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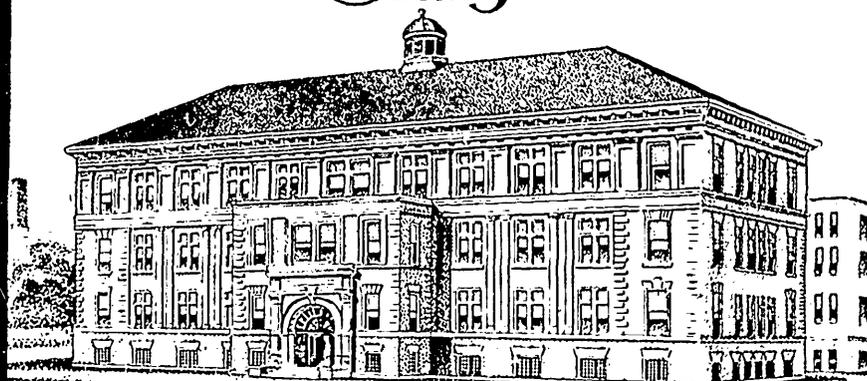
And Ontario Medical Journal

Volume 20

TORONTO, JANUARY, 1903

Number 1

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And Ontario Medical Journal

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TORONTO, JANUARY, 1903.

No. 1.

Original Articles

THE TREATMENT OF RHEUMATISM.*

BY J. T. FOTHERINGHAM, M.D., TORONTO.

Mr. President and Fellows,—The remarks one may have to make upon treatment are of necessity largely determined by the trend of the discussion of the topics which have preceded. A systematic statement of the treatment of rheumatism must be very brief to comply with the limitations imposed as to time. It is difficult in any case, but particularly so in the case of rheumatism, to do more than generalize, as it is not the disease but the patient which we have to treat, and in the absence of the patient only general statements would appear possible. Furthermore, the term has come to be not a specific but a general one, and the state of pathological opinion on it is, to say the least, unsettled. Bearing in mind the now generally accepted view as to the infective origin of rheumatism, the first indication for treatment would seem to be prophylaxis. The tonsils may be looked upon as a frequent point of ingress of the infection, and hence, particularly in children, recurring tonsillitis, urticarias, erythemas, and similar skin affections, thick scalding urine, transient pains—specially so-called growing pains—fleeting pyrexia, nocturnal restlessness, palpitations, pleurisy and other suspicious symptoms, should all be promptly guarded against by anti-rheumatic treatment.

No definite line of treatment can be laid down, but rheumatism always gives abundant scope for skill and care. With

*Contribution to "Symposium on Rheumatism," read before Toronto Clinical Society, Dec. 2nd, 1902.

marked tendency to natural recovery, but with no definite time-limit, and with distinct tendency to relapse, it is difficult to determine the part played by drugs in establishing a recovery, and hence the great list of drugs which have been recommended. Some manifestations are easily controlled, such as arthritis; others with the greatest difficulty, for instance, carditis.

Another general statement which may be made is that depleting treatment, such as bleeding and purging, is bad.

One may attempt to systematize the treatment, at any rate in his own mind, but cannot hope to say anything new; but if, on the other hand, in his attempt to say something of interest, one drops into details, one's remarks on treatment are apt to end, as military men would say, "in the air."

The three main lines which a statement of treatment may reasonably be expected to take are: (1) Treatment of acute rheumatism; (2) treatment of chronic rheumatism; (3) that of complications.

I. TREATMENT OF ACUTE RHEUMATISM.—With regard to the treatment of acute rheumatism, the infective view of the origin of this disease compels regard to the question of constitutional resistance. Vigorous treatment by powerful drugs may do harm by reducing the individual's resisting power more effectually than they control the disease. Poynton declares that he believes that in dangerous and complicated cases of visceral rheumatism, specially in carditis, the best results come from palliative measures, rest, careful feeding and nursing, moderate doses of salicylates for pain and arthritis, stimulants for cardiac failure, small doses of opium for cardiac distress and sleeplessness, proper elimination, mild tonics, in convalescence: in short, a watchful but gentle treatment. Under such measures some of the most desperate cases have rallied, and fewer have gone to the bad with the sudden development of urgent symptoms. With these remarks one may state that the treatment of acute illness resolves itself into (a) constitutional and (b) local measures:

(a) *Constitutional*.—Absolute rest in bed. This is of prime importance, specially with children, as tending to avert possible attacks of carditis, or to control them if developed. Fortunately pain usually compels this. The room should be warm and of even temperature, well ventilated but without draughts, specially during the sweating stage of the illness. The bed should be firm and well made, better high and narrow, and adjusted especially with regard to the difficulty which even a strong nurse will have in handling a patient to whom even the least movement may cause great pain. The personal and bed-clothing

should be woollen, but not too abundant, as the drenching and ill-smelling perspirations must be specially considered. The diet should be in the main, fluids, preferably milk. Fats, while of the utmost value in chronic, are contra-indicated in acute rheumatism as apt to impair digestion while the fever lasts. Carbohydrates, specially farinacea, are the mainstay of the nurse, while sweets are almost more unsuitable in acute than in chronic rheumatism. As to proteids, there is a singular unanimity among physicians of high repute against their use in acute rheumatism. Lauham insists that beef-tea and similar meat preparations cause relapses. Fish, poultry and white meats may be gradually resumed after the temperature has been normal a week: the red meats later and with caution.

Drugs.—As is the fashion these days, drugs have been left to the last in the inventory of the means of cure. While their name is legion, and the majority of them useless, there are some of undoubted value. First in the list (1) I would place purgatives, specially mercurial salines used early. Next I would mention (2) vascular depressants, as aconite, veratrum viride, and cimicifuga, which were used in presalicylic days, and if given early are doubtless of value. (3) Antipyrin and antifebrin are sometimes of distinct service, even though depressing, in those few cases in which salicylates fail, till then they should not be exhibited. (4) Methylene blue, salophen, aspirin (or acetyl salicylic acid), trimethylamin and propylamine, guaiacum, colchicum, rhus toxicodendron, and sulphur, are a few of the drugs which have been found more or less useful in isolated cases. Opium, and especially in the old days full doses of opium and nitre, was occasionally used, and may be used still, specially in cases of cardiac complication, and where salicylic treatment has not proved satisfactory. (5) Alkalies, such as the citrate, acetate, and bicarbonate of potash, form a very important group. In ordinary acute cases doses of 30 grains every four hours are to be used, till the urine has been rendered neutral, when the dose is gradually reduced. After specially large doses there is a distinct tendency to depression, and in some cases marked diarrhea. (6) I have purposely left to the last any mention of the salicylates. Bearing in mind the infective theory I would mention quinine with this group, which used specifically has often been useful, specially in the later stages. These drugs act principally by rendering the blood and tissues unfit culture mediums for the cause of the disease, the explanation being similar to that given for the benefit derived from these drugs in other infective disorders, such as pneumonia.

The drugs usually employed are salicin, salicylic acid, salicylate of soda, oil of wintergreen, and salol—the latter on account of containing a high percentage of carbolic acid being dangerous in full doses, and the danger increasing directly with the youth of the patient. Also I would mention the less common salicylates of bismuth, lithium, etc. In speaking of the treatment of acute rheumatism it need scarcely be mentioned that the use of the salicylates has outlived all adverse criticism. They are not now looked upon as productive of visceral complications nor of relapse, though they are not believed to give quite the same security against them as alkaline treatment, or rather a treatment in which alkalis and salicylates are combined, and I think that the great majority of practitioners now would look upon it as almost malpractice to refuse to a patient the relief of pain and fever which this treatment affords. It was introduced first in 1876 almost simultaneously by Stricker, F. Traube's assistant in Berlin, and by Dr. Maclagan, of Dundee. Willow tea is said to have been known for generations by the Hottentots and Boers of South Africa as a remedy for rheumatism. Among bad effects from the use of salicylates must be mentioned: (1) Nausea and vomiting, with epigastric pains; (2) enfeeblement of the heart's action. The exact effect of the drug in this direction is difficult to determine, as heart failure in rheumatism has been ascribed by the opponents of the salicylates to the drug, and by its defenders to the effect of the disease on the heart muscles. (3) A third undesirable effect, or group of effects, is the cerebral symptoms—deafness, giddiness, and noises in the ears, sometimes severe headache and even delirium. Disturbances of this sort, due to the salicylates, are very likely, if they occur, to be accompanied by a lowered temperature, as if the temperature remains high they may reasonably be attributed to the fever. Another occasional bad effect from over-dosage is epistaxis. Much of the adverse criticism of the drug is due to the error sometimes committed of withdrawing it not gradually, but suddenly on cessation of pain or fever; a great mistake. In spite of prolonged investigation and fairly complete knowledge of the action of salicylates so far as pharmacology goes, their specific mode of action in rheumatism, is yet ill-understood, as is admitted by so late an authority as Hale White in his text-book of 1901. It is likely that the infection finds a specific antidote in the drug, as that of malaria meets one in quinine.

(b) *Local*.—The local treatment of acute rheumatism consists of course of rest, warmth, special coverings and hot applications. The simpler the applications are the better in acute rheu-

matism. Elaborate liniments and counter irritant applications while useful in chronic, are useless in acute rheumatism. Fuller's lotion of laudanum and bicarbonate of soda, the one to relieve pain and the other to neutralize the over acid secretions of the skin, is quite sufficient. Indeed, in view of the excessive perspiration, oiled silk and other impervious coverings are undesirable. A warm flannel covered with wool and many-tailed bandage is usually the best. One will occasionally meet with most happy results from the inunction of say 30 drops of oil of wintergreen over the inflamed joint. The oil of birch, *betula lenta*, known as betulol, I have seen act like magic used in this way.

When one thinks, not of the joint affections, but of the muscles, lumbago, etc., one has much the same to say about treatment, except that local stimulants, and massage are all of distinct service in the latter case—that is, with the muscles. Dry heat is usually more relieving than moist.

2. TREATMENT OF CHRONIC RHEUMATISM.—The treatment of chronic rheumatism, like that of acute, falls into the two divisions of local and constitutional. The constitutional treatment of chronic rheumatism is in just as unsatisfactory a state as its pathology, as there are allied conditions, such as rheumatoid-arthritis, gonorrhoeal rheumatism, etc., which are not infrequently mistaken for the true rheumatism. As compared with acute rheumatism, the relative value of constitutional and local treatment is almost reversed, since while the former is still very important, the latter is of much greater importance than in acute conditions. The line of action, too, depends partly upon whether the disease is muscular or arthritic.

Constitutional.—Before any specific measures one must place food. Whatever view we may hold on the pathology of this condition, there is no doubt that malnutrition exists. Anemia is, as a rule, plainly marked, and therefore food must be abundant, varied, fresh and digestible. Fresh fruits and vegetables; a due proportion of starches; sweets limited, or quite excluded, as well as malted and most spirituous liquors (particularly beer and sweet wines), and meats being used rather freely. More particularly fats are a necessity, as shown by the value of cod-liver oil in such cases. Onions and celery are two vegetables of which such authorities as Whittall speak highly. Onions especially are valuable on account of the high proportion of sulphur which they contain. Extremes in diet are usually unsafe. Fads, such as the Salisbury treatment on the one hand, and vegetarianism on the other, are a mistake. As to medicines, they may be

grouped into the two classes, of alkalies and alteratives on the one hand, and hematinics on the other. The first group contains all the iodides, specially sodium iodide, arsenic and sulphur, and, of course, the ordinary potash and soda salts. The danger in their use lies in forgetting that alteratives without good food and exercise are depressing and aggravate the anemia already present. The alkaline cachexia of patients who go without supervision to the various anti-rheumatic water-cure establishments is familiar to us all.

The Iron Treatment.—As to this treatment, details cannot be given. Suffice it to say that the form which I have found most useful is the soft Blaud's mass with arsenic, made by Duncan and Flockhart. Salicylates are useful for pain, given in moderate quantities. Ziemssen says one dose at bedtime of 40 grains or so. Sulphur, both internally and externally, is sometimes of marked value: a heaping teaspoonful in honey or marmalade each morning and the powder freely dusted over the wool with which the inflamed joint is dressed.

3. COMPLICATIONS.—The surgical or orthopedic treatment of the results of chronic rheumatism has already been taken up by Dr. Nevitt. We now reach, finally, the third main subdivision of rheumatism—that of complications. The two main complications of acute rheumatism are carditis and hyperpyrexia. As to heart complications, no attempt can be made to discuss the topic through lack of time. It is one on which many a volume has been written.

Hyperpyrexia.—This one may define as being a temperature of 105 degrees F., especially if it has been reached rapidly, with signs of going on up. One must then remember that the heat-regulating mechanism is hopelessly upset, and therefore attempts to control the situation by drugs are probably useless. *A priori*, one would use antipyrin, antifebrin or phenacetin, as the increased temperature is due to increased heat production, not to diminished heat loss, and these drugs act by diminishing the heat production through their effect upon the oxidation processes in the body. The authorities agree that time spent on them is wasted, and that the cold pack or bath used at once gives the only means of escape. Besides being a waste of time these drugs are depressing to the heart, already sorely tried by poison and fever.

Dr. Armstrong, of Buxton, has spoken strongly in favor of the immediate use of the cold bath, and believes that in many cases the time spent in cold sponges or baths has determined a fatal issue. His method and rules are that the patient should be

immersed in water at 92 degrees F., which should be cooled down to 72 degrees F., and the patient kept in usually from ten to thirty minutes, with ice to the head, until the temperature falls below 100 degrees F. The condition of the heart calls for careful consideration during this procedure. On replacing the patient in bed, warm blankets and hot water bottles should be applied. The bath should be repeated as often as the temperature reaches 105 degrees F.

I can only close my contribution to this symposium with congratulations to the other fellows on the programme upon the character of the discussion, and with thanks for the pleasure they have given me as I listened. As for my own share in it, I can only express the hope that it may be half as serviceable in systematizing our ideas on the subject to the rest of you as it has been to myself.

SURGICAL INDICATIONS IN RHEUMATISM.*

BY R. B. NEVITT, M.D., TORONTO.

The characteristic ambition of the surgeon is to attain perfection of treatment, that of the physician to attain perfection of diagnosis. The instinct of the surgeon is to be satisfied with just so much of a diagnosis as will enable him to decide upon a line of treatment. The physician trained and accustomed to the patient solving of difficult diagnostic problems is not content with a utilitarian diagnosis. He wants to find out all that possibly can be found out. The first essential is accuracy of diagnosis, and until an accurate diagnosis is made all treatment must be haphazard and unscientific.

The diagnostic sins of the physician have been visited upon that grand old organ, the liver, while under the shield of that vague term, rheumatism, the surgeon has often taken refuge.

I have no doubt that many cases of Charcot's disease of the joints have been buried with the label of rheumatism attached. Nor can there be much doubt but that cases of joint tuberculosis have been laid at rest with a similar legend affixed. As our experience enlarged our diagnosis improved, and we are able to differentiate and to classify more accurately.

* Contribution to "Symposium on Rheumatism," read before Toronto Clinical Society, Dec. 2nd, 1902.

