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ULCERATION OF THE CORNEA.

SOME POINTS ON ETIOLOGY AND TREATMENT.

BY

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(From the Pathological laboratory of the Montreal General Hospital.)

It will be readily understood that in a paper limited to fifteen minutes it is not proposed to deal fully either with the etiology or treatment of ulcerative processes of the cornea, but rather to touch upon one or two points which seem to mark an advance in our knowledge of this subject. That disease of the cornea makes an important chapter in ophthalmology you will all agree, that ulceration of the cornea forms the most important part of that chapter will not be denied. One quarter to one third of all ophthalmic disturbances consist of corneal disease. Uhthoff, in ten thousand blind people, found thirteen per cent. due to corneal disease. Of the suppurative forms of keratitis ulceration of the cornea is the most common. The frequency of this affection, the serious damage to sight which it often causes demands from us most intelligent treatment.

Under etiology there are many points apart from the direct cause which need to be considered. The cornea is not supplied with blood vessels, so that the central part, so often the starting point, is less able to combat disease than is the periphery. Then, too, the cornea is the most exposed part of the eye to external injury. At its margin the cornea meets conjunctiva, sclera, and uveal tract. It is therefore divided into three parts: a conjunctival, a scleral and a uveal. From Fuchs quoting Waldeyer we learn the conjunctival portion consists of the anterior epithelium, Bowman's membrane and some of the anterior lamellæ of the corneal stroma. The scleral portion consists of the

Read at the section of Ophthalmology and Oto-Laryngology of the Canadian Medical Association, June, 1908.

middle layers of the lamellæ, while the uveal portion equals the posterior lamellæ, Descemet's membrane and the endothelium. Bearing this division in mind helps considerably in understanding the route of pathological processes. The conjunctival portion of the cornea suffers most from pathological conditions of the conjunctiva. We know the majority of cases of conjunctivitis are caused by pathogenic micro-organisms. We know also that corneal regenerative processes are about as rapid as the conjunctival, but when pathogenic bacteria complicate the repair, conditions are different. Ordinarily the cornea has a sufficient amount of lymph for its nutrition, but with the entrance of pathogenic micro-organisms upon the scene, the cornea is vastly inferior in regenerative ability. It is now a struggle between micro-organisms and the cells which have so often a considerable distance to go. This is why ulceration in the centre of the cornea develops and spreads so easily.

Ulcers begin as a rule in the conjunctival part of the cornea, quickly invade healthy tissue and entail a loss of substance. When repair begins, the cells of the tissue conquer the pathogenic processes by opposing to them a barrier of cells—a zone of infiltration. This produces an arrest of the ulcerative process. The loss of substance must now be replaced. The histology of ulcers of the cornea has been thoroughly studied. Loss of epithelium is replaced by growth of epithelium from the edges of the ulcer, that is, healing with a perfect restoration to the normal state without leaving a permanent opacity. Loss of corneal stroma is filled by ciccatricial tissue from the bottom and sides of the ulcer and is different from the normal tissue of the cornea. It is opaque.

Inflammations of the cornea may be divided into two groups, primary and secondary. This division is especially applicable to ulcers. By secondary, we mean ulcers the result of inflammation in the conjunctiva and in this group belong the vast majority of cases. The normal conjunctival sac is at times the seat of pathogenic bacteria and many cases of conjunctivitis from micro-organisms may be so mild as to cause the patient no inconvenience. When in these cases the epithelium is abraided, or when in cases of pronounced conjunctivitis or dacryocystitis the cornea is accidentally scratched the entrance of bacteria into the corneal tissue is allowed. When this happens the conjunctival micro-organisms play a most important rôle, to such an extent in fact, that our results, good or bad, depend upon our ability in combating this cause. Too frequently, while doing our best, we see useful vision destroyed, and this so often in patients who can ill afford the wage earning ability of one eye.

Now, what is the most common cause of ulceration of the corneaé For a comparison I have taken 41 consecutive cases from hospital and private practice, where in each case an attempt has been made to find a definite etiological factor. Of these 41 cases

21 were due to the Morax-Axenfeld diplo-bacillus.
2 were due to the Gonococcus.
8 were due to the Pneumococcus.
2 were due to the Streptococcus Pyogenes.
3 were due to the Staphylococcus Pyogenes Aureus.
2 were due to the Staphylococcus Pyogenes Albus.
2 were not due to bacterial infection.

We have in this list 22 cases caused by the diplo-bacillus, that is, in more than half of the cases, if seen early, there is no reason why the ulcerative process should extend beyond the corneal epithelium, so that in over 50 per cent. of the cases, healing should take place without scar tissue and with normal vision.

