function of the family doctor to impress upon the mothers, or guardians of young girls, the importance of this duty. The author quotes with approval Lawson Tait's suggestion that, from analogy of the fertilization of flowers, the idea of reproduction may be gained in the purest and simplest form.

The articles by Riddle Goffe are those on Displacements of the Uterus, The Vaginal Method of Operating, and the After Treatment

and Complications of Abdominal Operations. He is especially eloquent on the advantages of the vaginal avenue of approach for many intrapelvic conditions which require peritoneal section. Dr. Riddle Goffe, by his enthusiastic and persistent advocacy of vaginal section, has doubtless converted many of his countrymen from abdominal section. In some of the conditions to which he applies it most operators will, however, we believe continue to hold that the old is a more excellent way, and will not be prepared to admit all the advantages claimed for vaginal section by Goffe and others. Superior experience of a particular method of operating will usually result in its being preferred.

G. BROWN MILLER writes the articles on inflammation of the uterus, lacerations of the cervix, subinvolution of the uterus, inversion of the uterus, and the fibromyomata, and malignant tumours of the uterus. To X. O. WERDER falls the technique of abdominal operations, and extra-uterine pregnancy. The other subjects are treated by Brown Miller, Schenck, and Watkins.

The various operations for urinary and fæcal fistulæ are described. So also those for prolapsus of the uterus and vagina, and for lacerations of the perineum. Among the operations for displacement of the uterus shortening of the utero-sacral ligaments is included, and described. We believe that its applicability for this condition is very limited, and in many cases for most operators it will be found difficult of performance. On the other hand, the Lefort operation, as an adjunct to other procedures, or alone, in selected cases, which we have found most valuable, is not mentioned. Suitably done it need not prevent sexual relations or, as in cases on record, prevent successful pregnancy and parturition. In many respects this is an admirable work, and a valuable addition to the literature of gynecology.

PHOTOSCOPY. By MARK D. STEVENSON, M.D., Akron, Ohio. Octavo of 126 pages, illustrated. Philadelphia and London, W. B. Saunders Company, 1906. Cloth, \$1.25 net. Canadian agents, J. A. Carveth & Co., Toronto, Ont.

This work contains a short description of the principles of Photoscopy. All reference to advanced mathematics is carefully avoided, and clinical facts are well brought out. The descriptions are sometimes a little confused, and the writing is not always of the very best. As a practical guide, however, it is to be recommended to any one proposing to undertake the treatment of refractive errors.

RACE CULTURE; OR, RACE SUICIDE? By DR. ROBERT R. RENTOUL, Liverpool, Walter Scott Publishing Co., Ltd., London and New York.

The author states that the work is "a plea for the unborn," and the giving of more attention to the begetting of a healthy race. It is written for medical and non-medical thinkers; and the causes of degeneracy are discussed in twenty-one chapters, while suggestions are made for the prevention of an increase of degeneracy.

SAUNDERS' POCKET MEDICAL FORMULARY. By WILLIAM M. POWELL, M.D. Eighth Edition, Adapted to the new (1905) Pharmacopeia. Philadelphia and London: W. B. Saunders Company, 1906. In flexible morocco, with side index, wallet and flap. \$1.75 net.

The above heading sets forth the objects of this book. It is well known by reason of the seven editions which have preceded the present one. A book of this kind is of great value to a physician; and there is none better than this one.

THE MEDICAL RECORD VISITING LIST OR PHYSICIAN'S DIARY for 1907. New revised edition. William Wood & Company, New York.

Physicians who have used this book in the past will require another of the same kind for the coming year. It is all which one could desire for recording the details of the daily work. Messrs. Lea, Brothers & Co., and Messrs. Blakiston's, have also favoured us with copies of their "Visiting Lists."

THE AMERICAN ILLUSTRATED DICTIONARY. By W. A. NEWMAN DORLAND, M.D. Fourth Revised Edition. Octavo, 836 pages, 293 illustrations, 119 in colours. Philadelphia and London, W. B. Saunders Company, 1906. Flexible morocco, \$4.50 net; thumb indexed, \$5.00 net. J. A. Carveth & Co., Toronto.

It is just three years since, in December 1903, we had occasion to mention the appearance of the third edition of Dorland's dictionary. We said that it fulfilled all the conditions demanded in a book of reference; the definitions close and accurate and the words easily found. After using this dictionary for three years we are not disposed to think that it was praised too highly. The quick issue of the fourth edition would seem to be proof that a large number of persons entertains the same opinion.

OBSTETRICS FOR NURSES. By JOSEPH B. DELEE, M.D., Professor of Obstetrics in the Northwestern University Medical School, Chicago. Second revised edition. 510 pages, fully illustrated. Philadelphia and London. W. B. Saunders Company, 1906. Cloth, \$2.50 net. J. A. Carveth & Co., Toronto.

The "literature" which is available for nurses is now of considerable bulk. We cannot help wondering how many nurses read it; and, of those industrious persons, how many profit by what they read. It is not our conception of the duty of a nurse that she should master a book upon Obstetrics of 500 pages. Even if the feat were possible in view of her lack of preliminary training in anatomy and physiology, we do not think it either necessary or desirable. If the author puts this book forward as one suitable for the nursing "profession," we think that he is lacking in good judgement.

DIET IN HEALTH AND DISEASE. By JULIUS FRIEDENWALD, M.D., Clinical Professor of Diseases of the Stomach in the College of Physicians and Surgeons, Baltimore; and JOHN RUTBAH, M.D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, Baltimore. Second revised edition. Octavo 728 pages. Philadelphia and London, W. B. Saunders Company, 1906. Cloth, \$4.00 net; half morocco, \$5.00 net. Canadian agents, J. A. Carveth & Co.

The first edition of this book was mentioned in these pages in February, 1905, less than two years ago. The changes in the present edition are not numerous. The section upon salts has been re-written, and the recent work by Chittenden, Klemperer and Prochownik, is noted. No mention appears of Pawlow's investigation of the digestive juices. Many new recipes and diet lists are added. Probably no other book contains so much information upon the subject of diet in disease.

A TREATISE ON SURGERY. By GEORGE R. FOWLER, M.D. Two imperial octaves of 725 pages each, with 888 text illustrations and four coloured plates, all original. Philadelphia and London: W. B. Saunders Co., 1906; Canadian agents: J. A. Carveth & Co., Limited, Toronto. Per set, cloth, \$15.00; half morocco, \$19.00 net.