The definition of rheumatism as a disease of the joints, often associated with inflammation of the heart, and due to exposure to cold and wet, is not sufficient for the present day. For some years there has been a tendency to regard rheumatism as a specific disease of microbic origin, and claims have been advanced and proven to the satisfaction of their advocates that a specific diplococcus has been discovered, cultivated and inoculated with the result of setting up an antritis with all the ear marks of rheumatism. I do not feel called upon to enter into the discussion of the arguments *pro* and *con* of this thesis. These, no doubt, will be sufficiently elaborated by my colleagues this evening. But, accepting the view as above enunciated, the analogy to scarlatinal gonorrhoeal rheumatism, to tubercular, septic and rheumatic arthritis, becomes more clearly marked than the clinical symptoms have hitherto permitted. It follows from this that the significance of the rheumatic diathesis is curtailed to very slight proportions, if indeed it exists at all. It has long been a matter of observation that rheumatism has no effect upon the healing of surgical wounds; that at most a trauma occurring in a rheumatic subject may be followed by long-continued swelling and by persistent pain in the part, and that aside from the high fever and associated depression, and from the cardiac complications, rheumatism has no influence on surgical operations. I would not, however, have you infer that I would choose a patient suffering from acute rheumatism as a subject for surgical attack.

Surgically, rheumatism possesses interest from a diagnostic point of view. It has frequently occurred to me, and in this I feel sure that I may claim your sympathetic indulgence, to meet with patients with joint effusion whom I felt constrained to hand over to my colleagues on the medical side. On the other hand, cases of arthritis have been turned over to the surgical wards after the diagnostic and therapeutic skill of the physicians had been vainly exercised upon them.

The following history illustrates this point so well that I crave your indulgence while reciting it. A young man, now 24 years of age, whose father died of pneumonia—the mother alive and suffers with chronic bronchitis, and several members of the family have perished with tuberculosis of the lungs and brain—at the age of 7 years was attended by me with an affection of the knee joint, diagnosed and treated as tubercular arthritis, and recovered. A number of years after this he was treated by another physician for an affection characterized by pain and swelling in many of the joints. He was told he had rheumatism. He recovered. He is now a motorman on the

street cars. Some two years ago he applied to me for help for his right knee, which began to be painful and to swell, and whose functions were becoming limited. The trouble began insidiously and progressed slowly. He attributed the trouble to the action of the foot pressing against the ratchet of the brake, causing a constant and at times a severe strain upon the knee. It was this joint which I had treated some seventeen years ago. I put him to bed and put on a plaster-of-Paris splint, and gave him a prolonged rest. While he was in bed and wearing the splint the other knee became swollen and painful and continued so for some weeks. The pain and swelling under persistent rest gradually subsided and passed away, and after eight or ten months the plaster was removed from the right knee and he was allowed cautiously to resume active use of the limb. He has now returned to his work with only slight impairment of function. Was the diagnosis in the first attack correct? Was it correct in the second attack? And in the third attack what was the nature of the affection?

Again, cases of osteomyelitis have not been recognized as such, but have been treated as rheumatism. I recall one case in particular in which a child was admitted to the hospital for Sick Children with the diagnosis of rheumatism. My confrere on the medical side handed the case over to me, when I found the hip joints full of pus and subsequently the elbows and shoulders became similarly affected, and necrosed bone was removed on more than thirty occasions from the humerus, the jaw, the ribs, the ulna and radius, both femora and both tibiæ, and eventually the child recovered. Cases of a similar character can be recalled by many of you.

It has long been my custom to exercise considerable care in inquiring into the diathetic conditions of a patient, and in many instances it has seemed to have been of benefit to the patient, and although at present we may not attribute so much influence to the diathesis as formerly, yet the influence of the inquiries have been beneficial as contributing to greater accuracy in diagnosis.

The so-called gonorrhœal rheumatism and rheumatic arthritis, as a matter of fact, should no longer be considered as rheumatism. Yet, since they have so long occupied a position in the category of this disease, it is as well not to exclude them from our consideration of the subject.

Rheumatism holds but a small place as a provider of surgical work. At one time tuberculosis was almost wholly a medical disease, and it is only of late years that the knife of the surgeon

has beneficently attacked the medical territory of renal diseases. So in the not-distant future the surgeon may revel in the rheumatic provinces of the physician. Indeed one advanced and prominent physician has conceived and proposed a surgical operation designed for the relief of mitral stenosis, due to rheumatic endocarditis.

Tonsillitis, which occurs so frequently in rheumatic subjects and is so favorably influenced by the salicylates, is no doubt an example of a mixed infection, and the painful and distressing abscesses that form about the mouth and neck are due to the absorption of the ordinary pyogenic microbes. The rheumatic coccus, entering at the same time, is slower in its growth, and may remain latent for a long time to result finally in an attack of rheumatism.

The glandular tissues which enter into the formation of the appendix vermiformis may likewise offer a peculiar affinity for the rheumatic coccus. The association of appendicitis with rheumatism at all events is sufficiently frequent to permit of its being regarded as an etiological factor.

If the glandular structures of the tonsil and the appendix offer a frequent entrance to the rheumatic infection it would be a curious matter for observation to discover how excision of the tonsils affects the rheumatism. Does it prevent future attacks, and does excision of the appendix render one less liable to attacks of rheumatism? Cases of excision of these glandular tracts are now surely sufficiently numerous to base statistics upon.

Rheumatic affections of the serous sacs, the pericardium, pleura, and peritoneum occur and often demand surgical interference, which must be rendered independently of the primary disease. Rheumatic affections of the nerves, as sciatica, sometimes call for surgical help in the way of stretching the nerve. Osteitis, periostitis, and so forth, may call for linear osteotomy, or indeed for trephining, before relief is obtained.

The infrequency of suppuration, which is a marked character of rheumatism, most probably affords an explanation for the paucity of surgical operations in the joint affections. Yet in the arthritis of gonorrhoeal rheumatism opening and irrigation of the joint affords an efficacious and expeditious method of obtaining relief in obstinate cases.

In chronic rheumatism, osteotomy, and the removal of dendritic growths has in many cases been followed by relief and by restoration of the function of the joint; but its application is limited and can only be considered when one of the larger and more important joints is the seat of trouble. It would

appear hopeless and uncalled for to attempt operation where many joints were involved and the disease is progressive.

Operation may be considered in cases of malposition of a limb, or where tendons are glued together, or even in cases of true bony ankylosis. Most often massage and careful mechanical treatment is required. Brisement force is, in my opinion, not judicious except to obtain ankylosis in a more favorable position. In nearly every case, after the forcible breaking down of adhesions, the subsequent attempts at passive motion become so painful that the patient refuses to have them continued, and the joint falls back into ankylosis. A plan to prevent ankylosis is by interposing a film of metal between the raw surfaces.

In chronic rheumatic arthritis operation in the way of excision of a joint has been done and proved of benefit in selected cases. In rheumatism the lesions are in the tissues around the joints, in the fibrous tissues enveloping the joints, and if the synovial membrane be affected, the effusion is serous in character, and at most only false ankylosis is introduced.

In chronic rheumatism there is very little tendency to destruction of the tissues of the joints and no tendency to the formation of new bone about the joint. No medicinal agent, no electrical application will suffice to arrest the course of rheumatic arthritis unless associated with proper mechanical treatment.

Arteritis, embolism and aneurysm frequently are of rheumatic origin and may call for operation in order to obtain relief or cure.

Torticollis is sometimes caused by rheumatism of the cervical vertebræ; it may be distinguished from the ordinary forms of torticollis by the absence of tension in the sterno-cleido-mastoid muscle. Operation is not called for, but rather massage of the affected vertebræ and general rheumatic treatment.

The association of hemophilia with rheumatism has been mentioned by various authors. The connection has been refuted by others and the arthritic and muscular and periosteal pains explained by the presence of effused blood. Still the relation might be borne in mind when contemplating operation upon a rheumatic subject. Rheumatic iritis, though it has no distinctive features aside from its association, may require the usual operations called for in ordinary iritis. Primarily rheumatism offers but little for the surgeon's knife, but its secondary effects may open up a wide field for operative surgery.

Reports of Societies

TORONTO CLINICAL SOCIETY.—SYMPOSIUM ON RHEUMATISM.

Stated Meeting, Dec. 2nd, 1902.

The President, Dr. E. E. King, in the chair.

REPORT OF A CASE OF ACUTE RHEUMATISM.

Dr. Harold C. Parsons introduced the subject of acute rheumatism by reading notes of the following case: Miss McB., aged 44 years; the family history showed one brother died of tuberculosis at 27 years; a sister of appendicitis; the father of tuberculosis; the mother of nervous trouble. Regarding the personal history, the patient has had typhoid fever, diphtheria, mumps (at 24 years) and pneumonia. Had uterine myoma removed four years ago. Six years ago, after severe mental shock, began to have dizzy fits, buzzing in the ears, attacks of unconsciousness, with falling (several daily), progressive loss of hearing, vomiting; thought it Meniere's disease; controlled by bromide. The present illness began November 25th, 1902, with acute tonsillitis and pharyngitis; throat very sore and red, not much swelling, but pain along the sterno-mastoid muscles; swallowing painful. Temperature 103 degrees F.; pulse, 120; tongue very coated; breath foul. Sodium salicylate and hydrogen dioxide spray prescribed. On November 27th temperature was 101 degrees F.; pulse, 100; pain on swallowing, with pain down the neck. November 29th, much improved. Throat, red; not sore; irritable cough. November 30th, over right patellar tendon is an area $2\frac{1}{2}$ by 2 inches slightly raised, bright red and very tender. No swelling of joint; no pain in movement of joint except when above area is stretched. December 1st, about the area there were several smaller ones at sides of the knee, some slightly raised, others flat, all highly hyperemic. They vary from 0.5 to $2\frac{1}{2}$ to 3 c.m. in diameter, all very tender; can be pinched up, but this is very painful. The edges of some are raised but the rise is gradual. The patches are any and every shape, round, oval, but mostly irregular in outline. Temperature, 100 degrees F.; pulse, 88. The same condition is seen on left knee, a large patch over the patellar tendon, and smaller ones, twelve to fourteen, over sides of the joint. Down the shins, on both sides, is a line of

similar spots, mostly raised and very tender. They tend to run together into a line. There are a few scattered spots on the inner and outer sides of the legs; none posteriorly. Similar lesions have appeared along line of tendons over front of ankles, painful to touch, but not on movement. They are also over the metatarso-phalangeal joints, very painful to touch, but not on movement of joints. There is marked redness over both malleoli, both sides, and very tender. Twenty-four hours later there was swelling and redness below the malleoli, and later pain on movement of the ankle joints. The heels are also very tender. About the same time there was a strikingly symmetrical eruption above both knees on the front of the thighs and sides of the lower thirds of the thighs of similar area; some flat, some raised, and from 1 to 2 c.m. in diameter. Several are 3 c.m., quite raised and coming to a point, very tender, but at no time any fluctuation or suppuration, vesicles or pustules. Each lesion lasted four to seven days. The pain lasted three or four days, and the spots gradually faded, leaving a faint yellow discoloration for a day or so longer, and the raised ones a wrinkled surface. On December 2nd there was pain in the left side, cough, and pain on deep inspiration. Pleural friction was heard in mid-axillary line. All subsided in two days. There was no effusion to be found. The mental condition was very strange, very dull and drowsy, and when aroused very emotional; frequent wanderings and marked tremor of the hands. The eyes were rolled up; no squint; no focal signs. This continued until December 7th, the mind clearing somewhat by that time. Temperature, 98 to 99.5; pulse, 88; the heart and lungs clear. That day the patient complained of pain in the epigastrium, but an examination revealed no tenderness, no rigidity, no tympanitis. Early on the morning of the 8th of December the patient complained of severe pain in the right iliac fossa. The nurse noticed some distension, Temperature, 100 degrees F. at 11 a.m.; pulse, 99. The abdomen was slightly distended, resonant. The abdominal respiratory movements were lessened; no visible peristalsis. The whole right side of the abdomen was rigid and hard; left much less so. The right side was very tender, and also over the appendix. The left side could be palpated freely, but deep pressure here caused pain on the right side. The liver and spleen were not enlarged; vaginal and rectal examination was negative. The tongue was coated, but not more so than previously. Mr. Cameron saw the patient with Dr. Parsons that afternoon. All the signs lessened in two days. During this time, December 5th and 6th, on the palms, and base of fourth finger, both sides, there was an

area of irregular redness, not over the joints, but more towards the wrists, not painful but exceedingly tender on pressure; no pain on movement; gradually subsiding in two to four days. Much the same condition on plantar surfaces of both feet at the metatarso-phalangeal joints. The elbows show a few flat erythematous patches about the joints and along the crests of the ulnæ. The joints are alright. The symmetry is striking. December 9th, the nurse reports increase of the mental signs; very restless; constant, low, muttering delirium; patient tore the bandages from the legs. December 10th, there were some involuntary evacuations of urine and feces. Temperature, 101 degrees F.; pulse, 88. Heart and lungs clear; the abdomen soft and normal. Skin lesions on the proximal phalanx of fourth finger and adjacent side of little finger. From the 9th to the 15th the patient was quite unconscious. On the 15th Dr. Fotheringham saw the patient. The temperature had reached 101 degrees F.; pulse, 80-88. The face was drawn slightly to the left; convergent squint in right eye; flexor rigidity, general, but most marked in left arm. All reflexes were normal and there was no ankle clonus; meningitis or some cerebral lesion present. The patient was conscious again on December 15th. On December 16th the patient complained of pain under both jaws. Both submaxillary regions were swollen, indurated and tender; no fluctuation. On December 19th the temperature was 102 degrees F., and swallowing was very difficult; breath foul; breathing labored; again unconscious—perfect stupor. The jaws were rigid; could not examine the throat. Fearing edema of the glottis or retropharyngeal abscess, Dr. Parsons had Dr. Wishart on the 19th examined the patient under chloroform, but the examination was negative. On December 20th the temperature was 99 to 101.8 degrees F.; pulse, 64; fed by bowel. By December 27th the mental condition had cleared up; temperature lowered. By December 31st the patient was normal and recovery was continuous but gradual.

The following points in this case were noted by Dr. Parsons: Pharyngitis, erythema nodosum, arthritis and peri-arthritis, pleurisy, peritonitis, meningitis (unconscious nine days), angina Ludovici; all non-suppurative. Rheumatic affections of throat are recognized; erythema nodosum (rheumatic), arthritis and peri-arthritis (rheumatic), pericarditis, a frequent complication; endocarditis, joint surfaces, etc.—why not by analogy, pleura, peritoneum and meninges?—and all were non-suppurative. Question: Septic; rheumatic? Urinalysis on December 3rd showed that the urine was cloudy, amber, acid, sp. gr. 1015;

albumen (a trace), squamous epithelium and hyaline casts. On December 7th it was the same, and again, on December 10th, same; uric acid and a few hyaline casts.

ETIOLOGY OF ACUTE RHEUMATISM.

Dr. H. B. Anderson contributed a paper on the "Etiology and Pathology of Rheumatism."

The older theories which attributed rheumatic fever to an excess of lactic acid in the blood (Prout, Fuller, Richardson), or to a combination of lactic and uric acids; the nervous theory (J. K. Mitchell, Day, and others), have not been supported by more recent scientific research, and while these factors may be contributory in some cases, they are not in themselves sufficient to produce the condition. The *infective* origin of acute rheumatism is now accepted by the most competent authorities. The curves formed by statistics of the occurrence and mortality of the disease closely correspond with those of diseases known to be of microbic origin. The frequency with which the disease appears in particular houses, its clinical course, its occasional occurrence in epidemics, the fact that it has been transmitted from mother to child *in utero*, are all confirmatory of the same idea. The affiliation of acute rheumatism to the joint inflammations of gonorrhoea, pneumonia, pyemia, and septicemia, are also highly suggestive.