In the Montreal district, the commonest form of conjunctivitis is the Morax-Axenfeld or diplo-bacillary, a form so varying in its clinical appearance and severity that a diagnosis must depend upon the bacteriological examination. How common it is may be better judged from the fact that in less than three years I have seen over 400 cases here. A number of the cases here reported, followed the removal of a foreign body. Generally the ulceration complicating diplo-bacillary conjunctivitis is of the catarrhal type. It was formerly thought a superficial ulceration at the periphery of the cornea was characteristic of this form of infection, but now it is known the diplo-bacillus can give rise to ulceration as severe in type as the ulcus serpens of pneumococcus infection.

Case 2 was a man of 50 years, a teamster, who gave no history of trauma or tear sac trouble. The cornea, over its central third showed deep ulceration, with a large hypopion, the iris was dull, there was severe chemosis, vision was equal to the percepion of light, and the tension was normal. The treatment consisted of warm fomentations, and the instillation of sulphate of zinc ¼ per cent. solution. Scopolamine was used as a mydriatic. He left the hospital with a useful eye, the vision equal to two thirds of normal, a much better result than would have been obtained had the infection been taken for a pneumococcus one and the ulcer cauterised; for it is to be remembered that while the cautery destroys the pathogenic micro-organisms, it also destroys cell tissue, so

that any case of ulceration of the cornea which can be cured without cauterization, should be.

Infection of the cornea from the pneumococcus generally takes the form of ulcus serpens, which we all know well. Streptococcus ulceration is fortunately rare, while Staphylococcus, though occurring fairly often, is of a mild type. Now, will closer attention to etiology help us to bring about better results, that is, will this definite knowledge as to the etiological factor causing an ulceration help us to limit the destruction of corneal tissue to the epithelium, thus preventing the destruction of corneal stroma?

Where we have ulceration of the cornea from the diplo-bacillus, whether that be the catarrhal form or ulcus serpens with hypopyon, the indication is treatment with a weak solution of the sulphate of zinc. This is the treatment par excellence, as the sulphate of zinc is regarded by many as a specific in this form of infection. I always like to give the conjunctival sac and cornea a good flushing with a ¼ per cent. solution and then have instilled through the day frequently drops of a ½ per cent. solution. Treatment of this kind disposes of over 50 per cent. of our cases. The rest may be placed in one group, for their clinical course and treatment are very similar. Ulceration caused by the pneumococcus forms the largest part of this list. In this form, so often preceded by dacryocystitis, prevention should form a prominent part of our treatment. Buller, in a severe case that I remember, obtained a good result by tying ligatures just inside the puncta and in this way prevented the pus from the inflammed lacrymal sac from adding fuel to the fire. I recall a lost eye which resulted from the removal of a foreign body from the cornea, where pneumococci were present in the conjunctival sac. This possibility deserves some attention, especially as it is well recognized now that eyes that have undergone a severe ulceration of the cornea, may prove dangerous ones. Radical treatment in dacryocystitis would be the means of reducing greatly the number of cases of pneumococcus ulceration of the cornea. The general practitioner should be taught that his duty by no means ends with the removal of the foreign body. Much was expected from Römer's serum, but the results elsewhere have never equalled those obtained by Römer. Whether the inoculation of a vaccine in such cases would do good I hope in the near future to try.

Systemic treatment in severe ulcerative conditions must be ever borne in mind. The patient should be put in the best possible condition, the better to enable the cornea to fight the infection. The actual cautery, carbolic acid, iodine, nitric acid, acetic acid, all have their adherents.

They are all used for the same purpose, to destroy the destructive organisms and preserve as much of the cornea as possible.

Whatever our treatment may be, an exact knowledge of the etiological factor helps us to anticipate the severity of the process, for a beginning pneumococcus ulcer may be clinically identical with a diplo-bacillary one. But where we know which of these micro-organisms we are dealing with, we know exactly what our treatment must be. The clinical diagnosis is incomplete without a bacteriological one. The widening of bacteriological methods in ophthalmology is in no better way shown than by a study of the etiology of corneal ulceration, not because it is perhaps scientific, but because of its practical value. It is essential especially among adult patients to treat from the beginning not only energetically, but scientifically, ulceration of the cornea. The speed with which ulcers of the serpiginous type develop is only too well known, whether the organism present be the pneumococcus or diplo-bacillus. But of inestimable value as regards treatment and prognosis is it to find out at the beginning what etiological factor we have to deal with. Nor must it be supposed that bacteriology will always tell us the cause, but these methods by giving us positive or negative results, direct us to treat accordingly. These ulcers may present identically the same clinical picture, but in the light of our present knowledge, if we wish to treat and prognose with that degree of certainty with which we should, how important it is to find out what etiological factor we have to deal with. The advantage of knowing whether we are dealing with an ulceration caused by micro-organisms or not is easily understood. The value of knowing whether the micro-organism is the pneumococcus or diplo-bacillus will not be questioned. In pneumococcus ulceration we have an exceedingly virulent process to combat. In diplo-bacillary infection we have a pathological condition easily controlled and cured.