This second volume deals with the surgery of all regions of the body, save those of the head, neck, and thorax, which were described in the first, and is fully up to the standard of its predecessor. One is impressed by the wide knowledge possessed by the author, by the

lucid and concise presentation of the various subjects, and by the excellence and profusions of the illustrations. The late Dr. Fowler was among the leading American surgeons of the day, and his work justly deserves a high rank in surgical literature. It is to be deeply regretted that he was not permitted the satisfaction of seeing his book in print. Reviewing the various sections in detail, we find the treatment of fracture of the dorsal and lumbar vertebrae to be conservative, if the cord be injured and symptoms persist operation is advised, but in extensive injury or complete division of the cord operative interference is not likely to be attended with regeneration, however promptly it may be sutured. Potts' disease scarcely receives the consideration it merits. The surgery of the abdominal and pelvic regions is a very admirable section, and particularly the articles on the gall-bladder and bile ducts, the appendix, hernia, and the male genital organs. The symptoms of perforative typhoid are not clearly expressed, nor are the favourable results sufficiently brought out. He advises excision of the ulcer not simple invagination. Hæmorrhage from gastric ulcer, its treatment and present good results are not more than touched upon. The classification of appendicitis is made from a clinical rather than a pathological basis. Operation should not be delayed longer than 24 hours in progressive cases, and in many not that long. The kidney receives a fair amount of consideration, but the technique of cystoscopy and the various procedures for determining renal efficiency are not mentioned. Urethral strictures requiring to be cut should be subjected to external rather than internal urethrotomy. Conservatism is taught in the treatment of enlarged prostate. The perineal route is preferred for the radical operation. The female pelvic organs are considered as adequately as a book on general surgery permits. The surgery of the extremities is clearly expressed, but fracture of the humerus and femur have not been given the attention they merit.

W. L. B.

THE TECHNIQUE OF OPERATIONS UPON THE INTESTINES AND STOMACH.

By ALFRED H. GOULD, M.D., of Boston, Mass. Octava volume, containing 190 beautiful original illustrations, some of them in colours. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$5.00 net; Half Morocco, \$6.00 net. J. A. Carveth & Co., Toronto.

This beautiful book will be of great assistance to those wishing to make themselves familiar with up-to-date intestinal and stomach surgery. It is, as the author states, the result of three years' research,

and in it are collected nearly all the standard operations upon the stomach and intestines. The technique of the operations is fully described, and everything is given necessary to the thorough understanding of the various stages of the operations selected as the best. Too much praise cannot be given to the magnificent illustrations; they are so fine and so clear that no mistake could possibly be made as to their meaning. These illustrations with the accompanying text are all that is required to enable a person with but slight operative experience to become thoroughly familiar with stomach and intestinal surgery. The first chapter on repair of intestinal wounds, well illustrated, is a new feature in such text-books as the one under review. This book can be recommended to all interested in abdominal surgery. Dr. Gould is to be congratulated on having produced such a splendid work.

ATLAS AND TEXT-BOOK OF HUMAN ANATOMY. Volume I. By PROFESSOR J. SOBOTTA, of Wurzburg. Edited, with additions, by J. PLAYFAIR McMURRICH, A.M., Ph.D., Professor of Anatomy at the University of Michigan, Ann Arbor. Quarto volume of 258 pages, containing 320 illustrations, mostly all in colours. Philadelphia and London: W. B. Saunders Company, 1906. Cloth, \$6.00 net; Half Morocco, \$7.00 net. J. A. Carveth & Co., Toronto.

This, the first volume of Sobotta's anatomy, is a distinct addition to our atlases, and text-books, of anatomy. The translation seems well done, and the illustrations which are in a separate volume in the original are here united in one volume, a great improvement, in our opinion. The illustrations are beautifully coloured, and the best we have ever seen. They are so good that every practitioner who cannot consult the dissecting room at will should have a copy. In adapting the atlas for English readers the only changes have been in the nomenclature and the combination of atlas and text. The nomenclature employed is that proposed by the Basel Committee. In the section of myology, Latin terms have been retained throughout. The German author states that the atlas was prepared for the student as an aid in the dissecting room; but it is far too fine for that. This is the first anatomical atlas in which multi-colour lithography has been employed. All the illustrations were first photographed from specimens, and the majority of drawings were made for the photographs. Many of the illustrations are produced by the half-tone method, and made clearer by the use of a number of colours. We can recommend this artistic work to all who wish to renew their acquaintance with anatomy.

Medical News.

ROYAL VICTORIA HOSPITAL.

Monthly report for November: Patients admitted, 292; patients discharged, 252; patients died, 14. Medical, 84; surgical, 124; ophthalmological, 19; gynaecological, 35; laryngological, 30. Out-Door Department: Medical, 823; surgical, 740; eye and ear, 355; diseases of women, 93; nose and throat, 514. Total, 2525. Ambulance calls, 68.

ALEXANDRA HOSPITAL.

Admissions, discharges and deaths at the Alexandra Hospital from the date of opening to November 30th, 1906, were: Admitted: diphtheria, 95; scarlet fever, 46; measles, 18; erysipelas, 1; no disease, 2. Discharged: Diphtheria, 74; scarlet fever, 27; measles, 16; erysipelas, 0; no disease, 2. Died: Diphtheria, 7; scarlet fever, 0; measles, 1; erysipelas, 1; no disease, 0. Total admitted, 162. Total discharged, 119. Total died, 9.

MONTREAL GENERAL HOSPITAL.

During the month of November 280 patients were admitted to the Montreal General Hospital, and 246 were discharged. There were 23 deaths, 10 of which occurred within three days of admission. The average daily sick in the hospital was 200, and the highest number on any one day was 212. Out-door consultations numbered 3,792. The ambulance made 138 runs. The average number of visitors at the hospital on visiting days was 328. During the 16 years the training school has been in existence 270 graduates have passed.

For the Medical Council of Ontario the following persons were elected by acclamation to represent the territorial divisions named: Division 1, Dr. J. L. Bray, Chatham; 3, Dr. J. MacArthur, London; 4, Dr. J. Robertson, Stratford; 6, Dr. James Henry, Orangeville; 7, Dr. P. Stuart, Milton; 8, Dr. S. H. Glasgow, Welland; 10, Dr. E. E. King, Toronto; 12, Dr. H. Bascomb, Uxbridge; 13, Dr. S. C. Hillier, Bowmanville; 14, Dr. A. E. MacColl, Belleville; 15, Dr. W. Spankie, Wolf Island; 16, Dr. J. Lane, Mallorytown; 17, Dr. M. O. Klotz, Ottawa.

The contested elections resulted as follows: Dr. J. S. Hart, Toronto; Dr. Henderson, Strathroy; Dr. Luton, St. Thomas; Dr. E. A. P. Hardy, Dr. E. T. Adams, and Dr. C. Jarvis, Toronto.

Dr. C. S. Parke died in Quebec on 29th November, 1906, in the 63rd year of his age. The immediate cause of his death was inflammatory rheumatism. His only son is Dr. G. H. Parke, also of Quebec. Dr. Parke graduated from McGill in 1866, and subsequently went to Edinburgh for study. During his career he was consulting physician to the Jeffrey Hale Hospital, and attending physician to the Male Orphan and Finlay Asylum. He was a member of the select vestry for many years of the English Cathedral, and filled the offices of president of the Irish Protestant Benevolent Society, president of the Quebec Tandem Club, president of the Victoria Curling Rink, and president of the Quebec Turf Club. He received the Government medal and Fenian Raid medal.

The trustees of the Toronto Free Hospital for consumptives have awarded contracts aggregating \$27,000 for the erection of a new sanatorium near Weston. Ten thousand dollars of the amount required has been provided by Mr. Robert Mulholland for the erection of a special cottage, and another \$10,000 by Mr. H. C. Hammond for a second cottage. This sanatorium is intended to supplement, as an institution for advanced cases, the Muskoka Cottage Sanatorium at Gravenhurst, which is for incipient cases.