While there is general agreement as to the bacterial nature of the disease, there is much diversity of opinion as to what the specific organism is. Different investigators have arrived at very different results from their researches. Many indeed believe, and with very good reason, that more than one organism may be proved to be etiologically associated with conditions now clinically classified as acute rheumatism. Investigations into the subject are beset with many difficulties. Patients rarely die during an acute attack, the circumstance under which bacteriological examinations of the organs and tissues would be most favorable. Again, a suitable soil—the predisposing factors—is only secondary in importance to the infective agent itself. The most important recent results have been obtained by careful examination of the blood withdrawn during the acute stages of the disease and inoculated on special media. Another reason for the negative results obtained by the older observers, was the neglect to make *anaerobic* cultures, as the most important organisms recently isolated in cases of acute rheumatism have been obtained by this method of cultivation.

Dealing more in detail with the conclusions reached by different investigators as the result of their labors, we may mention first the views of Singer (*Wien. Klin. Woch.*, 1895), who main-

tained that rheumatic fever is a modified pyemia, due to various pus organisms. He arrived at this conclusion from the examination of the blood and urine of a large number of cases and of the tissues and exudates at autopsy. His methods, however, are open to objection, and his results have not been verified by other more exact observers. That the pyogenic staphylococci and streptococci are occasionally found, particularly in fatal cases, there is abundant proof, but they are probably due to secondary invasion after the way has been opened up by the specific organism.

In 1891 Achalme described a bacillus found in a case of acute rheumatism, which he believes to be the specific infective agent. In 1897, on examining the heart's blood and cerebro-spinal fluid of two undoubted cases of the disease as soon as possible after death, he obtained in each case and in large numbers a pure culture of the same organism. In six other cases subsequently examined by him during life, he found in the blood, four times in pure culture and twice associated with micrococci, the same bacillus. He describes it as a large bacillus resembling that of anthrax, staining readily with the aniline dyes and by Gram's and Weigert's methods. It is strictly anaerobic, and grows best at a temperature from 30 to 38 degrees C. on liquid media, especially horse bouillon, to which a little glycerine is added. Injection into guinea-pigs caused great local edema, formation of serous pouches, and death in from twenty to thirty-six hours. The organism grows in urine, more readily in that of arthritics than of others, and in sterilized urine it throws down a copious deposit of urates. Achalme remarks also on the sour smell given off by cultures of the organism, from the presence of lactic, acetic, butyric, and propionic acids. He found that on experimental inoculation, even when pure cultures were injected, he often recovered the organism associated in the serous fluids with cocci, especially streptococci.

Achalme's observations have received considerable confirmation by other investigators, as Sawthenko (*Archives Russes de Pathologie*, 1898), Carriere (Lille), de Bethencourt (Lisbon), Triboulet and Coyon (*Bull. de Societe des Hospitaux*, 1897), Thiroloix, and by subsequent researches of his own. In connection with this organism I wish to refer to a case of my own reported three years ago before the Ontario Medical Association:

J. H., aged 19 years, entered St. Michael's Hospital under my care suffering from a severe attack of acute rheumatism. He had been ill about a week before coming to the hospital. The patient had tonsillitis on entering the hospital, cultures from the throat showing the presence of staphylococcus pyogenes aureus. He

had well-marked febrile reaction, pains in the joints, copious perspiration, and altogether presented the clinical picture of a typical case of rather severe acute rheumatism. No endocardial murmurs were present at first. Examination one day at twelve o'clock no adventitious sounds could be heard, but at four o'clock the same afternoon very distinct systolic and diastolic aortic murmurs could be made out. Well marked throbbing carotids and collapsing pulse were also noted. The patient's condition became rapidly worse, and he died six days after coming to the hospital. An autopsy was made four hours after death. Cultures, both aerobic and anaerobic were made on blood serum and agar from the heart's blood, pericardial and pleural cavities, liver, spleen, etc.

A marked acute endocarditis, pericarditis, and double pleurisy were present. The aortic semilunar segments showed large recent vegetations, and one of the segments was ulcerated through. The aerobic cultures from the heart's blood, pericardium, pleuræ and spleen showed a growth of the staphylococcus pyogenes aureus and albus, while the anaerobic cultures from the heart's blood, pleuræ and pericardium showed the staphylococci, associated in each case with a large bacillus. This organism closely resembled the bacillus of Achalme, stained specimens of which I had previously seen presented by Dr. A. S. Wohlmann, at the Portsmouth meeting of the British Medical Association in 1899. Dr. Wohlmann kindly furnished me with photographs of Achalme's bacillus for purposes of comparison.

I tried to isolate the bacillus from the staphylococci by making anaerobic cultures in Novy's jars, but unfortunately the latter overgrew the former to a greater extent in each generation until the bacillus soon died out. Attempts at isolation by inoculation into guinea-pigs were equally unsuccessful. I was therefore unable to separate out the bacillus in order to study it in pure culture, but to me, obtaining in several tubes from the local lesions and from the blood, in a typical case of acute rheumatism dying at the height of the disease, an organism of the same appearance as Achalme's, was at least confirmatory of his results. It is interesting to note the severe character of this case in connection with Triboulet and Coyon's experience.

Triboulet and Coyon did not always find Achalme's bacillus in pure culture, but in two cases associated with a diplococcus resembling the one to be afterwards referred to, described by Poynton and Paine.

The latter observers have isolated from twenty cases of rheumatic fever a small diplococcus, each element of which is about $.5\mu$ in diameter. It grows best in anaerobic cultures,

especially blood-agar or milk and bouillon slightly acidified with lactic acid. It was found in the blood and urine of patients with rheumatism and in the local lesions. When absent from the clear effusions into the joints it was found in the synovial membranes and rheumatic nodules. The organisms rapidly disappears in the local lesions of the disease, though it lives for long periods in suitable culture media. On intravenous injection into rabbits it produces endocarditis and other characteristic lesions of rheumatism. They state that the organism certainly gains entrance to the system through the tonsils, and may also by other paths which have not been determined. Organisms differing only in minor details from the diplococcus of Poynton and Paine have been found by Wassermann, Westphal, and Malkoff (*Berliner Klin. Woch.*, 1899), Meyer (*Deutsche med. Woch.*, 1901), Allaria (*Revista Critica di clin. med.*, 1901), and Triboulet and Coyon. The latter found the diplococcus in some cases alone, but in two associated as mentioned before with Achalme's bacillus. They therefore conclude that the diplococcus is the cause of the simple cases of rheumatic fever, while the graver types are due to its association with Achalme's bacillus.

Poynton and Paine attribute much weight to predisposing factors in the causation of rheumatism, stating that "in rheumatic fever, heredity takes such a prominent part, and the rheumatic constitution is so clearly recognized, that it is hard to escape from the conviction that the disease is not to be explained by the presence and nature of the micro-organism only, but that in addition there must be some condition of the human tissue, which is also of importance."

From a consideration of the more recent contributions to the subject, there is an evident tendency to harmonizing of opinions as to the etiology of the disease. Though the results are not yet sufficiently definite to render them generally acceptable, still I think one can safely make the following points as representing the present status of our knowledge:

1. That rheumatic fever is a disease of bacterial origin, though
2. A peculiar constitutional condition is necessary for the development of the germs.
3. That further bacteriological investigation will separate different pathological conditions now clinically classed under the term rheumatism.
4. That a specific diplococcus is probably the cause of cases of simple rheumatic fever.
5. That a bacillus is found, either alone or associated with the diplococcus, especially in the graver forms of the disease.

6. That the pyogenic micro-organisms may be present as secondary invaders.

7. That the tonsil is the most frequent point of entrance of the infective agents.

SYMPTOMS OF ACUTE RHEUMATISM.

Dr. W. P. Caven recorded these.

In view of the great differences in the manifestations of rheumatism as ordinarily seen in adults, and those occurring in children, I have thought it best to describe them separately. In the first place I will describe the symptoms as met with in adults.

I. RHEUMATISM IN THE ADULT.—Rheumatic fever has no definite incubation period. The onset of rheumatism is usually gradual and is preceded in a great many cases by a few days of malaise, sore throat and irregular pains in the limbs and joints. Rarely, however, the characteristic acute symptoms may set in very abruptly. At the onset chilliness is often met with, but well marked rigors are not frequent, and when they do occur there are generally several of them. There is seldom headache. The appearance of the tongue is somewhat characteristic, being flabby, teeth marked and covered with a white fur. Twenty-four hours after the onset the disease is usually fully developed, the marked features being pyrexia, pain and joint affections, the condition of the skin and of the urine.

(a) *As to the Pyrexia.*—The temperature is in most cases severe in proportion to the number of joints affected, yet as Fagge says, "Even Wunderlich was unable to recognize any typical course" beyond the fact that it is usually highest in the evening (except in cases of hyperpyrexia). The highest temperature is reached early in the disease—from the second to the fourth day—and rarely exceeds 104 F. Under treatment, as a rule, it rapidly falls. The pulse is often very rapid, large, full and bounding, and sometimes dicrotic.

(b) *Pains and Joint Affections.*—Pain usually commences in one of the larger joints—knees, shoulders, ankles, wrists and hands—and rapidly becomes very severe. When in pain the joints are kept in characteristic positions; the knees slightly flexed, the ankles extended, the elbows flexed, the wrists extended, and fingers of the hand slightly turned towards the under side. The joints are swollen, hot and reddish as well as acutely painful. One of the most characteristic features of acute rheumatism is the suddenness with which the joint affection clears up in one joint and flies to another. One day a joint may be extremely painful, swollen and hot, and the next be free from pain and

present an almost normal appearance. The swelling around the joint differs from that of gout inasmuch as it does not pit on pressure, nor does desquamation of the epidermis occur, nor are the surrounding veins dilated. Extensive joint effusion is rare and much of the enlargement is due to the periarticular tissues being infiltrated.

(c) *Conditions of the Skin.*—Profuse sweating is one of the marked symptoms of acute rheumatism. Stress is often laid on the sour smell and acid reaction as a diagnostic point in acute rheumatism. However, one meets with exactly the same smell in persons in perfect health who do not change their underclothing after free sweating; and as to the acid reaction, different parts of the skin, in the same person, may be shown to present an acid, alkaline and neutral reaction to litmus paper. Associated with the sweating we often find a copious eruption of sudamina; this may, of course, be met with in any febrile state accompanied by sweating. The vesicles are at first clear and transparent, then their contents become milky and their bases slightly inflamed and reddened.

(d) *Condition of the Urine.*—Careful research into the condition of the urine has thrown no light on the cause of the disease; it presents the same features as in other fever conditions. It is reduced in quantity owing to the free sweating; it is of higher specific gravity—1.020 to 1.030—of high color from the large quantity of hematoporphyrin and small quantity of urobilin. It is very acid in reaction; clear when first passed; deposits abundant urates when cooled, and, usually, some uric acid crystals.

(e) *Conditions of the Blood.*—Anemia is often a marked symptom; it is associated with some leucocytosis. Fibrin is greatly increased, more so than in any disease except pneumonia, but coagulation is slower than usual; red cells may be diminished 1,000,000 to 2,000,000; hemoglobin is especially diminished; changes in form of cells are usually slight. The degree of leucocytosis varies with the severity of the case. Polynuclears are absolutely increased, lymphocytes (mononuclears—*Cabot*) absolutely diminished.

2. SYMPTOMS AS MET WITH IN CHILDHOOD.—Here we meet with marked differences in symptoms from those seen in the adult—prominent among which differences are the slight articular manifestations and the absence of the profuse acid perspirations. The onset in children is very frequently marked by an attack of tonsillitis. The tonsillitis is seldom of great severity, and a suppurative rheumatic tonsillitis in children is exceedingly

rare. There is nothing distinctive in the clinical appearance of rheumatic tonsillitis and cases can only be pronounced rheumatic when other evidences of rheumatism are present.

(a) *Pyrexia*.—This is a much less conspicuous symptom in children than in adults. In contrast with what occurs in other complaints, in rheumatism, the younger the child the less the tendency for the temperature to be raised. In ordinary cases without complications, as pericarditis or chorea, the temperature seldom ranges above 101 F. I will refer here to an interesting clinical fact, that in children who have sustained a sharp attack of rheumatism with considerable degree of pyrexia, the temperature may be persistently raised at some period of the day for months; it being known to reach even as high as 104 F. without any injurious effects on the child.

(b) *Pain and Joint Affections*.—Pain is almost invariably present at some time or another in every attack. Often it is the only symptom complained of, but it seldom is as severe as in adults. It cannot be too carefully remembered that in the vast majority of cases the so-called "growing pains" of children are rheumatic. Physiological growth is a painless process, and growing pains are undoubtedly pathological. We all know how common it is to find endocarditis in children, often producing mitral stenosis, where the only symptom of rheumatism has been these growing pains. The joint affections in children are, as a rule, severe and more transient than in adults. The knees, ankles and wrists are the joints most often attacked; when the smaller joints are attacked the case is usually a severe one. The flitting character of the joint affection is one of the features in the child as well as in the adult. Although the joint affection in children is usually of a minor degree, yet we must not forget that some degree of arthritis or pains in the joints is a feature in by far the greater number of cases.

(c) *Condition of the Skin*.—The skin in children is, as a rule, hot and dry, differing in this respect from that of adults. Rheumatic children, however, are very prone to sweating on slight exertion in the intervals between attacks. I will here refer to the occurrence of subcutaneous fibrous nodules attached to the tendons and fascia. They are much more commonly seen in children than in adults, and Cheadle has shown their close association with severe endocarditis. In size they vary from a pin's head to a large pea, and are most numerous on the fingers, hands and wrists, but also occur about the elbows, knees and spines of the vertebræ and scapule. In children they are mostly found on the backs of the elbows and over the malleoli. They

are not tender. Histologically the structure of the nodule is similar to that of the nodular growths on the cardiac valves. (Futcher worked these out.—*J. H. Bulletin.*)

COMPLICATIONS OF RHEUMATISM.

Dr. John L. Davison introduced this branch of the subject, and said:

Perhaps the most important complication of acute articular rheumatism is endocarditis. The cause of the lesion is due, no doubt, to either a dissolved toxin or a very abundant infective agent in the blood. This irritant affects chiefly connective tissue membranes, and especially such as are exposed to friction. For we see the endocardium affected exactly where the surfaces come into contact. It seems to require the mechanical effect of friction, added to the toxin, to produce the inflammation.

Of course, in every case of acute articular rheumatism the medical attendant watches daily for symptoms of this very serious complication. May I add a word of warning as to those cases in which the symptoms of rheumatism—so well given just now by my friend, Dr. Caven—are masked, where the disease is so apparently light as to its usual manifestations, that the patient is not put to bed, and may even be following his usual avocation. I think I have seen hearts left weak for the remainder of the span of life through neglect of careful examination for this grave lesion, in cases where the pain and disability were so slight as to allow the sufferer to take baneful exercise. Especially is this liable to happen in young subjects.

The pathology of the disease has been taken up by Dr. Anderson, but whatever be the *materies morbi* which produce the lesion, I believe that it sometimes attacks the endocardium without giving any other sign, which would surely attract the attention of the medical attendant to rheumatism, so that it would be well to examine the heart in every case where there is any doubt as to the nature of the ailment for which you are called in. Let me repeat that I regard this as very necessary in young children. I have more than once discovered endocarditis in children where "growing-pains" was the only symptom given, and where I have been called in to find the child going to school, or playing in and out of doors with the lesion well marked.

The subject is worthy a whole evening from this or any other clinical society, but having merely mentioned it, I must pass on, saying, however, that this complication occurs in perhaps 20 per cent. of all cases, but that epidemics of rheumatic fever vary greatly as to severity and frequency of complication.