PYELONEPHRITIS AS A COMPLICATION OF PREGNANCY AND THE PUERPERAL PERIOD.

BY

DAVID J. EVANS, M.D.

Pyelonephritis was first described as a complication of pregnancy by Reblued in 1892, but it was not until 1899 that much attention was paid to the subject. Since then, quite a literature has developed.

This complication is associated with the early part of the latter half of pregnancy being most common from the fifth to the seventh month. It is said to occur most frequently in primiparæ and is most commonly localized on the right side, though either or both kidneys may be affected.

The onset is often insidious and may escape observation unless constitutional symptoms develop. The first symptom that may be noticed is a vesical irritation which may last from a few hours to several days, when the patient is suddenly seized with more or less paraxysmal pain, most commonly located in the right lumbar region. Rigors, high fever, and vomiting may now be present. At first the urine may be quite clear, but after a certain time will be found to contain large quantities of pus. The presence of pus in the urine may be intermittent. Constipation or diarrhœa may be present. The pain may be complained of as being most acute in the upper portion of the abdomen to the right side, or in the right lumbar region behind, whence it radiates downwards into the groin or thigh. If untreated or unrecognized rapid loss of flesh occurs, the patient becomes cachetic. General septic infection follows and death finally closes the scene.

It is probable that the disease is more common than is generally recognized, as the lighter cases escape observation.

Transient albuminuria associated with heavy deposit in the urine is probably due to the occurrence of mild attacks of pyelonephritis. The condition has been ascribed to the compression of the ureter on the brim of the pelvis resulting in its dilatation. The pressure of the uterus, which by the fifth month has enlarged sufficiently to project well above the brim, is the probable cause. Tortion of the uterus, which is extremely common, favours traction upon the ureters, thus causing their lumen to be flattened. The right ureter is the one most commonly affected. The dilitation consequent upon this pressure results in damage to the mucosa of the ureter, thus favouring the development of localized infection. It is probable that at first hydronephrosis is present, subsequently, after infection developing into pyelonephritis.

The infectious process may be due to an extension upwards from the bladder or it may be derived from the blood.

In pregnancy the infecting organism is usually the colon bacillus, and is probably derived from the intestine, as it is frequently noticed that gastro intestinal disturbances of an indefinite character precedes the onset of the condition.

Streptococci, staphlococci, gonococci and the bacillus enteritis have been found present in a few cases.

The urinary contents vary considerably. Pus, blood, epithelium, and granular debris are usually present. Albumin is noted in varying amounts. The reaction is usually acid, though in neglected cases, where cystitis is present, it may be alkaline.

The facts, first, that pus may not appear in the urine for several days

after the onset of the symptoms, and secondly, that pus may occur intermittently in the urine from the pressure on the ureter being variable, should be borne in mind.

The diagnosis may be difficult, especially when the general symptoms mask the local signs, particularly when the condition arises acutely in the early puerperal period with rigor, high fever, vomitting and pain in the right groin. Usually in such cases infection of the genital canal is suspected.

During pregnancy the condition is frequently mistaken for appendicitis, occasionally for typhoid fever or salpingitis.

Generally pain over lumbar region, usually the right, palpation of a large and tender kidney, associated with the presence of pus and blood in the urine, particularly if the latter is acid in reaction, enable a diagnosis to be made. Usually per vagina in these cases the sensitive ureter can be palpated.

If a pregnant woman presents pus in the urine with no increase of frequency of micturation and little or no pain in the region of the bladder, pyelonephritis may be suspected. Paroxysmal pain occurring in the right side of the abdomen, associated with intestinal disturbances and slight febrile reaction occurring in a pregnant woman between the fourth and seventh month, should cause one to make a careful examination of the urine. The condition may be diagnosed from cystitis without much difficulty. In cystitis there is usually pain or tenderness on pressure over the bladder. Use of the catheter causes distress, and the distension of the bladder actual pain. In pyelonephritis, catheterization, distension of the bladder, etc., give rise to no distress. In doubtful cases, cystoscopy or catheterization of both ureters will make diagnosis certain.

The treatment of the milder cases consists of rest in bed, milk diet, the copious use of water and simple purgation. The drugs most commonly employed are urotropin and methylin blue. Where this treatment fails to rapidly produce an amelioration of the condition, nephrotomy or the induction of premature labor may be necessary. Jeannin recommends that in all cases of pyelonephritis the urinary bladder should be slowly distended with a saturated solution of boric acid three or four times in the 24 hours. Usually the induction of premature labor is the treatment selected, as in most of the cases emptying of the uterus is followed by rapid improvement.