The committee of management of the Western Hospital has issued an appeal to the public, signed by Mr. Charles F. Smith, president, and Dr. T. G. Ross, hon. secretary, for contributions in money or gifts. To enable the new hospital building, costing \$60,000, to be completed, a generous response is essential. It is the ambition of the committee to open the structure free of debt, but only a third of the amount has already been subscribed.

The Ottawa city council has been advised by Dr. Hodgetts, of the Ontario Board of Health, that, if the city will erect a sanatorium for consumptives in the vicinity of Ottawa, the Government will give a grant of \$4,000 towards the building fund, and contribute \$1.50 per week per patient towards maintenance. The city council has approved of the proposal.

The newly elected officers of the Thunder Bay Medical Association are: Hon. President, Dr. T. S. T. Smellie; President, Dr. C. J. H. Chipman; vice-president, Dr. H. E. Paul; secretary, Dr. J. D. Chis-

holm; treasurer, Dr. J. A. Crozier; Executive, Drs. J. M. McGrady and G. E. McCartney.

The London Medical Society held its annual meeting on December 11th, when the following officers were elected: President, Dr. E. Scaborne; Vice-President, Dr. W. J. Stevenson; Secretary-Treasurer, Dr. U. E. Bateson. The retiring president, Dr. Angus Graham, delivered the address.

The Hamilton Medical Association held its annual meeting on December 7th, and elected the following officers: Dr. Ingersoll Olmsted, president; Dr. Storms, vice-president; Dr. Davey, corresponding secretary; Dr. Hess, recording secretary; Dr. McNichol, treasurer.

At a meeting of the Regina Hospital Directors it was decided to approach the city council with a view to having a by-law presented to the rate-payers, authorizing the sum of \$100,000 debentures for the purpose of erecting a fully-equipped municipal hospital.

Dr. Walter Duesler Clement died in Toronto, on December 11th, 1906, in the 76th year of his age. He had practised medicine in Oxford county for forty years.

At the annual meeting of the St. Catherines General and Marine Hospital Association held 27th November, 1906, arrangements were undertaken for a new and modern hospital building of sixty beds.

The French Government has conferred upon Dr. Arthur Rousseau, of Montreal, Dr. C. S. Grondin and Dr. Arthur Simard, of Quebec, the honour of electing them Officers of the Academy.

Four hundred and thirty-three new cases of contagious diseases were reported to the Hygiene Department during November, bringing the total number of cases registered during the year up to 4,099.

Early in May the construction work on the new Royal Columbian hospital at New Westminster will be commenced. The new building will cost about \$50,000.

The building and site of the Montreal Dispensary has been sold to the Canadian Pacific Railway. The institution will go into new quarters next May at the north-west corner of St. Antoine and Inspector.

A site has been secured in Edmonton for the erection of the new hospital. The institution will cost \$75,000.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

J. W. STRUTHERS, M.B., F.R.C.S., Ed. "Spinal Anaesthesia; Its advantages and Disadvantages." *Edinburgh Med. Jour.*, November, 1906.

Sufficient evidence has accumulated during the last two years to allow of a definite opinion being formed of the value of spinal anaesthesia in surgical work. Cocaine has been abandoned for some time and its place been taken by stovaine, tropa-cocaine, and novocaine. Although various minor differences in the technique practised by different surgeons exist, there is an absence of real evidence of the superiority of one method over others, the main indications being to introduce 4 to 8 cgrms. of stovaine or tropa-cocaine, dissolved in an unirritating solvent directly into the subarachnoid space just below the spinal cord, with the most rigid precautions against sepsis. A complete sensory and motor paralysis is obtained, beginning with the sacral and involving the lumbar, and with large doses the lower dorsal, nerve areas, which lasts from an hour to two hours, and attended in about 60 to 90 per cent. of the cases by no complications nor followed by disagreeable after effects. But against these advantages several deaths have been reported, wholly or partly attributable to this method. Four cases of complete temporary paralysis of the respiratory muscles are reported following the use of stovaine. Every writer, who has had much experience of spinal anaesthesia, refers to cases of severe collapse occurring occasionally, while cases of slight collapse are apparently

frequent. Sickness, vomiting, and involuntary defaecation are of frequent occurrence, vomiting being especially apt to occur in abdominal operations. Imperfect anæsthesia, even in the most experienced hands, occurs in varying proportions, between 4 and 10 per cent. Headache is present in about 5 per cent., and is frequently severe and persistent, and difficult to relieve. In this respect the withdrawal of 5 to 10 c.c. of cerebro-spinal fluid is the most efficacious treatment, but often fails to relieve. The degree and duration of the anæsthesia cannot by any means known as yet be accurately controlled. The fact of the patient being conscious during a major operation is an insuperable objection. The mortality is little if at all below that attending chloroform and much greater than under ether. Unless means are discovered to materially lessen its dangers and to regulate more accurately its duration and extent, it seems doubtful whether spinal anæsthesia will retain the popularity which it has in some quarters attained.

JOHN G. SHELDON, M.D. "A further report on a case of Cirrhosis of the Stomach." *Annals of Surgery*, November, 1906.

This case was operated upon three and one-half years ago and is now well and attending his occupation regularly. At the operation, the stomach was found to be very small, its walls markedly thickened and indurated, but the organ was not deformed. Its cut surface appeared fibrous, and the mucosa, as far as could be determine, was smooth and atrophic. A gastro-enterostomy was done, the case being thought to be one of benign diffuse cirrhosis of the stomach. This condition, though rare, is now recognized. It is not associated with cancer, and may be of such severity as to cause death without cancerous involvement being present.

FRANZ FOREK, A.M., M.D. "The Treatment of Diffuse Suppurative Peritonitis following Appendicitis." *Medical Record*, December 1, 1906.

An extensive incision is made generally in the middle line of the abdomen. This incision extends from the umbilicus to the pubes, and in some cases as high as the ensiform cartilage. The pus is allowed to flow out, and what remains is gently dipped out. Adhesions between coils are separated, as his experience has shown many cases where there were abscesses so walled off, which would be dangerous to leave. The entire abdominal cavity is flushed out by pouring large quantities of saline solution into it, the coils of intestine being held aside and the various spaces thoroughly cleaned. The appendix is removed, and the

the abdomen closed without drainage. He does not think Fowler's position effective in this class of cases, and fears the dangers of syncope. His after treatment consists in stimulation by strychnine, digitalis camphor and occasionally caffeine and nitroglycerine, combined with saline infusions. In cases of severe shock adrenalin is added and the foot of the bed raised. Vomiting is treated by lavage. Sufficient morphine is given to make the patient fairly comfortable. He is against early opening of the bowels, prefers to relieve flatus by the rectal tube, and waits until the fifth or sixth day before giving a purgative enema. Twenty-one cases have been operated upon with a mortality of 14 per cent.

W. L. B.

MEDICINE.

UNDER THE CHARGE OF F. G. FINLEY, H. A. LAFLEUR AND W. F. HAMILTON.

WEICHARDT AND PILTZ. "The Aetiology of Eclampsia." *Deutsche Medizinische Wochenschrift*, Nov. 1906.