Pericarditis.—This complication, which is also of grave importance, occurs in perhaps 14 per cent. of all cases of acute articular rheumatism, subject to the same variations as first spoken of, due to severity, etc., and needs the same care for discovery as does the endocarditis, in mild and sub-acute attacks of rheumatism. Looking upon the pericardium as a large lymphatic space, we see the irritant gain admission to the space, and by the motions of the heart on the fluid of the sac, the poison is carried to all parts of the space, so that the whole surface, both parietal and visceral are usually affected at once. Before leaving the heart, I should mention dilatation of the right heart, and a febrile murmur not due to endocarditis; also a myocarditis with granular and fatty degeneration is observed very early with dilatation of the left ventricle. Symptoms referable to heart lesion, such as pain, palpitation and dyspnea, may not be disregarded even where no bruit or friction sound is present.

Pleurisy.—The pleural membranes are quite frequently involved. Especially does the left pleura suffer when the pericardium is infected. The signs of dry pleurisy are usually well marked, and rarely is there much serous exudate. Coryza, tracheo-bronchitis, laryngitis and affections of the muscles of the throat are frequently present in the early stage.

This leads me to speak of follicular tonsillitis, which is regarded by many as related to rheumatism. The recession of the disease under salicylates would favor this view, though no doubt the cases in which such treatment fails are due to other than rheumatic infection. I think we get numerous cases in cold damp, or cold dusty weather of true rheumatic throat with simple, not follicular, tonsillitis and a general engorgement of the pharynx with involvement of the surrounding organs, stiffness and soreness of the neck and throat muscles, with general malaise and some febrile movement. These cases, which I have been in the habit of calling rheumatic sore throat, nearly always yield readily to anti-rheumatic treatment.

Pneumonia and edema of the lungs need only be mentioned in passing as rare complications of the disease we are considering, seen in the acute stage.

The Skin.—Time will only permit me to enumerate most of the skin lesions which are seen as complications of rheumatism. They are roseola, urticaria, erythema nodosum and multiforme, herpes facialis, petechiæ, general subcutaneous and submucous hemorrhages and subcutaneous nodules. Purpura is rare, unless Schonlien's disease, peliosa rheumatica, be considered as such. It is really an erythema and not a purpura, as the discoloration

disappears at first under pressure. The subcutaneous nodules are seen most frequently in young subjects. They are found mostly on the fingers, dorsal and lateral surfaces of the hands, but may occur almost anywhere. Levison, of Copenhagen, mentions them as appearing especially on the front and back of the head. They are fairly movable, more or less painful, and disappear with the other symptoms of the disease, or sometimes last for weeks. It is interesting to note, as bearing on the relationship of the disease, that similar nodules appear in rheumatic subjects who have either endocarditis, chorea, or tonsillitis, with no joint lesion. They are composed of round and spindle cells and attached to the tendons of fasciæ. It may be said that similar nodules are met with, independent of arthritic disease.

Hyperpyrexia.—I have never seen a case of genuine hyperpyrexia. It is perhaps the most important of all the causes of death in acute rheumatism. It is attended with severe brain symptoms, though, as Hilton Fagge says, the existence of meningitis has been disproved. Levison also says that while there may be hemorrhage, edema or hyperemia in cerebral rheumatism, there is no true meningitis. When the temperature runs over 105 degrees, with profuse sweating, there is imminent danger of hyperpyrexia, in which the mercury rises to 107, 108, 109 or 110 degrees F. It is worthy of note that in these cases of hyperpyrexia the mercury mounts very rapidly. Thus Wilson Fox, in his analysis of twenty-two cases, gives one in which the temperature rose from 103.5 to 109 degrees F. in two hours. As the treatment to be of any service should be instituted at once before the higher centres become demoralized by the extreme heat of the blood, careful nursing should be the rule in all cases of rheumatism. Also, it should be remembered that the evil symptoms of any complication may show themselves in cases "which had seemed to be attended with little or no risk," as Fagge says. He instances one of Ringer's patients who was supposed to have recovered and about to leave the hospital next day, when cerebral symptoms set in, of which he died within two hours with a temperature of 110 degrees F. The first indication of the onset of hyperpyrexia seems to be a sudden loss of all pains, so that the patient finds he can move joints which were heretofore painful, without suffering. This seems a good omen, but unless the temperature falls at the same time it should make the physician fear impending danger, and use the thermometer at intervals of ten, twenty or thirty minutes. Interesting as this complication is, I must pass on, having briefly touched upon what seems to me the most important points in connection with it.

Chorea.—The association of Sydenham's chorea and arthritis has been noted for more than a century. Bright (1802) says that rheumatism was then distinctly recognized as one of the causes of chorea; and all the way down through medical literature, even up to the present, the association has been recognized. In a small volume of Osler ('94) on chorea he discusses the question, gives cases and the opinions of many writers on the subject, statistics, etc. He says that, as insisted upon by See and Roger, the arthritis in many cases precedes the chorea. In other cases the chorea precedes the rheumatism. In this connection, he (Osler) speaks of the manifestations of rheumatism in childhood being extremely varied and often so slight as to be overlooked, a point to which I have already referred. His statistics, which are too full and complex to give here, show conclusively a relationship between chorea and rheumatism. He gives German See's conclusions as follows: Of two rheumatic infants, one at least will be choreic; of five choreic children, two will be rheumatic. Roger concluded that articular rheumatism, chorea, and endocarditis were three terms of one and the same pathological state or phase—*la chorei rheumato-cardique*.

Examination of the Question.—The German writers show a small percentage of coincidence, while English writers give from 20 to 50 and even 70 per cent. Sir Dyce Duckworth's figures are 78 per cent. Osler's percentage is about 21. Cheadle (B. M. J.) states that 77 per cent. of his cases of chorea had had previous endocarditis. Axenfeld states that the relationship of chorea to heart diseases (endocarditis) is generally recognized under three conditions, as when (1) the chorea precedes the endocarditis, (2) when the endocarditis precedes the chorea, and (3) when they begin synchronously, or nearly so.

Appendicitis.—The rheumatic origin of appendicitis is worthy of a few words. Burney Yeo believes in the gouty and rheumatic origin of the disease. McNutt, of San Francisco, in the American System of Practical Medicine gives the following: "A patient, now aged 15, had appendicitis when eight years old, and again when ten. There was circumscribed peritonitis each time, but no pus and no operation. In the past two years he has had two attacks of tonsillitis which readily yielded to sodium salicylate. His mother is a great cripple and has suffered from rheumatism since he was five years old. Would the appendicitis have yielded to the sodium salicylate? The rheumatic origin did not occur to me at the time."

I shall now enumerate without remark the other diseases and conditions which are set down by various writers as being com-

plications of rheumatism: Peritonitis, hemorrhage from bowels and uterus, acute nephritis, albuminuria, hematuria, anuria, ankylosis, mental disease from emboli, muscular abscesses, synovial abscess, suppuration in joints, cystitis, hydrocele, orchitis, peripheral neuritis, rheumatism of the scalp, neuralgia, and sciatica.

SURGICAL INDICATIONS IN RHEUMATISM.

Dr. R. B. Nevitt had charge of this branch of the symposium. (For paper see page 7.)

RHEUMATIC CONDITIONS IN THE UPPER AIR PASSAGES AND IN THE ORGANS OF SPECIAL SENSE.

Dr. J. Orlando Orr dealt with this branch of the subject.

Rheumatism as a causative agent in diseases of the upper air passages and organs of special sense has not received as much attention from the recognized authorities on those diseases as one might expect from the enormous amount of literature written thereon. In fact, it is scarcely recognized at all by some, and by others only as a probable exciting cause, or an indirect contributor. There are but few diseases upon which the authorities generally agree as being caused by rheumatic poison.

Gradle, of Chicago, in his recent work says, "Rheumatic conditions as such are not of frequent occurrence in the upper air passages." "Rheumatism," he says, "has no definite relation whatever to any nasal lesion." On the other hand, Haviland Hall considers chronic rhinitis to be caused, in some cases, by rheumatism or to occur more frequently in chronic rheumatics.

Hay fever was by many authorities some years ago said to be purely of rheumatic origin. It certainly does in a few cases bear in its clinical history some similarity to rheumatic diseases. It, however, is now recognized purely as a neurotic disease, and as such occurs more frequently, and in a more aggravated form in patients with a lowered vitality, and only as a cause of lowered vitality, can rheumatism be recognized as an etiological factor in hay fever.

Bosworth attributes naso-pharyngeal catarrh in some cases to rheumatism, but this is extremely doubtful. Naso-pharyngeal catarrh is of frequent occurrence, more so in those of a tubercular than rheumatic tendency. I have not in my practice met with a case I could connect with the rheumatic habit. Tonsillitis alone, of all the diseases in this region, has given rise to a more general discussion, and all agree that between it and rheumatism there is some undoubted connection; but as to what that connection really

is, all do not so generally agree. Fowler, in his recent work, states that tonsillitis precedes acute rheumatism in as many as 80 per cent. of the cases, while more conservative authorities place it between from 5 to 20 per cent. It occurs also in a very considerable number of cases during the course of the rheumatic attack. In fact, few cases of acute rheumatism run their course without more or less inflammation of the tonsillar region, and few cases, on the other hand, of tonsillitis, run their course without the patient complaining of some rheumatic pains; but that acute suppurative inflammation of the lymphoid tissue surrounding the tonsil should be caused by rheumatic poison does not seem to me to satisfactorily explain its cause.

In the ear rheumatic conditions are more serious and more generally met with. Myringitis is no doubt due in some cases to the rheumatic poison. There is a variety of this disease characterized by a very slight redness of the membrana tympani, and excessive injection of Shrapnel's membrane, associated with slight pain at irregular intervals, aggravated by movement of the ossicles. There is defective air conduction, with subjective noises of a blowing character. This condition, while comparatively frequent, is, I believe, due entirely to rheumatism. It runs a very chronic course and in most cases (unless vigorous treatment is early adopted) ends in those forms of so-called dry catarrh of the middle ear, in which the hearing is seriously and permanently affected.

Affections of the ossicles of rheumatic origin are also met with, especially in those forms of progressive deafness in which we have fixation of the stapes combined with ankylosis of the ossicles, associated with most distressing noises in the head which are so disagreeable alike to patient and physician.

In the eye we have eczematous conditions of the lids and cornea that may be due to rheumatic virus, although I think this improbable. However, paralysis of the external ocular muscles is undoubtedly caused in many cases by rheumatism.

Of the diseases of the eye none can be so directly attributed to rheumatism as certain forms of iritis, especially that form which is characterized by severe pain, and which recurs with regularity at certain periods of the year. It occurs mostly in chronic rheumatic patients. It has a great tendency to relapse under the slightest provocation, and may occur in one or both eyes. It yields readily to treatment, and recovery is complete without any ill results, especially if at the outset means are taken to prevent the formation of adhesion of the iris.

These are the principal conditions recognized by the leading

authorities on those subjects that are with any certainty connected with the rheumatic habit.

THE TREATMENT OF RHEUMATISM.

Dr. J. T. Fotheringham dealt with the Treatment of Rheumatism. (For paper see page 1.)

GEORGE ELLIOTT,
Recording Secretary.

THE HEART IN DIPHTHERIA.

There can be no doubt about the statement (Chas. Bolton, *Edinburgh Medical Journal*) that "cardiac failure is one of the most important as well as the commonest of the toxic effects of diphtheria." A large percentage of patients have signs of cardiac failure at some period or other of the disease, and death during the acute toxic stage unless due to an accidental cause, as asphyxia, is invariably the result of primary cardiac failure.

During convalescence its supervention is usually associated with the presence of some form of post-diphtheritic paralysis, and it may be secondary to or accelerated by some strain, or shock. In this stage it is not so uniformly fatal, as during the acute toxic period. It must, however, be remembered that sudden death from syncope may occur at any stage, though its supervention, when convalescence is established, is always referable to some strain.

In the non-fatal cases of heart failure the evidence consists of irregularity or intermittence of the pulse, with or without the physical signs of dilatation of the heart; at the same time there is usually increased rapidity or slowing of the pulse. With regard to the pulse Dr. Bolton comes to the following conclusions:

(1) It alters considerably both in degree of irregularity and in frequency during the 24 hours.

(2) These changes occur frequently, and often at very short intervals.

(3) On the whole the irregularity is most marked at night.

(4) As a rule, when the pulse becomes irregular, there is a diminution in its frequency, but this rule is by no means absolute.

(5) The irregularity coming on in the acute stage is a primary affection, but is, nevertheless, greatly affected by strain.

(6) The irregularity does not conform to any type.

(7) As a rule the patient appears quite well and suffers no inconvenience or distress on account of the heart failure.—
Medical Chronicle.

Desiring to make a practical, useful journal for the General Practitioner,
the Editors respectfully solicit Clinical Reports from subscribers and others.

Dominion Medical Monthly

And Ontario Medical Journal

EDITORS:

GRAHAM CHAMBERS, B.A., M.B. WALTER McKEOWN, B.A., M.D.

ASSOCIATE EDITOR:

GEORGE ELLIOTT, M.D.

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No. 1.

ANNOUNCEMENT.

All right, title and interest in this journal have been purchased from the Nesbitt Publishing Company, Limited, by the Associate Editor, Dr. George Elliott. Some improvements have already been inaugurated for this number under the new ownership; others are to follow. In order to be able to continue to announce additional improvements from month to month, this, like any other business venture, must be conducted on business lines. For that purpose the conduct of the DOMINION MEDICAL MONTHLY need not be less professional or less ethical. We have to thank our contributors for their support during the past two years that the journal has been under its present editorial management, and to solicit for the future like favors. Within that time our original articles have easily doubled. We would be very glad to have more clinical reports, but in this respect, a department which ought to be well favored in all our journals, is to a great degree neglected. Now and again all our subscribers, whether in town or in village, at the country cross-roads or in the great cities, meet with interesting and instructive cases which would prove valuable matter for any medical publication, and be sure to be diligently read. You cannot have good medical journals any-

where without the aid of the profession generally. Give us these reports and we will give Canadian medical literature a good journal in return.

There is another department in Canadian medical journals conspicuous by its almost entire absence. In 1902 we only had one short letter for a "correspondence" department. Our medical men should write more letters on current topics to the medical press. Everybody would like to hear personal opinions on matters of interest to the Canadian profession. Why don't you write?

Our News Editor tries to keep you in touch with what is going on medically in every province in the Dominion, making this journal more national in character than provincial. In 1901 and 1902 we were especially favored with the privilege of the exclusive publication of the papers read at the annual meetings of the British Columbia Medical Association; so last year with the annual meeting of the Southern Manitoba Medical Association.

In selecting matter from our exchanges, we will try to be judicious. We believe, ourselves, that a good selected article or two is of more value than many abstracts selected from wide and varied sources. Abstracts can be found in the "weeklies," of which there are many good ones emanating from our neighbors. Personally, we believe every doctor should subscribe for a British "weekly," a United States "weekly," and a local journal. In this latter respect we hope that the great mass of the medical profession throughout Canada will continue to look upon the DOMINION MEDICAL MONTHLY with favor.

RHEUMATISM.

Rheumatism is a most important disease in the practice of every physician, and therefore the excellent symposium in this number of the journal should prove interesting and valuable reading. We all think we know a good deal about the disease, but its clinical manifestations are so variable, especially in children, that it necessitates a wide field of reading to make ourselves

familiar with the subject. The subject is deserving of special study, as there are very few diseases which cripple more people for life. This is specially true of the disease in children, in whom endocarditis occurs in the majority of severe cases, and may be met in mild types of the disease, such as erythema nodosum, and even in "growing pains." Moreover, it is not an uncommon occurrence to meet cases of mitral disease in patients without previous history of rheumatism.

As regards the complications of rheumatism, we think that there is a tendency to multiply the number without sufficient reason. For example, urticaria is sometimes considered a manifestation of rheumatism, probably for the reason that sodium salicylate is an effectual remedy in its treatment. This is a very weak argument, as the mode of action of sodium salicylate in rheumatism is unknown; but we do know that it is an active gastric and intestinal antiseptic, and hepatic stimulant. For this and other reasons urticaria is more likely due to auto-intoxication.