Stoeckel divides cases of pregnancypyelitis into three groups: (1) Mild cases—obstruction in the ureter without infection of the urine. Hydrureter. (2) Moderately severe cases—well marked obstruction of

the ureter with infection of the urine with Coli. (Bacteruria, Pyuria, Pyureter, Pyelitis.) (3) Very severe cases—protracted cases with abcesses of the kidney from mixed infection. (Pure Pyonephroses.)

If the pain and fever persist in spite of treatment by rest in bed, fluids and urotropin, direct local treatment should be resorted to. This includes: first, induction of abortion; second, catheterization of the ureter with or without injection of the kidney pelvis; and third, nephrotomy and the formation of a renal fistula.

He considers the interruption of pregnancy seldom if ever permissible. Catheterization of the ureters in his opinion is less unpleasant and less dangerous than is a vaginal examination if a pregnant woman. He employs a 3 per cent. boracic acid solution to douche out the ureter and pelvis of the kidney. In one case he employed 1 per cent. collargol solution for this purpose with satisfaction.

I have seen three cases of mild pyelonephritis in the course of pregnancy in my private practice all yielding promptly to simple treatment.

The following reports of three cases are from the records of the Montreal Maternity. The first two occurred during my service last summer and the third during that of Dr. Cameron, to whom my thanks are due for his permission to make use of it.

Case I. D. S. Age 28. Married. Third pregnancy. Last period, March 21, 1908. Admitted July 20, 1908, in 24th week of pregnancy, complaining of chills and fever, pain in right side of abdomen.

On admission, temperature 103°, pulse 128. On July 13th patient began to suffer from frequent and painful micturition lasting three days. Two days later she had a chill followed by fever. This was repeated on the following days, when she also noticed pain in upper right abdomen.

On admission the urine was found loaded with pus cells, trace of albuminuria, no casts, alkaline.

Patient looked very ill. Severe pain was complained of on light pressure over the upper abdomen on the right side. Pressure just below the costal margin in the right lumbar region gave rise to sharp pain. The kidney could not be palpated. Nothing else abnormal was noted beyond a foul vaginal discharge.

Treatment. Rest in bed with milk diet, urotropin, unlimited fluids. The temperature ranged between 102° and 103° F. for five days, then gradually returned to normal. The tenderness disappeared within a few days and the urine rapidly cleared up, there being a most marked diminution of pus within four days of admission. The first specimen examined was alkaline, but all the others strongly acid.

The patient remained in hospital twenty-three days, when she was discharged. She returned later for confinement, which was uneventful.

Case II. K. F. Age 22. Was delivered by difficult high forceps operation on account of contracted pelvis Aug. 7th, 1908. Was discharged Aug. 28th in good condition. On Sept. 3rd she suffered from pains in right lower quadrant of the abdomen, was feverish and constipated. This pain returned at intervals, and on Sept. 7th the patient was visited at home. In bed. Temperature 102°, pulse 120. Slight tenderness in right lower quadrant, no rigidity. Next day she was seen and examined by Dr. Little at the M. G. H. Gynecological Clinic. Pelvis negative. Four days later she was readmitted to the Maternity complaining of pain on the right side of the abdomen. T. 98°, P. 65. Lungs clear. Spleen not enlarged nor palpable. Widal negative. Urine acid, trace of albumen, large quantity of pus cells, no casts.

Diagnosis. Pyelonephritis, right kidney.

Treatment. Rest in bed. Fluids. Urotropin, bladder lavage for a few days, and hot formalin douches on account of a very foul vaginal discharge.

For four days the temperature ranged between 100° and 103° F., but she had no chills. The pain and tenderness over the right kidney was very marked at first, but disappeared by the sixth day.

Case III. Fatal case. Sixth month of pregnancy. Admitted with temperature 103° F. and foul vaginal discharge. Complained of pain in chest and abdomen. Next day the pain was most severe in right abdomen and back. She rapidly developed evidence of profound sepsis. Abortion occurred seven days after admission and she died two days later.

Autopsy showed signs of general septicæmia, acute gonorrhœa and double pyelitis.

TUMOUR OF THE TEMPORO-SPHENOIDAL LOBE AND "DREAMY STATES."

BY

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Mr. President and Gentlemen:

Some of you will remember a patient whom I presented before this Society in the early part of last session with the above diagnosis and will perhaps be interested in following the case to a conclusion. The definite localizing value of these so-called dreamy states, their nature,

often rendering the patient diffident about mentioning them, and the physician skeptical about believing them, or at least appreciating them to their full value make the case worthy to be recorded.

Often the first sign of a grave cerebral condition these dreamy states should be of as much interest to the general practitioner as the fine apical crepitations in incipient pulmonary tuberculosis.

C. B., female, aged 17, French Canadian, recommended to the Neurological Clinic by the Outdoor Department for Diseases of the Eye at the Royal Victoria Hospital in February, 1906, complaining of loss of sight and "attacks."