These authors state that a study of the mechanism of production of eclampsia and hay fever leads to the conclusion that each disease is the result of the formation of specific poisons from albumins, in the one case derived from placental albumin and in the other from the albumin of pollen. The serum obtained by injecting into rabbits placental cells or pollen grains, in each instance is not antitoxic but cytolytic, and cytolsins are formed which can break up homologous albumin molecules and liberate toxic groups or so-called endotoxins. It is Weichardt's belief that eclampsia is the result of the formation in the body of toxic substances resulting from the cytolysis of placental cells that enter the circulation, it being assumed that in these cases there is a deficiency in antiendotoxins or inhibiting bodies. By injecting into rabbits a specially prepared trituration of placental tissue the authors were able to satisfy themselves of the existence of such an endotoxin that appeared to present toxic components of two different types. The first of these was a hydrogel forming body which is therefore active in causing coagulation of blood, whereas the other more deleterious component has a specific affinity for the respiratory center, and when injected into animals promptly causes death through failure of this function. The authors also speak of their attempts to produce an artificial inhibitory body to be used as a prophylactic, in which they have been partially successful, though it does not appear that there is any immediate possibility of its being practically useful.—*New York Medical Record*.

J. E. DUTTON and J. L. TODD. *Memoir XX., Liverpool School of Tropical Medicine, June, 1906.*

This brochure of 72 pages is taken up for the most part by observations upon "The Prophylaxis of Malaria in the principal posts of the Congo Free State," followed by a description of the "Animal Reactions of the Spirochæta of African 'Tick Fever,'" and "The Specific nature of the Spirochæta of African 'Tick Fever.'" The first named article, written in French, deals at the outset with the fact that, since malaria, yellow fever and filariasis are carried by mosquitoes, all mosquitoes are therefore dangerous, and their destruction must be attempted. Figures are adduced to show that this is by no means impossible, and that careful prophylaxis has practically stamped out of existence, in certain places, what were previously dangerous maladies. Following some general remarks on the biology and habits of mosquitoes, is a short recital of the methods taken to destroy them, or to keep free from their entry, sources of drinking water. The kerosening of pools and drainage of marsh land are also alluded to, although these are rather questions that affect a community than an individual. For the individual of a white race, the habit of sleeping beneath a netting is obligatory, and the separation of his living quarters from the immediate vicinity of the natives highly essential. The authors then deal with the municipal laws that seem to be necessary in the struggle against infection, and outline the medical service as it now exists in the Congo Free State, particularizing the important stations by a report on each of five of the most important posts in the country; these reports, of local interest, as they are, yet indicate a very careful observation of the prevalent conditions, and careful suggestion as to the means of betterment of each. Maps from the hands of the authors, assist the understanding of these local conditions.

A. BREINL and A. KINGHORN. "Observations on the Animal Reaction of the Spirochæta of the African Tick Fever. (Published in *The Lancet*, March 10, 1906).

This brief report shows that the authors worked with the strain of Spirochæta discovered by Dutton and Todd, in human tick-fever, which was described in Memoir XVII, previously reviewed in these columns. They were able to infect, in addition to monkeys, the horse, dog, rabbit, guinea-pig, rat and mouse. Spirochæta obermeieri has not, as yet, been able to attack any animal save man and the monkey, so that the authors suppose that spirochæta duttoni is evidently a different organism.

A. BREINL. "On the Specific Nature of the Spirochæta of the African Tick Fever. (Published in *The Lancet*, June 16, 1906).

Breinl made a large series of inoculations with spirochæta obermeieri and with the spirochæta of African Tick Fever; after recovery from a first infection, the animals were re-infected, and the result was that each conferred a good immunity against its own re-infections but not against re-infection of the other. This, coupled with the observations mentioned in the last reviewed paper, lead to the supposition that the two species are quite distinct. The African species has been named spirochæta duttoni, to honour the memory of the late Dr. Dutton.

A. G. BENNETT. "Physical Methods of Treating Heart Disease; the Nauheim Bath." *Practitioner*, October, 1906.

The author redirects attention to the Nauheim bath, and to the virtues that it has, even if uncombined with massage or Schott movements. He says its most useful place is in dilatations after fevers, or cases of high arterial tension in Bright's disease, where there is not albuminuria to any marked extent; if the albuminuria be the result of cardiac inefficiency, Bennett does not consider the baths as by any means contra-indicated. The general enlargement that is known as the result of prolonged alcoholism, he considers as amenable to bath treatment. As to the question, how do the baths act? there are many offered solutions. Bennett considers that actual absorption of the carbon dioxide and other constituents must occur; some say the result is brought about by the irritation of nerve endings, which act reflexly on the nerves of the heart: considering how much blood the peripheral vessels can contain, it is easy to imagine that, with the peripheral blood greatly increased, the heart gains tone and command over its blood, even though seriously dilated. Baruch considers that carbon dioxide stimulates muscle fibre and that the main factor in the effect of the baths is that they increase the power of the rhythmical contractions of the peripheral arteries. Heitz has pointed out a great betterment in sensation, and the sense of position of limbs after the baths, and speaks of a tonic effect on the myelin sheaths of nerves.

Bennett recapitulates some of the cautions, such as the use of porcelain, not metal baths; the increase of the amount of gas the lower the temperature is; and finally, the stated contra-indications, with some of which he does not agree. If albuminuria be due to heart inefficiency, as stated above, the author considers it no contra-indication; if eczema exists, cover it by vaseline or collodion and proceed as if it did not exist; oedema is not necessarily a contra-indication, although true

angina pectoris and aneurysm are. In this connexion the author brings forward what is evidently with him a cherished idea, which may very likely be true, viz., that bather's cramp is really angina pectoris.

In his summary, the author looks to find, by the use of the baths, a capillary dilatation with relief to the ventricular circulation, and thereby better ventricular emptying and slowing of the heart rate, increased tone and volume of the distal capillary circulation, and a reflex effect on the cardiac ganglia. The floating up of the viscera may be of use in relieving the large venous trunks which are ordinarily pressed upon by these viscera, and the action of the skin and of the kidneys is certainly stimulated.

HEITZ. "Hypertension and Carbogaseous Baths." *Revue de Médecine*, 10th June, 1906.

This author gives an impression of being a little too enthusiastic over the good results of baths of this nature, but adds much interesting material relative to cases that have been observed with evident care. The cases have been treated at Royat, and only those are dealt with, in which the baths are the sole form of treatment. The author measures his results always by means of instruments, especially those of Potain and of Goertner, and prefaces his information by the statement that it is only permanent, chronic hypertension that lends itself readily to amelioration. In transient or paroxysmal hypertensions, such as those of eclampsia, lead colic, or scarlatinal nephritis, no good is to be hoped.

Heitz is of the opinion that the deposit of gaseous bubbles on the skin is of use in exciting the terminations of the sensory nerves, that the baths excite great vaso-dilatation of the superficial vessels, as shown by the redness of the skin, that the heart is slowed, that excitation of the abdominal vaso-constrictors occurs; and he observes continually that the sphygmomanometer shows a lowering of the blood pressure. Diuresis is increased as is uric acid elimination, and leucocytosis, especially of the eosinophiles, produced. The lowered blood pressure is not transitory, but lasts for a long time—often months. In 1904, this author reported favourable results in 60 per cent. of his cases, and now thinks he may venture to say in 75 to 80 per cent. The refractory cases are those of moderate hypertension. The disappearance of local pallor and cold is notable, and at times a real enlarging of the radial artery may be felt.