Again, there are many cases of irregular gout regarded as rheumatism, and until we are able to avail ourselves of some more accurate method of differentiating between these two morbid conditions, our ideas must remain more or less hazy.

The term rheumatism, as at present applied to disease, is most difficult to accurately define. Acute rheumatism may, with a fair degree of certainty, be regarded as an infectious process; but what we speak of as chronic rheumatism judging by its symptoms, and especially its complications, may not unreasonably be regarded as an entirely distinct condition. The present classification of arthritis requires revision; when we are in possession of sufficient data all the arthritides—acute rheumatism, acute infectious arthritis, gout, sub-acute and chronic rheumatism, and arthritis deformans—may undergo a new grouping or be placed in separate categories.

News Items

DR. SHIRRES, Montreal, spent Christmas at Ottawa.

DR. BLACKADER has returned to Montreal from Boston.

THERE are 420 students in medicine at McGill University.

DR. C. N. LAURIE, London Junction, has removed to Port Arthur.

THE Jubilee Hospital, Victoria, B.C., admitted 61 patients during November.

DR. WILLIAM GARDNER, Montreal, spent the Christmas holidays in New York.

DR. THOMAS CULLEN, Baltimore, spent Christmas with his parents in Toronto.

TORONTO Dispensary treated between 16,000 and 17,000 patients during 1901.

DR. BRYCE McMURRICH, Bothwell, Ont., spent the Christmas holidays in Toronto.

THE death is announced of Dr. Dennis Nunan, of Guelph, Ont., at the age of 64 years.

DR. FRED. PARKER, Bruce Mines, Ontario, paid Toronto a visit the latter part of December.

DR. F. G. WOOLLEY has resigned his governor's fellowship in pathology at McGill University.

MONTREAL General Hospital had 241 patients admitted to the wards during December. Admissions to the outdoor were 2,556.

DR. A. E. GARROW, Montreal, will sail from New York shortly to spend several months in post-graduate work in Germany.

AT the Children's Hospital, Toronto, there were 5,373 patients treated in the last official year ending on the 30th of September, 1902.

ST. MICHAEL'S Hospital, Toronto, is to have another new wing. It will be used for a maternity ward. There are now about 150 patients.

DR. G. P. GIRDWOOD, Montreal, presided at the third annual meeting of the Roentgen Rays Society of America, which was held recently at Chicago.

DR. DUCHESNEAU, Warden of the St. Vincent de Paul Penitentiary, is asking for superannuation, and will shortly retire from the superintendency of that institution.

NOTRE DAME HOSPITAL has accepted the offer of the Montreal City Council to care for cases of infectious disease for an annual grant of \$15,000, to extend over 25 years.

THE amount of the magnificent gift of Lords Strathcona and Mount Stephen to London, England, hospitals, will bring to King Edward's Hospital Fund over £4,000 quarterly.

DR. W. H. DRUMMOND, Montreal, delivered the opening lecture of the sixth series of lectures in connection with Lindsay, Ont., Collegiate Institute, on the evening of December 5th, 1902.

DR. A. C. McDONNELL, Montreal, died on the night of January 2nd. He was a graduate of Toronto University, and for twenty years was on the consulting staff of the Hotel Dieu, Montreal.

SANITARY conditions in Montreal are to be improved. A few months ago there were some five thousand privy pits in that city. By the first of May next it is expected that there will be not more than two thousand.

DR. ELLIS, of St. John, N.B., has been appointed medical superintendent of immigration in the Maritime Provinces, and will be empowered to deport immigrants suffering from infectious and contagious diseases.

DR. CASEY A. WOOD, of Chicago, while visiting in Montreal during the latter part of December, was dined at the Windsor by the Medical Faculty of Bishop's College University. Dr. Wood, who is a graduate of Bishop's, was formerly professor of chemistry, and later of pathology, at Bishop's.

THE following appointments have recently been made in the Medical Faculty of McGill University: Dr. H. Wolferstan Thomas to a faculty fellowship in pathology; Dr. A. H. Gordon, demonstrator in physiology; Dr. Starkey, the recently appointed professor of hygiene, to deliver the annual university lecture in January.

The Imperial Government has adopted the Canadian hospital tent, which is the joint invention of Surgeon-General Neilson and a citizen of Ottawa. Lord Kitchener saw the tent in South Africa, and was highly delighted with it.

SMALLPOX appears to be well under control in Ontario during the present season. In December, 1901, there were reported 250 new cases in the province; in December, 1902, but 86, and these were nearly all in two centres, one of which is now practically cleared up.

DR. G. A. CHARLTON, of Montreal, who recently conducted observations on the treatment of scarlet fever, with anti-streptococcic serum, has been appointed resident physician of the Ottawa Isolation Hospital. He recently resigned his fellowship of pathology at McGill University.

DR. WILLIAM STENNING HARDING, one of the most respected and best known citizens of St. John, N.B., died suddenly on the evening of the 19th of December. He was born in St. John in 1814, and was graduated M.B. from the University of Edinburgh in 1836. He immediately commenced practice in his native city, and continued in active practice up to a few years ago.

THE Montreal City Council for years has had under consideration a new Contagious Diseases Hospital. Recently, by a vote of 23 to 5, that body decided to give the Notre Dame Hospital and an English Hospital the sum of \$15,000 a year, each, if they would care for patients affected with contagious diseases, the contract to last for twenty-five years.

DR. COLIN A. MCPHAIL, of Summerside, P.E.I., died suddenly on the morning of the 3rd of December. Apoplexy was supposed to be the cause of his death. He was a graduate of Trinity Medical College, Toronto, and was about forty years of age. He was vice-president for P.E.I. of the Canadian Medical Association, and treasurer of the Maritime Medical Association.

DR. R. A. PYNE, Registrar of the Ontario Medical Council, has written the Minister of Education interpreting the regulations regarding medical matriculation. It is now decided that the standard of matriculation for 1903, shall be the same as for 1902; and for 1904 and subsequently the standard of admission shall be either (1) junior matriculation in arts, including physics and chemistry, with honor standing in any one subject of the course, or (2) senior matriculation in arts, as now provided for by the regulations.

TRINITY MEDICAL COLLEGE.—The staff of the Anatomy Department of Trinity Medical College has been re-arranged. Dr. George A. Bingham is Professor of Anatomy; Dr. Charles B. Shuttleworth, Associate Professor; Dr. T. B. Richardson, First Senior Assistant; Dr. George Elliott, Second Senior Assistant; and Dr. Charles P. Lusk, third Senior Assistant Demonstrator.

DR. C. W. HOPKINS, a graduate of McGill of '01, and medical superintendent of the Montreal Maternity Hospital, died in that city the latter part of December, of typhoid fever. Dr. Hopkins was one of the best all-round students which had ever been graduated from the medical faculty of McGill University, having taken first-class honors in nearly every subject throughout his entire course.

DR. ARCHIBALD YOUNG SCOTT, Professor of Chemistry and Botany at the Ontario College of Pharmacy, Toronto, died early on the morning of the 3rd of January, from myocarditis, which resulted from an attack of typhoid fever, which he had two years ago. The late Dr. Scott was born in Stratford, Ontario, in 1861, and was educated at the University of Toronto, and graduated in natural science in 1882. He received his degree in medicine from Trinity University in 1887. Dr. Scott was well known in military circles, having served in the North-West Rebellion in 1885. He was Major of No. 4 Field Hospital Company.

THE annual meeting of the National Sanitarium Association was held in Toronto on the afternoon of the 20th of December, with Sir William Meredith in the chair. The report of the physician in charge of the Muskoka Cottage Sanitarium, Dr. J. H. Elliott, showed that during the five years' history of the institution 612 patients had been treated. During the past official year, 85 per cent. had apparently been cured or the disease arrested. Ninety patients were treated in the Free Hospital for Consumptives, Gravenhurst, during the first five months of its existence. Of these fifty came from Toronto, and the balance from other parts of Ontario and the Dominion. The announcement was made that a very desirable building site was already owned for a third hospital near Toronto; and that the sum of \$25,000 was promised towards the erection of the buildings by a leading citizen of Toronto. In addition the Association has under consideration the establishment of a fourth institution on the Pacific coast. Dr. C. D. Parfitt, physician-in-charge of the Free Hospital, read a paper before the meeting dealing with the sanitarium treatment as a means of relieving the situation.

The Physician's Library

Surgical Anatomy. A Treatise on Human Anatomy in its Application to the Practice of Medicine and Surgery. By JOHN B. DEEVER, M.D., Surgeon-in-chief to the German Hospital, Philadelphia. In three volumes. Illustrated by about 400 plates, nearly all drawn for this work from original dissections. Volumes I. and II. Philadelphia: P. Blakiston's Son & Company. Canadian Agents: Chandler & Massey, Toronto.

No medical or surgical work which we have been privileged to examine during the past few years has given us such extreme pleasure as Volumes I. and II. of Deever's *Surgical Anatomy*, the third being just about to be issued. When one reads in the preface on the initial line that this work has been twelve years in preparation, he can grasp some idea of the great amount of labor involved, and the care and exactness with which it has been accomplished. The plates and illustrations are simply magnificent, an expression which aptly applies to what we have already before us. Opportunity has only been afforded us to examine these, which we have done with infinite delight and pleasure, as page after page was turned only to reveal as one proceeded new beauties, without even more than a cursory perusal of the text. Here and there, however, as time has permitted, we have read with great satisfaction the text, which is all that one could desire, and indeed have very few criticisms to offer. While we fully believe that all anatomy should be strictly exact, even to minute details, here and there, we find what, though plain to the surgeon and advanced anatomist, might prove misleading to the student. To illustrate: The acromion process and spine of the scapula are said to be subcutaneous. It is quite plain what the brilliant author wishes to convey; but as a precise anatomical fact, the spine of the scapula is not subcutaneous—only the intermediate space on its posterior border. Again, in the illustration of the bony thorax, the first rib appears with its surfaces facing inward and outward, whereas they should look upward and downward; but these are minor faults. The author also makes no mention of a set of lymphatics which surround the emissary vein, which passes through the parietal foramen. This we consider a very important drainage channel from that area of the scalp, where baldness very often first makes its appearance. No one, however, can find any important fault with this remarkable production, which is as truly excellent as it is remarkable. It is

probably expensive for the student of surgical anatomy; its purchase price (\$7.00 a volume) will repay him, however, thrice over. We would heartily recommend it to the student, as comprehensive and exhaustive, for its readily understandable style of diction, as for the great help and light the illustrations let in on the subject. The general practitioner, though he may not be often doing major operations, will be highly pleased with his ownership in these volumes; and we simply wish to state that if all knew what treasures reposed between these covers, they would hasten to become possessed of this great masterpiece in medical bookdom. Messrs. Blakiston, the publishers, as well as the distinguished author, deserve the warm thanks of the medical profession for this truly great production. Canadians may order their copies through Mr. A. P. Watts, of the Chandler & Massey Co., Yonge Street, Toronto.

The American Text-Book of Obstetrics. In two volumes. Edited by RICHARD C. NORRIS, M.D.; Art Editor, Robert L. Dickinson, M.D. Second edition, thoroughly revised and enlarged. Two handsome imperial octavo volumes of about 600 pages each; nearly 60 text-illustrations, and 49 colored and half-tone plates. Philadelphia and London: W. B. Saunders & Co. Canadian Agents: J. A. Carveth & Co., Toronto. Per vol.: Cloth, \$3.50 net; sheep or half morocco, \$4.00 net.

This is a work for the student and practitioner alike. It makes clear those departments of obstetrics that are at once so important and usually so obscure to the medical student. The obstetric emergencies, the mechanics of normal and abnormal labor, and the various manipulations required in obstetric surgery are all described in detail, and elucidated with numerous practical illustrations. Since the appearance of the first edition many important advances have been made in the science and art of obstetrics. The results of bacteriologic and of chemico-biologic research as applied to the pathology of midwifery; the wider range of surgery in treating many of the complications of pregnancy, labor, and the puerperal period, embrace new problems in obstetrics, some of which have found their place in obstetric practice. In this new edition, therefore, a thorough and critical revision was required, some of the chapters being entirely rewritten, and others brought up to date by careful scrutiny. A number of new illustrations have been added, and some that appeared in the first edition have been replaced by others of

greater excellence. By reason of the extensive additions, the new edition has been presented in two volumes, in order to facilitate ease in handling. The success primarily achieved unquestionably awaits this present edition, as we know of no more commendable work on the subject.

Diseases of the Pancreas and Their Surgical Treatment. By A. W. MAYO ROBSON, F.R.C.S., Senior Surgeon Leeds General Infirmary; Emeritus Professor of Surgery, Yorkshire College, Victoria University, England; and B. G. A. MOYNIHAN, M.S. (Lond.), F.R.C.S., Assistant Surgeon Leeds General Infirmary; Consulting Surgeon to the Skipton and to the Mirfield Memorial Hospitals, England. Handsome octavo volume of 293 pages, illustrated. Philadelphia and London: W. B. Saunders & Co. Canadian Agents: J. A. Carveth & Co. 1902. Cloth, \$3.00 net.

This work, dealing with the surgical aspect of pancreatic disease, has been written with a twofold object: to record and to review the work done in the past, and to indicate, as far as possible, the scope and trend of future research. We can state freely and unreservedly that the objects aimed for could not have been better accomplished. It is only within recent years that any material progress in regards to our knowledge of the functions and diseases of the pancreas has been made, and a work like the present volume, the combined efforts of two such distinguished surgeons, will most certainly be welcomed by the profession. The work is an excellent one, and besides containing a very commendable exposition of the various diseases and injuries of the pancreas, it includes an accurate account of the anatomy, abnormalities, development, and structure of the gland. We endorse the work most heartily, and believe every physician and surgeon will find its perusal of unusual advantage.

Bacteriological Technique. A Laboratory Guide for the Medical, Dental, and Technical Student. By J. W. H. EYRE, M.D., F.R.S., Edin., Bacteriologist to Guy's Hospital, and Lecturer on Bacteriology at the Medical and Dental Schools, etc. Octavo of 375 pages, with 170 illustrations. Philadelphia and London: W. B. Saunders & Co. Canadian Agents: J. A. Carveth & Co., Toronto. 1902. Cloth, \$2.50 net.

This book is an excellent one. It presents, concisely yet clearly, the various methods at present in use for the study of

bacteria, and elucidates such points in their life-histories that are debatable or still undetermined. Moreover, it does not encumber the student with the many uncertain methods usually crowded into books of this kind, only those being included that are capable of giving satisfactory results even in the hands of beginners. The excellent and appropriate terminology of Chester has been adopted throughout. This is a very commendable feature, as Chester's terminology needs but a trial to convince one of its extreme utility; and its inclusion in an elementary manual is calculated to induce in the student habits of accurate observation and concise description. The illustrations are numerous and practical, the author considering, and rightly so, that a picture, if good, possesses a higher educational value and conveys a more accurate impression than a page of print. The work is not intended for the medical and dental student alone, having been designed with the needs of the technical student generally constantly in view, whether he be of brewing, dairying, or agriculture. Of the many laboratory guides and technical manuals constantly being issued, this is, without question, for a book of its pretensions, the best that has reached us.