The present illness commenced about three years previously with attacks of "vertige." The first attack came on when she was dressing herself one morning in her own room. It commenced with a feeling of dread, she trembled as if from cold and felt as if she were dying. She says she did not lose consciousness, but during the attack, she saw as if in a dream a woman apparently trying to save a child from drowning. She could not see the woman's face. The patient, who was a very intelligent young woman, waxed quite eloquent in her description (of which the foregoing is as literal a translation as possible), which was given quite spontaneously on the patient's part without any leading questions being asked. After this she averaged about one attack a week, all of the same nature, ushered in by this feeling of intense fear and consisting of the same vision. She could recognize the woman as the same one, although she never saw her face. There was no aura of smell or taste such as is frequently experienced in these cases. The face is said to have become very pale and the lips cyanosed. The attacks lasted four or five minutes. There were no convulsive movements, no involuntary micturition nor biting of the tongue, and she says no loss of consciousness. Usually she slept after the attack for a short time. Only occasionally did she have headache, which was always on the left side of the head and face, and on one or two occasions only was accompanied by vomiting. About a year previous to her coming under observation her eyesight began to get poor, and in the course of two weeks she became blind. She never complained of diplopia.

Lately, and only since she became blind, the patient said the attacks changed somewhat in character, and she saw no definite vision, but during the fit, events passed before her mind and then afterwards she would not know if these events had actually happened or if they had been dreams. In every other way the attacks were similar to those already described. The headache became more frequent and severe, but was always confined to the left side of the head and face and associated

with a numb feeling in these parts. She complained, too, that she could not taste as acutely on the left side of her tongue as on the right.

Previous History: Always healthy; no history of injury.

Family History: Marked family history of tuberculosis and one sister died of some cerebral trouble.

On Examination she was found to be very intelligent, of cheerful disposition, with absolutely no sign of dysarthria or aphasia of any kind. She had always been right handed. She could not recognize peppermint or cloves in either nostril. There was well marked post neuritic atrophy with complete blindness. The right pupil was larger than the left, neither reacted to light; both reacted on convergence. The other cranial nerves were normal. The muscular and sensory systems showed nothing abnormal. The reflexes were all normal.

She continued to come to the clinic every week and was examined carefully each time. On March 28th, *i.e.*, about a month later, she was found to have loss of sensibility to pain and touch over the skin supplied by the left fifth nerve with loss of conjunctival and corneal reflexes. There was no paralysis of the motor branches of the nerve. Taste was lost on the anterior two-thirds of the left side of the tongue and she had a partial nerve deafness on the left side. The abdominal and epigastric reflexes were diminished on the right side. Plantar reflexes were normal, showing flexion right and left.

In December, 1907, the attacks again became somewhat different and again she saw images, this time of people's faces, but indefinitely, so that she could not recognize the face again; at the same time there was convulsive movements of the head to the right. She did not lose consciousness during the attack, but could speak and understand everything said to her. She continued to have similar attacks until May, 1908, when she began to suffer from severe pain in the left side of her face, which continued, and early in July a physician was induced to try and give relief by pulling out a tooth; but it broke off, leaving the roots in place. She then had a slight deviation of the lower jaw to the left on opening the mouth, and evident weakness of the left masseter and temporal muscles, showing motor fifth paralysis. She was emaciated, weak and nervous. Dr. Stuart Nichol at my request then examined the teeth, and extracted the root; but this giving no relief, operation was advised.

She was admitted to the Royal Victoria Hospital and trephined immediately over the tumour in the temporo-sphenoidal lobe on the left side. Unfortunately this did not give the desired relief, and the patient died in the course of a few weeks. In the last days, it could not be

definitely determined when, on account of the dressings, the tumour mass showed itself posteriorly in the roof of the mouth on the left side.

On post mortem examination the tumour was of the nature of an endothelioma, more or less circumscribed in the brain, involving the second and third temporal convolutions in their anterior two-thirds and the uncinate and the hypocampal gyri. The anterior one-third of the first temporal convolution is also partially involved. Inferiorly it was found to have invaded the dura and bone, involving the Gasserian ganlion and spreading into the Antrum of Highmore.

It will be noticed that there was no aphasia of any kind and no disturbance in the faculty of naming objects at any time, although the second temporal convolution is destroyed, showing that in this patient, at least, there was no separate naming centre in the second temporal convolution such as Mills, of Philadelphia, describes. The fact that there was no aura of smell preceding the attacks is probably explained on the grounds that here we have a destructive lesion of the uncinate gyrus.