In the particularization of cases, cardiac neuroses and paroxysmal tachycardiac have been much benefited, though wisely remarks that

the baths are only good adjuncts to psychotherapy. In many myocardial lesions, marked changes in murmurs have been produced, and in four cited anginal cases, the results in the disappearance of attacks are wonderfully good. Diminution of albumen in cases of renal insufficiency, and the lessening of insomnia and vertigo have also been very encouraging. Without particularizing further his cases, which partake of many different forms of hypertension, from that of neurasthenia to that of gout, his results are very good.

As contra-indications, aneurysm stands first; the imminence of a gouty attack is a warning to desist, and a quick drop of pressure in a sclerotic means so great cardiac effect as to be dangerous. Pulmonary oedema, much cardiac asthma, and arteritis of the coronaries or great myocardial change all counsel care in administration; if there be much albumen and many casts, or if renal insufficiency be indicated by poor elimination of methylene blue, there is no use in attempting the treatment, for in such cases the result may be a rise of blood pressure. Careful observation and systematic use of the blood-pressure instrument are absolutely essential.

J. McC.

PATHOLOGY.

UNDER THE CHARGE OF J. G. ADAMI.

MACFADYEN. "An Antityphoid Serum Obtained from Goats. *Centralblt. f. Bact.*, 1906. XLI. Heft. 2.

The author prepared the anti-typhoid serum by immunizing goats with the juice of the typhoid bacilli. This cell juice he prepared by growing the organism on large surfaces of agar, and after incubating 18 hours, collecting the virulent bacilli. The bacilli were frozen with liquid air and ground to a fine powder, from which an emulsion was made. In this way the liberated endotoxins were dissolved and obtained in concentrated solutions. Such endotoxin solutions were highly toxic for animals, but it was found that an anti-substance could be produced in administering it in small doses. From goats a potent anti-toxic serum was obtained. The serum is not truly antitoxic, as the term is used for anti-diphtheritic serum, but rather anti-endotoxic,—for it not only contains antibodies to the endotoxin, but also possesses agglutinating and bacteriolytic properties.

JAGIC. "Cirrhosis of the Liver." *Wiener Klin. Wochensch.* 1906. XIX p. 1058.

Though cirrhosis of the liver has for many years been ascribed to alcohol, the experimental results obtained by alcohol have not entirely

borne this out. Alcohol given by the stomach to the lower animals leads to a severe gastritis but no liver cirrhosis. Mertens has claimed positive results by administering alcohol by inhalation. The general contention held at present is that alcohol predisposes to liver cirrhosis, but that it does not stand alone in this. Weigert advanced the sweeping theory that in each case of liver cirrhosis, there was a preceding stage of liver-cell destruction, and that the various etiological factors which had been brought forward, were the agents leading to this destruction. In support of this are the experiments of Deutsch who was able to produce localized necrosis in the liver by injecting the animal with hepatic immune serum. Such hepatic immune serum was obtained by treating one animal, by intraperitoneal inoculations, with the ground-up liver substance of another animal. After some weeks of treatment, the serum from the inoculated animal, is found to be toxic and destructive of liver tissue in the other species of animal. Although several have claimed that the necrotic areas in the liver so obtained, are later filled in with connective tissue, Jagic never found this in his animals. Other experimenters reported the production of cirrhosis by bacterial inoculation, and many scattered reports exist of the finding of fibrosis of the liver in animals dead of tuberculosis. The cirrhosis occurring with tuberculosis is an intratubular pericapillary fibrosis.

Of the type of liver cirrhosis associated with obstruction of the bile passages, the author takes little note. The author passes on to a discussion of the cases occurring in Nothnagel's clinic in the last few years. He divides the cases into the alcoholic and non-alcoholic forms. Jagic points out that the cirrhosis occurring in distinctly alcoholic subjects always presents severe gastro-intestinal symptoms with icterus and pain over the liver. In every one of his cases belonging to the non-alcoholic type there were present one or more foci of tuberculosis somewhere in the body. These cases differ in the symptoms from the alcoholic type, in the absence of icterus and pain over the liver area.

The author believes that the tubercle toxin is the direct cause of the destruction of the liver cells and that the later cirrhosis is of the character of a replacement fibrosis.

WERSIŁOWA. "Hereditary Syphilis." *Central. f. Bakter.* 1906. Bd. XLII p. 513.

Syphilis may be transmitted from parents to child either by the ovum or spermatozoon, or through the placenta. The author attempted to trace the line of infection by demonstrating the spirochætes in the placenta, cord and internal organs of the foetus. The Giemsa and silver nitrate method of Levaditi were used to demonstrate the organisms.

In several cases of dead-born children, with definite syphilitic histories in either parent, the spirochaete pallida was demonstrated in the heart, lungs, liver and spleen. Again, in other cases, where no syphilitic history was obtainable in the mother, and where the mother showed no lesions of liver, the organism, now considered as specific for syphilis was obtained in the child. The spirochaetes were particularly numerous in the lesions of pemphigus present on the children. It was also shown that the organisms were present in large numbers in the placental tissue and in the cord, but the author was not able to determine whether there was a passage of the organisms from the maternal to the foetal portion of the placenta. The author concludes that, (1) The spirochaete pallida is present in the organs of a new-born child of syphilitic parentage. (2) the spirochaete pallida may pass from mother to child by the placental route. (3) Their presence in the placenta, cord and organs of the child is also possible, in a mother showing no signs of syphilis.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The fourth regular meeting of the Society was held Friday, November 16th, 1906; Dr. F. G. Finley president, in the chair.

CERVICAL RIB.

C. K. RUSSEL, M. D., read the reports of four cases of this anomaly. One of the patients was presented to the Society for inspection.

F. M. FRY, M.D.—I would like to know if any symptoms have been noted with regard to this anomaly in children. In Berlin, Professor Hoffa was good enough to show me a child eight years of age, who had a cervical rib on each side, but this patient had come on account of another congenital anomaly, inasmuch as the distal phalanx of the left thumb was missing, and the stump was adherent to the hand, while the entire right thumb was lacking. There was no reason to think that this had been produced by gangrene or if so it must have been during intrauterine life. This child had slight torticollis attributed to the presence of the cervical rib. He also gave details of two other cases both of which showed some gangrene of the hand. The ages in the two latter cases I do not recall.

W. G. TURNER, M.D.—In connexion with accessory cervical rib a number of cases of this kind have occurred without any symptoms, and it would seem possible that as Dr. Russel has said these symptoms do not come until after 20 or after. On looking up one of my records of clinics

I find a series of eight cases all under 20 years of age. These had come to the orthopaedic clinic for treatment of scoliosis, and showed no symptoms of any other effects. They were simply diagnosed in the routine examination, and also by means of the X-rays; a definite cervico-dorsal scoliosis being present.