A Text-Book of Diseases of the Eye. A Handbook of Ophthalmic Practice for Students and Practitioners. By G. E. DE SCHWEINITZ, A.M., M.D., Professor of Ophthalmology in the University of Pennsylvania, etc. Fourth edition, revised, enlarged, and entirely reset. Octavo volume of 773 pages, with 280 text-illustrations and 6 chromo-lithographic plates. Philadelphia and London: W. B. Saunders & Company. Canadian Agents: J. A. Carveth & Co., Toronto. Cloth, \$5.00 net; sheep or half morocco, \$6.00 net.

This book has attained its fourth edition, which is sufficient proof of its deserved popularity. Written in the hope that it would prove of service to both students and practitioners, it has more than fulfilled all expectations. The methods of examining the eyes, and the symptoms, diagnosis, and treatment of ocular diseases have received the largest share of attention. The subject matter has been given in greater detail than is customary in books of its scope, doubtless because the author, being a teacher of wide experience, recognized more fully than others the knowledge requisite for the successful practice of ophthalmic science. In this new edition the text has been thoroughly revised, and the entire work has been reset, many new chapters have been added,

such as Thomson's Lantern Test for Color-Blindness; Hysteric Alopecia of the Eyelids; Metostatic Gonorrhoeal Conjunctivitis; Grill-like Keratitis (Haab); the so-called Holes in the Macula; Divergence-paralysis; Convergence-paralysis, and many others. A large number of therapeutic agents comparatively recently introduced, particularly the newer silver salts, are given in connection with the diseases in which they are indicated. The illustrative feature of the work has been greatly enhanced in value by the addition of many new cuts and six full-page chromo-lithographic plates, all most accurately portraying the pathologic conditions which they represent. There is no question that this fourth edition will attain the same popularity as did its predecessors.

Diseases of the Bronchi and Pleura; Pneumonia. "Diseases of the Bronchi," by DR. F. A. HOFFMANN, of Leipsic. "Diseases of the Pleura," by DR. O. ROSENBACH, of Berlin. "Pneumonia." By DR. F. AUFRECHT, of Magdeburg. Edited, with additions, by JOHN H. MUSSER, M.D., Professor of Clinical Medicine, University of Pennsylvania. Handsome octavo volume of 1030 pages, illustrated, including 7 full-page colored lithographic plates. Philadelphia and London: W. B. Saunders & Co. 1902. Canadian Agents: J. A. Carveth & Co. Cloth, \$5.00 net; half morocco, \$6.00 net.

This, the fourth volume to be issued of Saunders' American Edition of Nothnagel's Practice, fulfils all expectations. The eminent authors of the valuable monographs which comprise this volume had, by their breadth of learning, their exhaustive research, and extensive practical experience, made their essays almost complete as originally written. Nevertheless, the author, in the light of recent research, has made numerous valuable additions, so that the American edition represents the present state of our knowledge on the subjects under discussion. Among other things, these additions include new matter on the anatomy and physiology of the bronchi; on foreign bodies in the tubes; on the pathology, bacteriology, and treatment of bronchitis, and the recent researches on bronchiectasis and on eosinophilia in asthma. Much new matter has been incorporated into the section on pneumonia, including the recent work of Hutchinson and others on the blood and urine in that disease. In the pleurisy section will be found an account of the latest bacteriological

studies, and references to the work of Morse on the leucocytes in pleurisy, to that of Williams and others on X-ray diagnosis, and to the Litten phenomenon. The work in every particular is thoroughly up-to-date, and no criticism is possible but praise.

A Text-Book of Materia Medica, Therapeutics, and Pharmacology. By GEORGE F. BUTLER, Ph.G., M.D., Professor of Materia Medica and Therapeutics in the College of Physicians and Surgeons, Chicago, Medical Department of the University of Illinois, etc. Fourth edition, thoroughly revised. Handsome octavo volume of 896 pages, illustrated. Philadelphia and London: W. B. Saunders & Co. 1902. Canadian Agents: J. A. Carveth & Co., Toronto. Cloth, \$4.00 net; sheep or half morocco, \$5.00 net.

The new edition of this commendable work is offered to the profession after a careful and complete revision. The pharmacology and therapeutics of each drug have been thoroughly revised, incorporating all the recent advances made in pharmacodynamics. In view of a larger experience, resulting in more definite conclusions, numerous modifications have been made in the expressions of opinion regarding the utility of certain drugs, notably the newer synthetics. The chapters on organotherapy, serum-therapy, and cognate subjects have been enlarged and carefully revised. But perhaps the most important addition is the chapter on the newer theories of electrolytic dissociation and its relation to the topic of pharmacotherapy, and the relevant discussion added of the simpler relations of chemical destruction to drug-action. The profession will undoubtedly greet most cordially this new fourth edition of a work supplying the student of medicine with a clear, concise, and practical text-book, adapted for permanent reference no less than for the requirements of the class-room.

Special Selections

THE BRADSHAW LECTURE ON INFECTIVE ARTHRITIS.*

BY HOWARD MARSH, F.R.C.S.,
Surgeon to St. Bartholomew's Hospital.

Mr. President, Ladies and Gentlemen,—In my first words I must convey to you, Mr. President, my thanks for conferring upon me the honor of giving the Bradshaw Lecture this year. Within the walls of the Royal College of Surgeons of England, where Hunter laid the foundation and considerably advanced the development of the grandest museum of its kind in the world, where his spirit has ever since been present to inspire his followers, and where his work has been continued by Cooper, Lawrence, Owen, Paget, and our present distinguished curator, Professor Stewart; where our library grows year by year larger, and, as we believe, more and more useful for study and reference; and where at our examinations we have in the name of English surgery highly important duties to discharge, to be invited to lecture is an honor which he who is worthy of it cannot but warmly appreciate. Nor certainly for a moment can he forget the responsibilities which the office involves.

LORD LISTER.

But before I pass to the lecture itself, there is a circumstance to which, Mr. President, I think you would wish me to allude. On December 9th, 1852, just fifty years ago yesterday, a certain candidate passed his examination and became a fellow of the College. He came from Essex, and his name was Joseph Lister.

What that name has since become, not only in the annals of English surgery, but among the greatest benefactors of the human race, we all remember with admiration and with gratitude. The poet Gray alludes in trenchant phrase to those who show the gates of mercy on mankind. Lord Lister has done more than any living man to throw them open. No matter in what century the roll of fame is called, the name of Lister can never henceforth be omitted from it.

Lord Lister was never the man to seek recognition or reward,

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yet honors have flowed in upon him from every direction, and surely his cup became full when a few months ago he stood by and saw his principles turned to account in one of the most dramatic incidents of history, and when by appealing to them, Sir Frederick Treves, with conspicuous skill and conspicuous fortitude, averted the imminent peril which beset our King. The profound joy with which his subjects in every part of the world hailed the King's recovery was, in our profession, intensified by the fact that His Majesty, by constant devotion and earnest labor in the development of his Hospital Fund—which reached the unprecedented sum this year of £100,000—has made himself the greatest and most productive philanthropist of his generation.

HISTORICAL.

This lecture, together with a similar one at the Royal College of Physicians, was founded by the late Mrs. Bradshaw, to honor and perpetuate the memory of her husband, the late Dr. William Wood Bradshaw, M.A., D.C.L., Oxford. Her action was at once affectionate and enlightened. She hoped that successive lecturers would, each in his turn, do something to advance the profession to the pursuit of which her husband had devoted his life. And it remains to each Bradshaw lecturer to give effect, to the best of his capacity and knowledge, to the objects which she had in view.

The subject I have chosen is that of infective arthritis: in other words, I propose to discuss those diseases of the joints which are due to infection. I have not taken this subject as one that is altogether new, for it has long been known that in such instances as septicemia, pyemia, and other allied conditions, the joints are liable to become infected. I have chosen it because recent advances in bacteriology and exact clinical observation have made it clear that joint affections of this origin are much more frequent than was formerly supposed. Thus while no doubt much will still be added to our knowledge, the time, I think, has come when it may be useful briefly to review what has thus far been done.

In general pathology, one of the main advances recently made has consisted in the discovery of the large part which infection by various micro-organisms plays in the production of disease. Thus, for example, peritonitis, only a few years ago, was supposed to arise as an independent form of inflammation, to be, as the phase was, idiopathic. It is now well established that no such form is ever met with, but that inflammation is, in the large proportion of cases, infective and due to micro-organisms, of which several forms have been recognized. And as it is with

the peritoneum, so it is with the joints. When inflammation occurs in a joint, while it is never idiopathic, it is often infective, and is produced, moreover, by agencies which, when they were first discovered, were supposed to be limited in their action to other structures. Indeed, there exists a close parallel between the peritoneum and the joints in regard to infection; and that this should be the case appears even at first sight probable when the similarity of structure between the peritoneum and the synovial membranes is borne in mind. Both consist of an epithelial layer and a substratum rich in blood vessels, along which infective agents easily pass, and through the walls of which their migration can readily take place. A notable illustration of joint infection is met with in the case of the pneumococcus or the bacillus lanceolatus. This micro-organism, originally discovered in the saliva and shown to be a pathogenic agent by Sternberg, was subsequently proved by Fraenkel to be the active agent in the production of acute lobar pneumonia, and, in the absence of any suspicion that it invaded other organs, it was termed the pneumococcus or lung coccus. Later investigations have shown, however, that it has a far wider range, and that it not only produces pleurisy, peritonitis, pericarditis, and meningitis, but also acute primary arthritis.

In fact, the general statement may now be made that in, at all events, the great majority of specific diseases, the joints are liable to infection. In compiling the list of these diseases tuberculosis and syphilis need not now be considered, and the common forms of septicemia and gonococcal infection are so well known that they need not be further alluded to. There will then remain the following: pneumococcal infection, typhoid fever, influenza, scarlet fever, dysentery, erysipelas, and glanders. Lastly, there is the doubtful case of acute rheumatism.

PNEUMOCOCCIC ARTHRITIS.

The discovery in 1888, by Weichselbaum, that the pneumococcus (*diplococcus lanceolatus* of Fraenkel) has the power of producing acute inflammation of the joints, was of the highest importance, not only on its own account, but because of the impetus it gave to the study of the general subject of infective arthritis. In January, 1901, Dr. E. Cave published his paper on pneumococcic arthritis, and furnished a table of the cases which had so far been recorded. The list included 31 examples. Dr. Cave's paper was so complete that little of importance has since been added to his description of this affection.

In all these cases arthritis was developed from two to fifteen days after the onset of acute pneumonia. In two instances,

however, referred to by Cave, arthritis is said to have preceded the pneumonia, in one by three, and in the other by seven days. In three cases arthritis occurred independently of pneumonia. Of the thirty-one cases, no fewer than twenty-five are known to have been males. The disease in different cases attacked all the large joints in turn, the hip, however, only in one instance. The age varied from five to seventy-one years; but only two patients were children. The great majority were between thirty and sixty, while six were over sixty, and two between seventy and eighty. In some cases only one joint was attacked, in others several were involved. The disease was somewhat more frequent in the upper than in the lower extremity.

As to the form of inflammation, suppuration occurred in as many as twenty-seven instances. The extremely grave nature of this form of arthritis is conclusively indicated by the fact that of the thirty-one cases in Cave's table, no fewer than twenty-three—that is, nearly seventy-five per cent.—terminated fatally.

The high mortality which attended these cases has been observed in other cases also. It is due to the fact that the pneumococcus produces a general systematic infection—in other words, an acute and profound septicemia of which the arthritis is merely a local manifestation, others being, in addition to acute pneumonia, malignant endocarditis, pericarditis, pleurisy, and empyema, meningitis, peritonitis, nephritis, and otitis media. In a case (Leroux's) mentioned by Cave, the necropsy disclosed endocarditis, a purulent meningitis, pleurisy, peritonitis and arthritis, a group of lesions which shows that, amongst agents giving rise to general infection, the pneumococcus occupies a bad pre-eminence, while its morbid anatomy may be summarized in the statement by Cave that it is essentially the same as that of any other septic infection.

The pathology of the pneumococcus in respect to the human subject and to animals has been set forth by Foulerton in an able and exhaustive paper printed in the *Lancet*, August, 1901.

ARTHRITIS IN TYPHOID FEVER.

Since attention was first drawn to this subject by Parise in 1842 several writers have alluded to it, and recorded their observations. Among these may especially be mentioned Keen, of Philadelphia, who, in 1898, published his important monograph on the complications and sequelæ of typhoid fever, including a chapter on affections of the joints, and Barjon and Lesieur, whose essay on "*Septicémie Eberthienne*" was published in 1901.

Keen, placing himself in line with previous writers, states

that there are three forms of joint disease met with in association with typhoid fever :

1. Rheumatic typhoid arthritis.
2. Typhoid arthritis proper.
3. A form of septic arthritis.

(1) Under the head of rheumatic typhoid arthritis are placed cases in which at the commencement of the illness, sometimes as the earliest symptom, the patient complains of severe pain in the knees, elbows, or other joints, which are the seat of varying degrees of swelling. Usually the affection lasts for a few days and then disappears without leaving any ill-effects. In other instances effusion increases in quantity and suppuration occurs. As a good example of this early form Dr. Percy Kidd has given me notes of the following case :

A girl, aged 17, was admitted into the London Hospital, December 9th, 1899, having complained for two or three days of pain in her left knee, which was swollen. Her case was at first regarded as one of acute rheumatic arthritis. The knee, however, became worse, and on the 14th was explored, as suppuration was suspected. No pus was found. Two days later the temperature was 105 degrees, and diarrhea, faint rose spots, and Widal's reaction disclosed typhoid fever. Death occurred sixteen days later from intestinal hemorrhage, and typhoid ulcers were found in the intestines. The joint affection had subsided. Unfortunately no bacteriological examination was made.

To speak of these cases—not that Dr. Kidd does so—as rheumatic typhoid arthritis because they in some respects resemble acute rheumatism is but another example of the confusion which results when terms, which themselves are (in the absence of precise knowledge) virtually meaningless, are so used as to suggest pathological theories. The real nature of these cases is at present undetermined; but it seems likely that the joint condition will prove, on further investigation, to be the direct result of some irritative product of the typhoid bacillus.

(2) *Typhoid Arthritis Proper.*—This is met with in the acute stage of typhoid fever, or towards its decline. Occasionally it makes its appearance during convalescence. Its features vary in different cases. Several joints may be involved (polyarticular form) or it may be limited to one (monarticular). In the former two, three, or more of the larger joints may be attacked. There is pain, together with more or less swelling, due in part to infiltration and thickening of the synovial membrane, and in part to the effusion of turbid fluid into the joint cavity. In some instances the attack subsides and recovery follows. In others, the joints, after prolonged inflammation, undergo fibrous

ankylosis, which can be removed, if at all, only by repeated manipulation under an anesthetic and prolonged passive movement and massage. Or, again, suppuration may ensue, necessitating free incision and irrigation.

In the monarticular variety it is the hip which in the great majority of cases is involved, and the result is usually serious, for some cases end in firm fibrous ankylosis much resembling that which ensues after gonococcal infection, while in others (and much more frequently) the capsule becomes distended by serous effusion, and then either spontaneously, or when the patient is lifted, dorsal dislocation occurs.

The pathology of this group of cases is as yet but imperfectly worked out. Such evidence, however, as is at present available tends to indicate that the arthritis is due to the local action of the typhoid bacillus on the tissues concerned. It is well known that, although the typhoid bacillus is not usually present in the general circulation, it is to be found in the liver and the spleen, in bone and marrow, and in the rose spots on the skin; in other words, that it is widely distributed in the tissues. It is therefore easy to see that along with other parts the joints may be invaded by it. Positive evidence, however, of the presence of the bacillus in the joints is as yet very limited. Several observers who have examined fluid withdrawn from joints in these cases have found that it was completely sterile. Too much weight must not be attached to this negative result.