It was interesting to find the constant diminution of the abdominal and epigastric reflexes on the right side, as evidence of impairment of function of the pyramidal tract by pressure. This is an important aid in diagnosis, often, as in this case, being present before destruction of the pyramidal tract has become sufficient to give rise to a Babinski reflex. This shows very beautifully the *cerebro spinal* nature of these superficial reflexes; the reflex arc being made up of the sensory nerve fibres and sensory paths in the cord, with their cells probably in the basal ganglia; the efferent part of the arc being served by the pyramidal tract and the motor nerves pressure on the pyramidal tract then has impaired the functioning of the arc. Similar cases in the literature are rare, as far as I have been able to find in a hasty search. Dr. James Anderson, in 1886 (Brain, Vol., ix.), reported a similar case with autopsy, in which the attacks started with a rough, bitter sensation in the mouth, and then the patient saw some trivial scene of his childhood's days, which always recurred. He had convulsive movements of the right side of his face and of the right arm. The tumour was found to involve the left temporo-sphenoidal lobe. A second case was reported by Hughlings Jackson and Beevor (Brain, Vol. xii.) of a woman aged 53, who had attacks, ushered in by a smell of dirty burning stuff, and then she saw a little black woman who was rather agreeable and was always flitting about the kitchen. She had also the general signs of increased intracranial pressure. The tumour was discovered at autopsy in the right temporo-sphenoidal lobe.

Buzzard has reported a third case (Lancet, June 30th, 1906), which I had the advantage of observing, and which was quite similar to the above described. The tumour was in the right temporo-sphenoidal lobe.

In conclusion, I should like to emphasize the fact that one must avoid putting leading questions. One such question may destroy altogether the value of subsequent examination. The term intellectual aura sometimes used for such a condition is quite incorrect. These "dreamy states" are in no wise a warning, but are as much the expression of the fit itself as the convulsive movements which sometimes follow, and as much a focal epilepsy as the ordinary Jacksonian type.

PARALYSIS OF THE LEFT RECURRENT LARYNGEAL NERVE IN MITRAL-VALVE DISEASE.

BY

WILLIAM OSLER, M.D., F.R.S.

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There are two conditions in which valvular disease of the heart suggests the existence of aneurism of the aorta. In insufficiency of the aortic valves, as Corrigan pointed out in his original paper, the throbbing of the aorta near the heart may lead to this diagnosis. This is particularly the case in young persons in whom the degree of dynamic dilatation may be extraordinary and even compel the diagnosis of aneurism.[1] In mitral valve disease with great dilatation of the left auricle and compression of the recurrent laryngeal nerve there may be a combination of symptoms and physical signs most suggestive of aneurism. Paroxysms of orthopnœa, cyanosis, the cracked voice, the paralyzed vocal cord, and on inspection a pulsation in the 2nd left interspace may make a most deceptive combination. My attention was first called to the condition by a case in which the late Professor Nothnagel of Vienna, had suggested the diagnosis of aneurism, though the patient was known to have an old mitral lesion. She was a large, stout woman, and the severe paroxysms of dyspnœa and the great cyanosis, without dropsy or other signs of venous stasis were certainly very suggestive of aneurism. In the second case I saw there was no suspicion of aneurism, but in the third case the diagnosis was suggested by the combination of the laryngeal paralysis and the unusually wide-spread pulsation in the 2nd left interspace. The condition is not common. I have only met with three cases, and it is not a symptom likely to be overlooked, as one's attention is at once called to it by the change in the voice.

Ortner, of Vienna, seems to have been the first to call attention to it in 1897. A boy of 14 with mitral lesion had inequality of the carotid pulse, a complete paralysis of the left vocal cord. The diagnosis of aneurism was made, but the post mortem showed only the mitral disease with compression of the left recurrent nerve between the aorta and the greatly dilated auricle. Since Ortner's paper many cases have been reported, chiefly in Vienna and in Italy, and in America by Herrick, of Chicago. The post mortems have shown the nerve to be compressed between a greatly dilated auricle and the aorta; in a few cases the compression seems to have been due to the dilated pulmonary veins, and in the case of Fischauer, of Vienna, by the left pulmonary artery. In a few instances both nerves have been paralyzed, and in explanation it has been suggested that the enlarged heart drags down the aorta and the right subclavian artery sufficiently to cause atrophy of the nerves as they pass beneath these vessels. In *Case III*, here reported, the small section of nerve between the wall of the auricle and the aorta was distinctly more opaque white in colour than in any other part of its course. Occasionally the paralysis of the larynx may be a coincidence in an old mitral lesion as in a case referred to by Reitter, in which the paralysis was diphtheritic in origin. In *Case II*, the patient had had diphtheria and it was thought at first that the paralysis might be due to this cause, but the change in the voice antidated the attack of diphtheria by at least six months.