OSKAR KLOTZ, M.D.—With regard to the pathological findings in the arteries, there are some very interesting points to be noted. It was found that in the right arm the sub-clavian artery was flattened out as it passed out from the thorax, and at this point it was thrombosed. Then the vessel again regained its normal and almost normal lumen as it passed into the arm, only to become occluded again at the wrist and in the hand.

There has been an abnormal course of the subclavian artery, which has acted upon the artery in such a way, either by compressing it or exposing it to friction in the movements of the arm, that a thrombosis was brought about. There a secondary thrombosis occurred in the vessels of the wrist and hand. That these arterial blockages are thromboses and not endarteritis is seen in the fact that blood pigment can be found in the new tissue within the vessel, as deep down as the original vessel wall. These thromboses are well organized and also show canalization, a process which is not seen in endarteritis obliterans. The blockage in the arteries of the right side was of greater extent than on the left, as in the latter the collaterals were not affected.

C. K. RUSSEL, M.D.—I have been able to find no cases in the literature of cervical ribs causing symptoms in children. The youngest case was aged 13, the next 17 and the others over 20. In his review of the literature Tillman reported 26 cases in which cervical ribs had been discovered, 13 were only by accident, the other 13 having some symptoms of the condition. In 10 the symptoms disappeared by treatment; in three cases in which there was pressure on the subclavian artery and came to operation, there was recovery. With regard to why symptoms did not develop in the left hand in the patient seen by Dr. Gordon, I may say that the left hand had not been in use so constantly as the right, and that lately he has supplemented his writing a great deal by the use of the typewriter. One cannot of course exclude the possibility of the mental condition having something to do with this case but I think the rib was probably the indirect cause. The condition is evidently there before the age of 20, and I merely suggested the question of late ossification and the greater muscular development of the right side as a possible cause to explain symptoms which come on at that time. In the vertebral artery the turns which it has to take are normal; in this condition

they are abnormal; and really only occur late in life, when the bone becomes ossified, and fixed to the vertebra. Of course we cannot exclude a toxic influence in all cases; but then, why should it be only localised to this one particular part. With regard to the symptoms in the lower extremities the woman was decidedly anæmic and neurotic, and I thought the cold feet was more due to this, more especially as she did not show any cyanosis at any time. The vessels in the lower extremities did not show any changes, and this I thought would rather exclude a toxic cause.

E. W. ARCHIBALD, M.D.—Dr. Russel is fortunate to have such a series of cases, the first, so far as I know, to be presented before the Society: and especially fortunate in that he has examples of two kinds of possible effects from cervical rib, the nervous and the circulatory effects. The subject from the etiological aspect is still involved in a certain amount of obscurity. For instance the fact that these cases do not usually develop symptoms till after the age of 20 is to my mind absolutely unexplained by the suggestion which Dr. Russel has put forward, to the effect that complete ossification of the rib occurs about that time. I can hardly see why a cartilaginous structure, as regards pressure upon the nerves, can exert any less effect upon those nerves than a structure of bone. With regard to the case which I presented before this Society in January of this year under the title of "A Case for Diagnosis" even with the post-mortem before us it still seems to me to be a case for diagnosis. What the post mortem revealed was an obliteration of the subclavian on both sides; on the right extending from underneath the clavicle to the thyroid axis, and on the left occupying only the subclavicular portion. The actual cause of this obliteration is I think still somewhat to seek. The suggestion which Dr. Russel puts forward is to the effect that this rudimentary rib, which we must accept as a first rib, and not a cervical rib, has so crowded in the subclavian in its course that the later is forced to take an abnormal curve underneath the clavicle, a condition which in some way, say by variation in intravascular tension, *not* by any actual pressure, has ultimately caused complete thrombosis. There are some things to be said against this view. The mere abnormal curving of the artery is hardly sufficient to cause thrombosis; take for instance the course of the vertebral artery which makes a sharp turn on leaving the transverse process of the atlas; and yet you never hear of a thrombus at that spot. To my mind something further must be supposed. The history of the gonorrhœal infection about the same time that she developed her symptoms, about 8 or 9 years before she came to hospital, is a suggestive fact. Now we know from experimental work upon the intravenous injections of toxic substances, such as adrenalin, digalen, and nicotine, that these are capable of producing a mesarteritis, which may cause secondarily an intimal proliferation. We know also

clinically that thrombosis is not infrequent after the infectious fevers, especially typhoid. The frequent occurrence of gangrene in the extremities during an epidemic of typhus in the Russo-Turkish war, was found to depend upon arterial disease with thrombosis. All this would seem to indicate that in the present case we may have had to deal with an infection of toxic origin, affecting the wall of the subclavian more particularly at the areas of abnormal curve in the vessel. It is reasonable to think that this may have been the starting point of an endarteritis which gradually progressed by thrombosis to occlusion. A remarkable point in this woman's history is that she had symptoms not only in her upper extremities but also in the lower. In the upper there were very marked objective symptoms, while in the lower these were limited to the subjective complaint of pallor and coldness of the feet. The question then still arises was this primarily a case of arteritis obliterans, so-called? The very fact that the symptoms were present in all four extremities makes me still think that the case was primarily an intimal proliferation followed by thrombosis, and the condition only secondary due to the abnormally curved course of the arteries in the neck. Dr. Russel at post-mortem found the post tibial arteries unaffected; and for this reason is inclined to set down the symptoms in the legs as of a neurotic nature. The argument is not quite valid in the absence of evidence as to the state of the arteries in the feet and in the popliteal and femoral regions. To exclude arterial occlusion as the cause of the leg and feet symptoms, it is necessary to examine the whole course of the arteries. It is certain that at an early stage of the disease in the upper extremities the radials were patent; yet from this it would plainly have been an error to argue that the vessels proximal and distal were free from disease. The event proved otherwise.

SOME CLINICAL CONSIDERATIONS IN RESPECT OF PELVIC TUBERCULOSIS.

JAS. R. GOODALL, M.D., read a paper upon this subject.

A. LAPHORN SMITH, M.D.—This is a very interesting paper, and Dr. Goodall has put the subject very clearly before us. A few of my own cases which I can remember at the moment bear out what Dr. Goodall has said, though I have not had many; because, if a patient had tuberculosis of the lungs, I have never operated for pelvic tuberculosis. One of the cases was a woman who had all the symptoms of pelvic tuberculosis; with a large mass in the pelvis, in fact, the whole pelvic contents were solid. I opened the abdomen removed both tubes and ovaries not as individual organs, but as whole handfuls of caseating material. The patient lived six or seven months later, but died from general wasting. The next case was a girl of 24, whose abdomen I