Possibly the bacillus, although originally present, subsequently undergoes disintegration. It is not rare to find collections of pus in various parts which are sterile but which almost certainly were produced by micro-organisms now no longer to be found, and Cave remarks that even in some cases of suppurative arthritis occurring in association with pneumonia the pus removed from the joint has been sterile; but in such cases it is nearly certain that the pneumococcus was originally present. Or the explanation suggested by Widal that the arthritis was produced not by the pneumococcus itself but by toxins derived from it may be correct, a view which may also be held in the case of the arthritis of typhoid.

On the other hand, Delanglade and Chibret found the typhoid bacillus in the joint fluid, while Orloff produced arthritis by injecting the bacillus into the joint of a rabbit. Further observations are required to determine the real origin of the form of arthritis under discussion, but at present such evidence as we possess points, as I have said, to the conclusion that the typhoid bacillus may produce arthritis by its specific action on the tissues, just as may the gonococcus or the pneumococcus.

(3) *Septic Arthritis*.—It will readily be understood when the condition of exhaustion to which the patient is reduced by typhoid fever is borne in mind, that septic arthritis is a highly dangerous complication. It is, in fact, very generally fatal. It, however, presents no specific characters. It is an instance of the common form of septic infection, and is due to the presence of streptococci or staphylococci which have been absorbed from boils, or bedsores, or from the surface of intestinal ulcers. Perhaps the bacillus coli communis may also in some instances be concerned, but as to this there is, so far as I know, no positive information.

ARTHRITIS IN SCARLET FEVER.

The arthritis which is not very rarely associated with scarlet fever occurs in two forms. The first is often indistinguishable clinically from acute rheumatism. It makes its appearance either quite early—while the rash is still present—or during the desquamative period. It usually involves several joints, is not severe in character, and, in the majority of cases, soon subsides. As to its pathology, Dr. Hilton Fagge remarks, "Probably most cases of synovitis following scarlet fever are true rheumatism." Osler regards it as analogous to gonococcal arthritis, while Dr. F. Taylor holds practically the same view, for he says, "Although known as scarlatinal rheumatism, it is possibly an arthritis due to the direct action of the septic organism of the primary disease." This, in the present state of our knowledge, and judging by such instances as the pneumococcal, gonococcal, and probably also typhoid arthritis, is likely to be the correct view. The second form is much more severe, and not rarely ends in suppuration. It is usually, as Strumpell remarks, a part of secondary sepsis or a general pyemia, as evinced by such other lesions as empyema, subcutaneous abscesses, splenic tumor, etc. Here, as in the septicemic form of typhoid arthritis, the infective agent is the streptococcus pyogenes, or the staphylococcus.

ARTHRITIS AFTER INFLUENZA.

I have met with two cases which appear to suggest that, with whatever rarity, arthritis may follow influenza. On this subject Boncoumie has contributed a paper to the *Bull. Gen. de Therapeutique*, Vol. cxi., p. 5, 1900. His observations, however, refer not to any specific form of arthritis directly dependent on influenza, but to the predisposition which influenza establishes to attacks of ordinary gout. The subject is one about which little is known, but it seems possible that these cases of

Boncoumie which resembled gout may have been due directly to the action of the influenza bacillus.

The first of my own cases was that of a gentleman, aged 42, whom I saw with Dr. Hetley, of Norwood. The patient had a sharp attack of influenza (which was at the time epidemic in the neighborhood) on May 3rd, 1891. Two days later he complained of severe pain, apparently in the glands below Poupert's ligament; he had a rigor, copious sweating, and a temperature, for the next ten or twelve days, ranging between 102 degrees and 103.5 degrees. During this time nothing abnormal could be detected in the groin or thigh, till on May 11th a band of edema appeared running down the outer side of the limb from the trochanter nearly to the knee, but this was neither painful nor tender. Pain was situated chiefly in Scarpa's triangle on the inner side of the femoral vessels. There was a tender spot also over the sciatic notch. On May 14th the temperature went down and the edema subsided, but some thickening could be felt in front of the joint, and the artery seemed to be pushed forward. At this time the limb was becoming flexed and abducted. There was marked muscular wasting, and pain about the joint was so severe as to call for the hypodermic injection of morphine. Two consultations were held in the next three weeks, but the nature of the case remained obscure. Dr. Hetley, however, formed the opinion that the hip-joint was involved. I first saw the case on July 5th. The patient was very weak, temperature was 101 degrees to 103 degrees. The limb was flexed and adducted; there were night startings and much muscular wasting. Any attempts to move the limb produced severe pain. It was obvious that the joint was actively inflamed. Weight extension in the axis of deformity was used. The symptoms gradually subsided, and the patient gained flesh and strength, and was able in about two months to be up on crutches. When I saw him again in the following December, there were three-quarters of an inch of real shortening, and some adduction to the limb; the trochanter was considerably above Nelaton's line. The joint was stiff, but all active symptoms had ceased. At the present time the patient walks with a stick, but lameness is marked. He has only fatigue-pain. No further shortening has taken place. Any one who now examined the limb would probably regard the case as one of monarticular osteo-arthritis. A few days after the hip was attacked the patient complained of pain in the knee, which was enlarged from periarticular infiltration. There was no fluid in the synovial cavity. This condition persisted for four or five weeks, but then slowly subsided. The joint ultimately completely recovered.

In the second case, a boy, aged 18, after a moderately severe attack of influenza, complained of stiffness and severe pain about the right hip. On his admission, two months later, into St. Bartholomew's Hospital, the limb was flexed and abducted, the joint was stiff, and there was much brawny edema of the soft parts in Scarpa's triangle in the iliac fossa, and on the outer side of the joint, and below and a little internal to the iliac spine there was a suspicion of fluctuation. The inguinal glands were enlarged. The muscles were wasted. The position of the limb was corrected by weight extension and swelling slowly subsided, but stiffness remained. The brawny thickening persisted for several months, and suppuration often appeared imminent. At present the joint is stiff. There is no pain, thickening around the joint remains to some extent. The patient walks with only slight lameness.

As to the sequelæ of influenza, I may mention in passing the case of a surgeon who suffered from acute purulent cystitis, attended with high temperature, severe pain, and rapid loss of flesh and strength after a severe attack of influenza. The bladder was irrigated two or three times a day with warm boracic solution, and in about a fortnight the cystitis subsided, and he ultimately made a complete recovery.

ERYSIPELAS AND ARTHRITIS.

Arthritis as a complication of erysipelas appears to have been first recorded by William Musgrave in 1702, and Boissier de Sauvage mentioned it in 1740. But the arthritis in question was believed to be acute rheumatism, and was by some later writers termed erysipelalous pseudo-rheumatism.

An important contribution to this subject consists of a thesis written by Dr. Rene Jorrot, published in 1899. Dr. Jorrot has collected from various sources a number of cases which show that the joint affection usually occurs in the acute stage of erysipelas, though in a few instances it comes on when the disease is declining. Like the arthritis met with in septicemia, it may occur as—

(a) Transitory synovitis attended with serous effusion and involving many joints and sometimes the sheaths of tendons.

(b) As a plastic form tending towards fibrous ankylosis. This form may be persistent over many weeks; in one case it lasted for two months and a half;

(c) An acute suppurative arthritis by which the joints are rapidly disorganized.

No exhaustive bacteriological examination seems to have taken place as to the agent by which the arthritis is produced.

In the early days a chain coccus was described by Fehleisen as the streptococcus erysipelatis, but this is now very generally regarded as identical with the streptococcus pyogenes. Suppurative arthritis appears to be rare as a complication of erysipelas. Jorrot calls it very rare—one in about two hundred cases.

ARTHRITIS IN GLANDERS.

Delafield and Prudden allude to arthritis as met with in the course of glanders, but they give no detailed account of the affection, nor have I found elsewhere any full description of it. It would probably be acute and destructive.

As to acute rheumatism, although it is believed by many authorities, from the evidence already obtained, that it is an infective disease, there is up to the present no agreement as to the agent by which it is produced; some believe it to be the diplococcus first described by Triloubet, and since carefully studied, among others, by Paine and Poynton; Singer, but with few adherents, holds that it is the streptococcus or the staphylococcus; others consider that the disease is caused not by any one micro-organism exclusively, but by a mixed infection, arising from bacteria lodged in the tonsils or the adenoid tissue of the pharynx.

I have now passed in brief review the principal instances in which the joints are liable to infection in the course of the various specific diseases, and it will be apparent that the infective agent is different in different cases. In some cases it is the same micro-organism (or its toxins) as that which produces the primary disease, as, for example, when acute arthritis occurs as a complication of pneumonia, and the pneumococcus is found in the joints; or when arthritis, developed in the course, or as a sequel, of typhoid fever, depends on the local action of the typhoid bacillus.

The arthritis found in association with scarlet fever appears to be a mild form of ordinary septicemia due to the streptococcus pyogenes or the staphylococcus, while that which is sometimes met with in dysentery is the result of a mixed infection, in which, perhaps, the bacillus coli communis plays a chief part.

In studying these infective agents, it is to be remembered that the effects which they produce may be largely influenced by the varying conditions under which they are placed, as determined, for example, by the resisting power of the individual attacked, the dose received, and the presence of other micro-organisms or their toxins. These are matters about which at present little is known. Little, for instance, I think, is known as to the influence which the typhoid bacillus or its toxins may have

in modifying the action of the streptococcus or staphylococcus, or vice versa.

INFECTIVE JOINT CHANGES.

The changes met with in joints which are the seat of infective arthritis vary considerably in different instances. In some they are slight and transient, and result from synovitis, attended with infiltration of the sub-synovial tissue, and with some, but only a limited amount, of serous effusion into the cavity of the joint. This is the case, for example, in the arthritis which occurs in the early stage of scarlet and typhoid fever.

In a second group, one, two, or more of the joints are painful and swollen from effusion of fluid into the synovial cavity. These are the cases which have been so misleading in consequence of the close similarity of the appearances observed, on clinical examination, to those of acute rheumatism. Although at first, as I have said, merely turbid, the fluid in the joint in some cases soon becomes purulent.

In the third group the inflammatory process chiefly involves the periarticular tissues, and leads to considerable brawny or boggy swelling, and to reddening of skin, which is at the same time so stretched and shiny as to suggest the presence or near approach of suppuration. This is one of the most clearly marked types of infective arthritis, and one with which we have long been familiar in some of the cases of gonococcal infection. In this form there is frequently *no effusion into the cavity of the joint*, and, so far as I am aware, though it seems imminent, suppuration very rarely occurs. Clinically, these cases run a very prolonged and tedious course; they may extend over several weeks, some have lasted two or three months. Many are attended with pain, not only persistent but very severe, and they show a strong tendency to result in firm fibrous ankylosis, which apparently, in some instances, gradually passes on, by ossification of the new fibrous tissue, to complete synostosis. In these respects they furnish a close parallel to one of the forms of arthritis which is met with in the course of the septicemia which follows acute infective periostitis or osteomyelitis.

A fourth group of cases includes those in which the arthritis is, from the first, acute and destructive. Suppuration takes place early, and goes rapidly on to complete disorganization of the joint, and often to the wide burrowing of pus, which has escaped from the synovial cavity, along the intermuscular spaces of the limb. This fourth variety is met with in its most marked phase in pneumococcus arthritis.

UNCLASSIFIED INFECTIVE ARTHRITIS.

Thus far I have been laying before you such an account as time will permit of infective arthritis as it occurs in connection with various specific diseases; but apart from this clearly defined group, and under widely varying circumstances, other examples are met with, and to these I will now ask your attention.

Every one who has many patients passing under his notice meets with cases of joint affection attended with fever, as to the nature of which he is uncertain, but which are traditionally regarded as acute or subacute rheumatism. Now, just as charity covers a multitude of sins, so has the term rheumatism covered a broad expanse of loose pathology. Undefined itself, it has thrown its ægis over many conditions equally obscure. To-day, however, when it becomes more and more probable that acute rheumatism is itself an infective disease, it is seen that many cases which have been termed rheumatism may also belong to the infective class.

Certainly one of the most instructive contributions towards the elucidation of this obscure subject is the paper in the current volume of the Clinical Society's *Transactions*, in which Drs. Paine and Poynton relate the result of their investigations into the pathogenesis of two cases of arthritis under the care of Mr. Page in St. Mary's Hospital. In Mr. Page's first case, a man, aged 34, fell and sprained his right knee. About three weeks later, on his admission (January 11th, 1901) to the hospital, the joint was greatly swollen and very painful. As swelling had not diminished, aspiration was performed on January 15th. The pain, however, continued, and the swelling began immediately to return. The patient was restless and irritable, and as it were "off his head." On January 18th fluid was again removed and the joint washed out with carbolic lotion (1 in 100) till the fluid returned perfectly clear. After this steadily progressing recovery took place.

In the second case a boy of fourteen was admitted March 22nd, 1901, having hurt his knee shortly before Christmas. Some swelling followed, but passed off in a few days. On March 15th he knocked his knee against the wall as he lay in bed. The blow was followed immediately by swelling and considerable pain. On admission the joint was tightly distended with effusion, and he was evidently very ill, his temperature was 100 to 101 degrees F., and he was restless and irritable, and inclined to wander. March 26th.—Fluid removed from the joint. The boy was, however, no better, but rather worse, and his tempera-

ture was higher. On April 2nd the joint was again emptied and washed through with carbolic lotion. From this time he steadily recovered and left the hospital on May 9th.

I can only briefly summarize the bacillary and experimental investigations of Drs. Paine and Poynton, than which it would be difficult to find work more admirably done or more suggestive.

On cultivation the fluid contained numerous very minute diplococci in chains. Twenty minims were injected intravenously into a rabbit. Arthritis followed in several joints. The heart's action became very excited, and a systolic murmur developed at the apex. Two months later the rabbit was killed. The necropsy showed mitral valvulitis. The joints contained exudation like raw white of egg, and showed swelling due to chronic inflammation in the periarticular tissues. Two other rabbits were treated by intravenous injection, and again a polyarthritis was produced. In none did suppuration occur. "The investigation demonstrated," the authors of the paper observe, "that the exciting cause of the arthritis in the second of the two cases described by Mr. Page was a diplococcus, and that this diplococcus resembled in its morphological and cultural characters the diplococcus of rheumatic fever rather than the streptococcus pyogenes."

On a subsequent occasion Drs. Paine and Poynton at a necropsy found in the exudation and synovial membrane of a knee-joint showing all the changes of osteo-arthritis, a diplococcus which in ten weeks produced an osteo-arthritis of the right knee-joint of a rabbit. This observation is of great importance, and we may hope it will not be long before we hear more from the authors respecting this subject. The severe form of osteo-arthritis occasionally met with after parturition seems especially suitable for bacteriological investigation.

In October, 1901, at the Clinical Society, Dr. Percy Kidd showed a female patient, aged 26, who eighteen months before had become the subject of chronic bronchiectasis. Six months later the sputum was offensive and more copious, and the ankle-joints became affected. Subsequently the wrists and knees were involved. When the patient was exhibited both wrists were swollen, stiff, and tender. The fingers were generally enlarged, the joints swollen and tender, and the ends clubbed. The knees were swollen, each containing a little fluid. The ankle-joints were swollen but not tender. A remarkable point in this case was that the condition of the joints varied with the variation in the bronchiectasis, undergoing considerable improvement when the sputum was limited in amount and less fetid in character, but becoming worse when the sputum was more copious and more fetid.

In other words, the amount of arthritis seemed clearly to depend on the amount of absorption that was taking place.

In a second case recorded by Dr. Kidd, in a man aged 30, who was suffering from a foul and copious discharge due to bronchiectasis, the knees, wrists, and ankles were swollen and contained fluid. This patient stated that he had had gout on several occasions during the last six years, but the present joint affection began three years ago with pain and stiffness in the knees and ankles. He had chronic cough with expectoration for three years, and for a year the sputum had had a foul taste.