Case I.—I saw, June 10th, 1888, Mrs. G., aged 45, a stout, large woman, complaining of dyspnœa on exertion and paroxysms of coughing, and shortness of breath at night. She had been very healthy, had had six children, had never had rheumatism, and until about a year ago she had had no trouble with the breathing. Many years before she had been told she had heart disease and she has been short of breath on exertion for ten or more years. About six months ago she noticed that her voice had changed. In April of the present year she was in Vienna and consulted Prof. Nothnagel, who wrote to her husband that in addition to the old mitral disease it was quite possible that she had an aneurism of the aorta as the left recurrent laryngeal nerve was paralyzed and the paroxysms of nocturnal dyspnœa suggested pressure.

The patient was a large-framed woman who weighed 195 pounds. The face and hands were slightly cyanosed and she was very short of breath on exertion. The apex beat was neither visible nor palpable. A feeble thrill could be felt under the left breast. There was no pulsation to be seen or felt to the left of the sternum. There was no tracheal tugging. It was impossible to make out definitely the area of heart flatness, but

it appeared to be increased. There was a well marked presystolic murmur in the apex region with a soft systolic murmur, heard as far out as the mid-axilla. Nothing could be heard behind and the air entered both lungs equally.

Her voice was cracked, and on examination with the laryngoscope, there was seen to be paralysis of the left vocal cord. The pulse was small, and irregular. With diet, a careful regulation of her life and the use of digitalis she improved very much. I saw her once again in May, 1889, when she had slight swelling of the feet, great irregularity of the heart, and extreme dyspnœa. The paralysis of the left vocal cord continued. She again improved and was able in the summer to go to Europe. In September, she died in an attack of urgent dyspnœa. A post mortem examination was made. No aneurism was found. The mitral orifice was stenosed and the left auricle was enormously enlarged. I only had the verbal statement of the husband as to the condition of the heart. There had been so many opinions given, particularly as to the possibility of aneurism that it was to determine this point more particularly that he consented to an autopsy.

Case II.—B. M. S., aged 27, came to me first in March, 1892, complaining of shortness of breath, palpitation of the heart, cough, and change in character of her voice.

She had always been pretty healthy and well; though never very robust. Family history good. She has never had rheumatism, St. Vitus' dance, or typhoid fever. She had scarlet fever about the age of 12, subsequent to this had whooping-cough, which persisted and evidently from her description and her father's, the attack must have been unusually severe. In October, 1891, she had diphtheria, light attack; was not in bed at all. She has not regained her strength from this time.

In January, she had an attack of fever of some sort, cause not known, with great shortness of breath. Change in the voice has been noticed more or less for a year. When she first came under observation she was pale, short of breath, and on examination there were all the characters of well-marked mitral stenosis. She was ordered Blaud's pills and was sent to Dr. Warfield for local treatment of the throat. She improved very much through the summer, but is still short of breath on exertion, and has palpitation of the heart, but her general condition is evidently very much improved.

Present condition. Looks better; cough not husky; voice distinctly changed, a little husky and broken; finds it impossible to raise it. Dr. Warfield has examined the throat again and found the left vocal cord scarcely moved at all. Pulse 84, volume small but regular; tension not

increased. The apex beat is about normal in position; the impulse is forcible, and on palpation there is a definite thrill followed by a well marked systolic shock of considerable intensity. Cardiac dulness begins on third rib. On auscultation well marked, rough, blubbering presystolic murmur followed by a loud snapping first sound. There is also a systolic murmur, short but intense. The pulmonic second sound is accentuated; the aortic second is normal. No other features of note.

April 19th, 1893. Patient examined again to-day. She has had much more shortness of breath and has had swelling of the feet. She is paler, and has very little appetite. The voice is still husky, and Dr. Warfield reports that there is still paralysis of the left vocal cord. The heart condition has changed very materially. The apex beat is more diffuse, and the systolic murmur has increased very much in intensity. There is a loud, blowing, systolic murmur propagated into the axilla. The presystolic murmur is well heard, but the thrill is not so marked.

In the autumn of 1893, anasarca came on, and she gradually sank and died November 9th, 1893,

Case III.—At my clinique, February 25th, 1908, I showed a patient of Dr. Mallams, A. R., æt. 46, who was suspected to have an aneurism. The patient was dropsical, with œdema of bases of both lungs, shortness of breath, and all the features of a severe cardiac breakdown.