opened, and found everything matted together, so much so that it was impossible to tell what one was separating, and only after cutting layer after layer did I come to a piece of intestine which I deliberately cut into in order to identify it; and closed. The patient made a good recovery and I understand is in good health now. The other case was a girl with two or three large separate masses in the abdomen and pelvis, and I tried to remove the largest one, but came to the conclusion that it would be dangerous to go on separating the mass. As it was the hæmorrhage was frightful, and she died in 24 hours. Another case was a girl sent in to the Samaritan Hospital last year with large masses in the pelvis, diagnosed as the tubes and ovaries very much enlarged. The masses were about the size of an orange on each side, and there were several others in the abdomen. She had a temperature of 105, but on general treatment for three weeks the temperature went down to normal, and I operated to find at least five of these masses the size of a fist. I did not even touch them as my experience of the hæmorrhage resulting did not warrant such a procedure. I closed the wound and four weeks after this transferred her to Dr. Brown who began the injection of iodoform. About two months ago she called to tell me that she was doing her work as a book-keeper ten hours a day in a wholesale house downtown, and on examination all the masses which I had not only felt but had actually seen had disappeared. Of course it is a well-known fact that sometimes tuberculosis peritonitis is arrested or it may be cured by simply opening the abdomen. Dr. Goodall has referred to one case of fæcal fistula. This is a thing I have learned as another reason why one should be careful about breaking up adhesions of the intestines in these cases. In a case 10 years ago which came to me with the same group of symptoms I separated the adhesions, and after digging out the tubes and ovaries put in a drainage tube; and just where the tube rested in the pelvis, probably on the rectum, it went through and she had a fæcal fistula which I was not able to heal, and she died from exhaustion or from general wasting a few months later. I would like to impress still further the importance of the fact which Kelly points out that it is not wise to stir up adhesions though in these cases the temptation is great to separate the knuckles of intestine which are bound together. I find that nature knows more than we do, and in separating these coils one may find that we expose a perforation which would have taken place but for this matting together by nature. Sometimes one may be able to get pus out by vaginal drainage, although I am not much in favour of the vaginal route. In two cases I drained in this way, and gave temporary relief,

but one died some months later. The other I operated upon a year later by the abdomen, and she recovered.

F. A. L. LOCKHART, M.D.—Dr. Goodall is to be congratulated in presenting this most useful paper. It represents a tabulation of a series which would take a long time for one to sort out for oneself. As regards his definition of the two conditions, primary and secondary, I think it is an extremely good one, that is, speaking from the clinician's standpoint and also from the actual scientist's as well. Because, if we diagnose a case as primary tuberculosis situated in the pelvic organs and we removed them and the patient does not develop within the next five or six years at the outside tubercular foci in any other part of the body, we certainly, I think, are entitled to classify that as primary tuberculosis of the genital organs. As regards his treatment of such cases I think it is excellent as regards the prognosis from every standpoint. Nine years ago I removed two tubes which were distended with the usual kind of inspissated pus found in these chronic tuberculosis cases. There was no tuberculosis upon the surfaces of the tubes but on making sections we came across undoubted bacilli. The woman is living to-day and perfectly well and I think the operation probably saved her life. The percentage which Dr. Goodall gives us of the tuberculous disease in cases of inflammatory affections of the tubes is perhaps a little too large; that one in every six cases of tubular inflammatory disease was originally tuberculous in nature. Personally, from naked eye appearances at all events, that percentage seems to me a little bit large. Undoubtedly careful microscopical examination of all our cases as a routine measure will develop a larger percent of cases than we are accustomed to regard as occurring. A case was sent to me, a cyst of the ovary, which presented clinically no, or but very light, manifestations of tubercular disease but upon having the walls of that cyst examined microscopically undoubted tubercular foci were there found. Now if I had been satisfied with the macroscopical examination of that case I would have missed the diagnosis. That case impressed upon me the great importance of having a careful histological examination made of all pathological material which one removes. As regards the operation for tuberculous peritonitis ending in some cases with subsequent operation for tuberculous disease of the tubes, I have had a case in the wards which illustrates that point. Five years ago the patient was operated on for general tuberculous peritonitis; at that time the appendages were presumably healthy. The patient subsequently reported to the gynecological department and upon examination, both appendages were found extensively affected with tuberculous disease. The danger of working among ad-

hesions, in the way of producing faecal fistulae, cannot be too strongly emphasised. I have a case, a patient from whom I removed both appendages for tubercular trouble, where the adhesions were not at all marked, I had no trouble in separating the masses but yet on the 21st day after operation the wound opened up and, unfortunately, a faecal fistula developed. She has been in the wards several months and it is only now that the fistula has closed up. As regards the number of cases in which both gonorrhoea and tuberculous trouble have been present in these tubes I am not surprised that Dr. Goodall states that something like 6 of 37 had a previous history of gonorrhoea. When we remember how extremely prevalent that disease is, I do not think that is a large percentage. As regards the age, it is, also my experience that it ranges from 15 to 25 though not very long ago I had a patient who was 51 years of age with no previous trouble in the pelvis and from her I removed tuberculous foci from one tube. As regards the treatment, I believe with Dr. Goodall that the only treatment, where operation is not contraindicated by serious disease elsewhere, and the only perfect treatment, is to remove the genitalia and remove them thoroughly. It is just possible that in some of these cases we might do some good in using Durant's Solution of iodine with potassium iodide and guaiacol in glycerine, but more especially this is of benefit in general tuberculous peritonitis.

W. W. CHIPMAN, M.D.—I have been especially interested in this paper because I am familiar with some of the clinical material and also because I have been able to follow the pathological work which has been so thoroughly carried out. There are in this paper one pathological fact and two or three clinical facts which I am especially interested in. The pathological fact is the rarity of ascending infection. That is, how rare it is that any infection introduced into the healthy vagina will start up disease. This ascending infection was supposed to be a frequent occurrence, but lately it has been shown that it is extremely rare. Last year when I was in Edinburgh, Carmichael, working in the laboratory of the College of Physicians and Surgeons, was doing some experimental work on this question, injecting into the vagina of guinea pigs a culture of the tubercle bacillus. He told me that where the vagina was healthy he practically never got any infection following the injection, but that if he scarified the mucosa and then used his cultures infection almost invariably followed. As high as eight out of 10 cases showed subsequent tuberculosis. The reason for this is that tubercle bacilli are non motile, do not grow readily on normal secretions and are easily killed by the bactericidal properties of these secretions and have not the power of

advancing against ordinary uterine lymph currents. So that we can say if the vagina and uterus of the adult female be healthy there is very little to fear from infection by the ascending route. I notice in the last Empire Journal an Italian is also experimenting along these lines. He finds it almost impossible to infect the healthy rabbit or guinea pig. But if he injected the vagina of the parturient rabbit or guinea pig invariably there was present subsequently uterine tuberculosis, the reason being that the uterine current is interfered with and you have a more or less raw surface upon which the bacillus will flourish. The clinical points are, that wherever the abdomen is opened for tuberculous peritonitis, no operator has thoroughly fulfilled his duties until he has thoroughly explored the pelvis and has removed all suspicious material found there. This would do away with the need of a subsequent operation for tuberculous salpingitis which so often has to be carried out later. Another fact is the size to which these tuberculous masses grow. A case I had recently was of a woman married eight months who came to me thinking she was six months pregnant. The whole tumour mass was made up of the uterus below and the appendages above and on either side. This was a difficult case to diagnose, the onset had been insidious, there was no fever, and it looked like an ovarian or ligamentous cyst. With regard to faecal fistula I think it may be said that tuberculous fistulae of the small intestine never heal and I think that in operating upon these cases if you open the small intestine the prognosis for the patient is extremely bad; in the large intestine you are more likely to get healing by your suture. There, of course, is where the judgment of the operator will come in because, as Dr. Smith has said, you must not do too much. At the same time fistulae result sometimes from comparatively little handling. In a recent case of double tuberculous salpingitis then there was simply one coil of the ileum bound down to the tube. It was absolutely necessary to remove the diseased tube. In doing so I made two small openings into the lumen of the bowel. Fortunately this bowell wall was not extensively infiltrated. I pared the edges of these openings widely and reinforced the Czerny—Lembert suture with an outside row of mattress sutures. The fistulae healed, affording, at least, one exception to the above mentioned rule.