The fact that this patient had suffered from gout, so that his joints were already damaged, may be noted in reference to the case recorded by Barjon and Lesieur. A girl, aged 17, having had typhoid fever when she was eight, and acute rheumatism when she was eleven, was attacked on October 1st, 1900, with acute illness, accompanied by raised temperature, a cardiac *bruit* and painful swellings of several of the joints. The joint symptoms completely disappeared by October 15th. But the general illness continued and now presented the phenomena of typhoid fever: there were rose spots, profuse diarrhea, high temperature, bronchitis, and delirium. Death occurred on October 28th. At the necropsy no intestinal lesions were found. But that the disease had been typhoid fever was proved by the discovery in the blood (removed from the patient on October 12th) of the typhoid bacillus. The view the authors held in respect to this case was that while the glandular structures of the intestine had been rendered immune by the first attack of typhoid and so escaped, the joints, already damaged by acute rheumatism, had lost their normal resistance, and thus became localities in which the irritative action of the typhoid bacillus, or its toxins, could take effect.

Thus both in Dr. Kidd's case and in that just described, the joints were, it appears, predisposed to attack in consequence of their diminished powers of resistance, produced by previous gout in one and acute rheumatism in the other, and bearing on this same loss of resistance, we notice that in Dr. Cave's table, in no fewer than 10 out of 31 cases, pneumococcal arthritis was developed in recently injured joints; while in Verco's case pneumococcal infection declared itself a few hours after a young lady had been exposed to cold by passing through the house during a night in October in her nightdress. Within forty-eight hours the right knee-joint, which was swollen and painful, was punctured, and yellow pus was withdrawn.

The influence of injury, of whatever kind, in predisposing joints to attack by the pneumococcus and other micro-organisms

should be carefully kept in view. Unless this is done, cases really depending on infection may be regarded as merely traumatic, and so the requisite treatment by evacuation and irrigation of the affected joint may be withheld until very serious mischief has taken place.

Dr. W. H. Brook recently described at the Clinical Society an epidemic which occurred in May, 1902, in Lincoln, and which was traced to infected milk. A large number of people were suddenly attacked with a very severe sore throat and edema of the fauces and uvula. The tonsils were coated in many cases with a drab-colored fur. The cervical glands were enlarged and tender, and there was in many instances a skin-rash resembling urticaria. One patient died of pyemia. High temperature was reduced in several cases by the administration of antistreptococcus serum.

One of these patients, a man aged 37, had, on about the tenth day of illness, intense pains in the knees, ankles, and elbows. The slightest movement produced agony. None of the joints contained fluid. There was no endocarditis. For several weeks the patient was unable to move any of his limbs. Now he can walk, but with great difficulty.

Similar joint symptoms were present in several other cases.

On the subject of infective arthritis, Mr. Clement Lucas's observations (1885) on the occurrence of infection of the joints as a complication of ophthalmia neonatorum formed a very important contribution. His views are fully recorded in his paper in the *Med. Chir. Trans.*, 1899, while other observers have amply confirmed him. Among the most instructive papers is that by Dr. Hawthorne, in the *British Medical Journal*, May, 1902.

In Dr. Hawthorne's case speedy and complete recovery resulted when the conjunctival discharge was removed by treatment, that is, when the supply of infective material was stopped, a result corresponding with the variation in the degree of arthritis mentioned in Dr. Kidd's case dependent on the condition of the bronchiectasis, and as to the amount and character of the discharge.

THE ACUTE ARTHRITIS OF INFANTS.

In 1874 Sir Thomas Smith described, under the title of "Acute Arthritis of Infants," a series of cases in which young children were attacked with an acute form of arthritis attended with early suppuration and disorganization of the joints, and often terminating fatally. All the patients were under a year old, and in several the affection was developed in the first week or two

of life. In some instances as many as four of the large joints were involved. In one infant swelling of the right knee was noticed very soon after birth, and in the next month the opposite knee, the left elbow, and the left ankle, were attacked. In one case a female infant, four weeks old, along with purulent poly-arthritis, had empyema. In these cases on necropsy it was almost invariably found that the arthritis was secondary to an abscess which had developed in the end of one of the bones forming a joint, and had made its way through a pinhole orifice in the cartilage into the joint. When his paper was written Sir Thomas Smith was not in a position fully to explain the pathology of these abscesses, although the necropsy indicated in some of the instances that the cases were associated with pyemia. But no one would, I think, at present hesitate to believe that they were infective in their origin. Probably the infective agent concerned was either the streptococcus pyogenes or the staphylococcus. Precisely where the primary infective process was situated is uncertain. In some instances it perhaps was connected with suppuration around the funis, in others with septic conditions in the nose or pharynx, whence, or from some other locality, the infection was carried in the blood stream into the vascular cancellous tissue in the end of one of the bones. My object in mentioning these cases is to add them, as I am sure I may do, to the list of cases of infective arthritis.

The following cases have been seen in the past few years, either in consultation or in St. Bartholomew's Hospital:

CASE 1.—A man, aged 54, who had been a free liver, and had diabetes, had a large boil on the abdomen, near the groin. This was opened, and two drachms of offensive pus were let out. Within two or three days he had very acute inflammation of the right knee-joint, which became flexed, considerably swollen, and globular from periarticular infiltration (there was no fluid in the joint) and intensely painful. The skin was red and shiny, suggesting early suppuration, but none occurred. The patient had a high temperature and was very ill. On seeing him, with Mr. John Adams, of Aldersgate Street, I suggested boric fomentations and weight extension. Under treatment, very carefully carried out by Mr. Adams' partner, Dr. Dyson, slow improvement occurred, and in six months the patient was able to be upon crutches; fibrous ankylosis, however, occurred. The patient is now well, and the joint is free from pain. The knee is slightly flexed, and quite stiff.

CASE 2.—A case almost exactly similar, except that the source of infection was untraced, was that of a lady, aged 37,

a patient of Dr. Haynes, of South Kensington. This lady "caught a sharp chill" at an evening entertainment and cold weather. Next day she had severe pain in the right knee, which became red on the surface and considerably swollen. Pain was so severe and prolonged that it was necessary to keep the joint on a splint for two months. For several weeks the temperature was raised. Pain and swelling subsided slowly, but the joint was left firmly ankylosed. At the present time there is no pain, but the knee is stiff and still enlarged by brawny periarticular thickening.

CASE 3.—An unmarried lady of 23 had acute arthritis of the right knee following a wrench at tennis. The joint a week after the injury was considerably swollen, very painful, and covered with dusky red skin. The joint contained no fluid, but the periarticular tissues were thickened and brawny. The limb was kept at rest on a back splint and swung from a cradle. The patient's temperature was 99 degrees in the morning and 101 degrees in the evening, and for the next month pain continued to be severe, and it seemed probable that suppuration was about to occur. From this time, however, very slow improvement took place, and at the end of three months the splint was removed. The limb was in good position, but the joint had undergone close fibrous ankylosis, and the patella was firmly fixed on the condyles of the femur. The patient six months later was walking on the limb, but the joint was so completely rigid that I believe the ankylosis, which was at first fibrous, had now become bony.

CASE 4.—Mr. X., aged 24, had an illness extending about six weeks, and attended with rise of temperature. Several of the large joints and the finger-joints were the seat of pain and swelling but the left ankle was especially involved. It was extremely painful and considerably swollen. All the other joints recovered, but the ankle remained inflamed and painful for two months, and ultimately became firmly ankylosed. I saw Mr. X. in consultation with Sir A. Garrod, and we agreed in regarding the condition as gonococcal in its origin; but this the patient firmly denied. As the foot was in the condition of slight equinus, I manipulated it under ether and brought it up within a right angle with the leg. During this proceeding, which required some force, strong cicatricial tissue was torn through. The ankle-joint itself remained stiff, but by long-continued manipulation and exercises considerable movement was required in the medio-tarsal joint, so that the patient ultimately walked with only slight lameness. It is, of course, impossible to be sure that

gonococcal infection did not occur in this instance; but as the patient, who was intelligent and straightforward, persistently denied it, it seems unreasonable to assume its presence, and, looking at the case in the light of recent experience, I now regard it as one of some other infection, although here, as in preceding cases, what the agent was—whether the pneumococcus, the streptococcus, or some other—I cannot say.

CASE 5.—A man, aged 29 years, was admitted into St. Bartholomew's Hospital in whom all the large joints of the lower extremities had undergone ankylosis, after an illness attended with fever of thirteen weeks' duration. As to the nature of this illness no trustworthy information could be obtained, but apparently there had been no gonorrhœa. I think there need be no hesitation in pronouncing this case is one of infection; but what the infective agent was must remain uncertain.

CASE 6.—A lady, aged 35, was suddenly attacked with swelling and severe pain in the left ankle, which became uniformly and considerably swollen. Pain in the next three days increased to great severity. The temperature was 101-102 degrees, and the skin was red and shiny, as if suppuration would occur. The joint was carefully supported in a poroplastic splint, and covered with warm boric fomentation. As the patient had had gout on a previous occasion, this attack was at first considered to be of this nature, and colchicum was prescribed. No improvement followed, and sodium salicylate also failed to give relief. Morphine was used hypodermically for seven or eight days to relieve the severity of the pain. The symptoms slowly subsided. Three months later the patient could walk on the foot, but the joint became firmly ankylosed. The source of the infection, which I cannot doubt was present, was quite obscure.

I have felt compelled, even at the risk of being wearisome, to state the clinical evidence which has led me to believe that scattered about in everyday practice, are a number of cases which have hitherto been regarded as rheumatic, but which are really infective. Many such cases, it is true, when they are taken singly, present no distinct resemblance to what is usually regarded as the typical form of infective arthritis. When, however, they are massed together, and their features are compared, and when they are studied in connection with observations which have recently been made in bacteriology, their real nature appears to admit of scarcely any reasonable doubt, and I venture to anticipate that in the future their comparatively common occurrence will be generally recognized.

PROGNOSIS AND TREATMENT.

In the first form of infective arthritis which I have mentioned, that, namely, which consists of a transient synovitis, attended with limited effusion, prognosis is favorable. The arthritis soon subsides, often in the course of four or five days, and the joints completely recover. A suitable splint and warm fomentations will be the only treatment required.

In Group 2, in which the joint cavities contain fluid, the treatment imperatively called for is clear. It is the same as that which should be employed in gonococcal infection. The fluid must at once be removed and the joint freely irrigated, either with carbolic lotion, 1 in 100, or with mercurial solution, of which, perhaps, the best form is biniodide, 1 in 1,000. To evacuate the fluid, a full-sized hydrocele trocar and cannula may be used, and irrigation can be readily performed through the cannula; or the joint may be opened by an incision at the side of the patella. If the fluid proved to be already purulent, the joint must be freely opened and the finger inserted to break down any adhesions which may have formed, and behind which pus might be imprisoned, and then thorough and copious irrigation must be carried out. The immediate improvement and complete recovery observed in Mr. Page's cases after evacuation and irrigation was very striking, and it has its parallel in what, I think, many surgeons will have observed in cases of pyemia, namely, that when a joint has become extended with pus, if it is freely opened and copiously irrigated, it may forthwith undergo a startling improvement, and, if the patient survives, may completely recover and retain absolutely free movement.

In the third or plastic form, prognosis is distinctly unfavorable. The arthritis tends, as I have said, to extend over a considerable period. A large amount of new fibrous tissue is developed both between the articular surfaces and in the periarticular tissues, and the joint is converted into a massive scar, so that firm fibrous ankylosis, which may subsequently become bony, results. This strong tendency towards ankylosis is, I think, one of the especial characteristics of infective arthritis; nor are any means at present known by which it can be prevented. As to treatment, the best that can be done is to keep the joint for the time being at complete rest; indeed, the pain is such that no alternative can be thought of. Warm boric or opiate fomentations are required during the most acute stage, but when swelling and heat have somewhat subsided a succession of small blisters will alike relieve pain and promote absorption. Later still, massage will be required to remove the brawny edema of the soft parts.

A very important question is, whether, in any of these cases, manipulation should be employed with the object of restoring movement. In the slighter cases this is advisable, but when inflammation is either severe or prolonged, the joint becomes filled up with cicatricial tissue and the restoration of movement is impossible. Forcible manipulation in such conditions is not only useless, but definitely mischievous, for it renews irritation and promotes the formation of scar tissue. Moreover, I have seen instances in which manipulation has left a joint which was previously free from pain so sensitive and painful for many weeks that it was necessary to keep it at complete rest, so that instead of being diminished, stiffness was increased.

In the fourth group prognosis is highly unfavorable, for the arthritis is but one of the manifestations of a general septicemia, and is often associated with other lesions of the gravest kind. Often the arthritis is rendered comparatively unimportant—except for the suffering it entails—by the speedily fatal termination of the case. In those rare cases, however, in which the septicemia is of a milder type and other local developments are absent, if the joint is at once freely opened and irrigated, repair may take place sometimes with ankylosis, sometimes with the restoration of considerable, or even completely, free movement.

In the future when our knowledge of pathology has become more exact, and when each infective agent can, as we may hope, be opposed by an appropriate antitoxin serum, these cases may be treated with much more success than is at present possible.—*British Medical Journal*.

TREATMENT OF RUPTURE OF THE UTERUS.

The writers (Draghiesco and Christeanu, *Annales de Gynecologie et d'Obstetrique*) begin by agreeing with Varnier, who, in a recent paper on twenty-three cases of rupture of the uterus, comes to the conclusion that total abdominal hysterectomy is the only proper treatment. They have collected 77 cases in the years between 1880 and 1901, but naturally only their recent cases can have much weight at the present day. Till the end of 1899, they had 71 cases treated by temporary drainage and douching, with a death-rate of 75 per cent. In their next three cases, they sutured the tear and lost 33 per cent. In their last three cases, they did total abdominal hysterectomy with vaginal drainage, and all three recovered. Of the 77 cases 73 were in multiparæ. The seat of the lesion was found to be 33

times in uterus and vagina, 29 times in the vagina alone, and 8 times in the uterus alone.

While the writers remark that complete rupture is far more dangerous than incomplete, they admit that in some cases it is impossible to distinguish the one from the other before the autopsy. The causes of the increased mortality in the former are, of course, hemorrhage, and to a far greater extent septic infection. They have come to the conclusion that total abdominal hysterectomy with vaginal drainage is the only feasible treatment, for the following reasons: Their 71 cases treated with douching and drainage had a death-rate of 75 per cent. They had a smaller death-rate with suture of the uterine tear, but this made a future pregnancy possible, and such pregnancy was not without risk. It has been found that the cicatrix, in future pregnancies, is very thin, and Brunings quotes one case seen by him when the scar was as thin as a sheet of paper. Varnier, out of 15 cases of rupture, had 5 repeated ruptures, and of these 3 died, while the writers themselves had one case in which the uterus had ruptured three times, the last ending fatally. They recommended vaginal drainage since they have found that abdominal drainage gives more chance of sepsis, is more liable to set up some peritonitis which may cause adhesions to the abdominal wall, and is further apt to lead to future hernia of the cicatrix. In all cases of complete rupture with escape of the child into the abdominal cavity, they recommend removal through the abdominal wound.

As for incomplete rupture, they recommend immediate extraction of the fetus, and total abdominal hysterectomy. The peritoneal cavity, in such cases, does not require such careful treatment unless signs of peritonitis are already visible. In these cases the position of Trendelenburg is recommended, while in the complete rupture, with the greater chances of septic infection, the horizontal posture is preferred.—*The Medical Chronicle*.