OSKAR KLOTZ, M.D.—In regard to the mode of infection of the female genitalia, at Chiari's clinic where 1,200 cases come to autopsy every year, he pointed out to me that in only one case, in records extending over 15 years had he ever felt moderately sure that infection had been by the ascending route. The case was one in which the patient had been in an insane asylum and he attributed the infection from filthy

habits. This was the only case from this huge mass of material which he could say was probably caused in this way.

The fifth regular meeting of the Society was held Friday evening, December 7th, Dr. F. G. Finley, President, in the Chair.

ECTOPIC GESTATION.

The paper of the evening on a series of cases of ectopic gestation, was read by Dr. W. W. Chipman.

A. LAPHORN SMITH, D.D.—The reader of the paper has left very little to be said. His conclusions are those to which most of us have come, and I would only like to point out, as he has pointed out, so as to emphasize it, that a tubal gestation is practically a malignant disease. This feature of the case is not always fully appreciated by most physicians, namely, that the ovum is able to eat its way into tissues and blood vessels and is able to cause hæmorrhages and other disturbances just as malignant disease is able to do. When I hear the remark made in a case of tubal pregnancy, that the case will get well anyway and without an operation, I feel that the practitioner who makes it has no conception of the importance of the situation. The necessity of acting in these cases, even before one is absolutely certain as to the diagnosis, should be kept in mind. The mere fact that there is something in the pelvis which should not be there, with symptoms pointing to pelvic inflammation, justifies one in opening the abdomen even before the symptoms of rupture have occurred. I removed one case before rupture per vaginam when it was not thicker than one's thumb. The tubal pregnancy occurred during treatment for salpingitis and was felt from the beginning. My own experience quite coincides with Dr. Chipman's in the relative frequency of the place where the rupture takes place in these cases. I have only had one case where the rupture was interstitial through the wall of the uterus, and no case where it occurred into the broad ligament; the majority of them were near the fimbriated end of the tube.

F. A. L. LOCKHART, M.D.—Very few of us here to-night are in a position to discuss this paper, as it seems more for the histologist than for the practical gynæcologist. Dr. Chipman has not adopted the latest treatment of ectopic gestation (and in this he has exercised good judgment), viz.: the removal of the contents of the tube alone and the repair of the wound, leaving the tube in situ, or he would not have been able to so minutely examine the condition of the tube. The chief point I wish to mention is that of the decidual cells in tissues occurring either in the uterus itself or the opposite tube. Tubes of the side

opposite to the gestation sac which I have examined have never contained any such cells, and, as regards the point of decidual cells always existing in the uterus in ectopic pregnancy, I would state that I had a very good opportunity the other day of examining the interior of a uterus which I had removed in toto in a case of extra-uterine gestation, and in that uterus neither Dr. Duval nor any others who examined it were able to detect any such cells. I was very glad to hear the statistics upon the question of rupture into the broad ligament. I had always felt that my pathology was at fault for, so far, I have never yet been able to satisfy myself that any of the tubes I had examined had ruptured in this situation, but, when I note the relative rarity of the condition in the statistics just quoted, I feel satisfied that I have never come across the condition.

TWO CASES OF CÆSAREAN SECTION.

A. LAPHORN SMITH, M.D.—The report of these cases will be found on page 31 of this number of the JOURNAL.

KERATITIS LAGOPHTHALMIC WITH PATHOLOGICAL FINDINGS.

FRED. T. TOOKE, M.D. read a paper upon this subject.

J. G. ADAMI, M.D.—I was greatly interested in the sections from Dr. Tooke's case. Experimentally, if an extremely mild irritation be set up by touching the front of the eye with caustic few polymorphonuclear leucocytes make their appearance in the region; primarily the irritation shows itself by swelling, enlargement, and proliferation of the corneal corpuscles. Here in Dr. Tooke's case there is identically the same appearance obtained in man—almost entirely a proliferation of the corneal cells, whereas ordinarily in corneal inflammation pus cells and polymorphonuclear infiltration is in the ascendant. Whether we regard this as a case of simple exposure keratitis or regard the nerve disturbance as playing any part, we are dealing here with a very simple type and not the infective type of disturbance. There has been a question as to the existence of true neuroparalytic inflammation of the eye; the experience in other parts of the body indicates that following section of the nerves a form of inflammation is set up identical with that developed where the nerves are still intact. One is not justified in dividing off a true neuroparalytic inflammation. Here we have an exposure keratitis, an exposure, it may well be, largely brought about by paralysis of the trigeminal. If in general the tendency is for paralytic inflammations to develop more rapidly and be more intense, that certainly has not been the case here. At the same time I admit that this may not afford the picture seen in every case of neuroparalytic keratitis. By

chance this eye has been little if at all infected; there is no reason why in other cases there might not be grave infections, and then the picture afforded would be of a suppurative, infiltrative rather than of a proliferative type.

J. W. STIRLING, M.D.—With regard to the clinical symptoms of neuroparalytic ophthalmia I may say the ulceration is much slower in appearance and this may be due to the protection of the lids which is not present in the keratitis e lagophthalmo.

TWO CASES OF PERFORATING DUODENAL ULCER.

C. A. PETERS, M.D.—The report of these cases will be found on page 35 of this number of the JOURNAL.

G. E. ARMSTRONG, M.D.—The closure of perforated duodenal ulcers is accompanied by certain technical difficulties. The perforation is often near the pylorus, within half an inch or sometimes less; the edges are much thickened, and often a good deal of inflammatory induration is present. To turn in and close the ulcer as one would close an ulcer in the anterior wall of the stomach would lead to puckering and undue narrowing of the pyloric orifice. In several such cases I have effected closure, the parts coming together without tension, and it ensures functional results satisfactory in every way. Thorough drainage of the stomach is established, and the ultimate recovery in the cases where I have adopted this procedure has been all that could be desired.

ANNUAL MEDICAL REPORT MONTREAL MATERNITY HOSPITAL.

J. C. CAMERON, M.D.—In laying the report before the Society, Dr. Cameron wished the members to peruse it at their leisure when at a subsequent meeting of the Society it might be fully discussed. This is the first complete report of the kind which the Hospital has been able to issue, it now having a permanent staff and facilities for the collection of statistics which are everything that could be desired in the way of accuracy and completeness. A particular study lately has been the examination of pelves, deformed, flat, etc., and their bearing on labour

The sixth regular meeting for Session 1906-07, was held in the Society's rooms, on Friday evening, December 21st. Candidate for election to resident membership, Dr. J. T. Rogers.

PROGRAMME.

Medical Instruction in Germany and France, illustrated by lantern slides, Eugene St. Jacques, M.D.