The examination of the chest gave the following: Large area of visible impulse in 3rd, 4th, 5th and 6th left interspaces. In 2nd left interspace also, as far out as 5 c.m. from the sternal border there is a distinct pulsation. On palpation the impulse was felt to be diffuse and the heart's action irregular. On auscultation, double murmurs at mitral and at aortic areas. There was paralysis of the left vocal cord and the voice was cracked. The patient has been a healthy man with the exception of three attacks of acute rheumatism, at ages of 14, 26 and 40. Seven months ago he had shortness of breath and dropsy, but gradually recovered. The present attack began about a month ago, and he has been growing worse. For weeks the patient was very ill, but he gradually improved, and the dropsy disappeared and by the middle of April he was sitting up. The heart's action was regular, there was a large area of impulse, and the visible impulse in the 2nd left interspace was very marked. It seemed directly continuous with that in the 3rd interspace, and was better seen than felt. It was this large area of visible impulse in the 2nd left interspace with the paralysis of the left vocal cord that suggested the possibility of aneurism. The fluorscope showed very clearly that the left auricle was enormously enlarged and that there was no aneurism of the aorta. The patient left the hospital June 26th. He was

readmitted August 18th, in a state of asystole and died on the 24th. *Autopsy* by Dr. A. G. Gibson. The area of heart uncovered by lung begins at the 2nd left chondro-sternal junction and passes outwards and downwards to the junction of 4th rib with its cartilage and then transversely outwards. On opening the pericardium, the tip of the right auricle extends to the left border of the sternum. The rest of the anterior surface of the heart in relation to the chest wall is formed by the right ventricle. The aortic valves are not competent. The mitral orifice admitted two fingers, the tricuspid three. All the chambers are greatly dilated and the heart as a whole is much hypertrophied. The left auricle is enormous, admitting a small fist. The aortic segments are sclerotic and the anterior leaflets joined together. The mitral valves are much thickened, the orifice somewhat narrowed and the chordæ tendineæ thickened. The coronary arteries were normal. The left recurrent laryngeal nerve was traced and just at the point where it lies between the aorta and the left auricle it looked sclerotic and of a duller white colour than elsewhere in its course.

PULMONARY GANGRENE AND ABSCESS.

BY

GEORGE E. ARMSTRONG, M.D.

Pulmonary Gangrene and Abscess although recognized by Hippocrates, and considered by various writers from that time up to the present, has become of practical interest to the surgeon chiefly since the era of Listerism. Indeed, it is only within the last few years that the surgery of the lungs, including pulmonary gangrene and abscess, has received serious attention, and been placed upon a sound scientific basis. The various details connected with the diagnosis, operative treatment and prognosis of these conditions have been advanced very largely by the labours of Quincke, Tuffier, Gluck, Karewski, Garré, and Körte.

The present paper is based upon 14 cases of pulmonary abscess and gangrene. The ages were from 20 to 53. There were ten males and four females. The right side was diseased in six, and the left side in eight cases. The upper lobe was involved in three cases; the middle in one, and the lower lobe in eleven.

Three of these patients were epileptics and three were alcoholics. In six cases the disease seemed clearly to be secondary to pneumonia, and probably in all of the six it was an aspiration pneumonia.

In two the pneumonia immediately followed the extraction of teeth

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under general anæsthesia, alveolar abscess being present in both instances. In one it began by sudden severe pain in the right side two days after confinement. The following day the patient spat up a mouthful of blood-stained material. A pneumonia then developed which would seem to be embolic in origin.

In one instance the abscess followed trauma. An Italian fell 40 feet, striking on his back. A traumatic pneumonia developed, followed by abscess.

In no instance was a foreign body found or suspected. Foreign bodies in the bronchi as a cause of gangrene are very rare. Weist in a collection of 1,000 cases of foreign bodies in the air passages does not mention gangrene as a sequel. Hoffman in 252 cases reported in Nothnagel's System, mentions it only twice, while Murphy in his article on "Surgery of the Lung," in a collection of 59 cases of abscess does not give foreign bodies as an etiological factor. Clarke and Marine after a careful search of the literature found but 31 cases in which gangrene followed the inspiration of a foreign body. In these 31 cases, the foreign body was a tooth twice, a pin once, a piece of wood once, a button twice, a head of grain or grass seven times, a bit of evergreen twice, a fruit-stone twice, a bone ten times; not mentioned four times. The gangrenous process in these cases lasted from three days to four years, most frequently from two to four weeks. The right lung was involved in 14 cases, the left in seven cases. Death occurred in 21 cases, recovery after thoracotomy in two, and spontaneous recovery in four cases. The foreign body was coughed up in five, four of which subsequently died, and one made a rapid recovery.

The diagnosis and location of pulmonary abscess is sometimes extremely difficult, and differentiation between abscess and gangrene is, in many instances, quite impossible. Lenhartz and Körte think the differentiation artificial and uncertain. In both lesions the primary condition is infiltration and smelting together of the tissues, and whether these tissues break down and form large sequestra, or break down into small particles, often as elastic tissue, is only a question of degree. In fact it is difficult and sometimes impossible to tell whether there is a sequestrum or not. The differentiation by examination of the sputum may lead to erroneous conclusions, for although a pure purulent expectoration would stand for abscess, and a fœtid ichorous expectoration for gangrene, yet a sequestrum may be present with a purely purulent expectoration. In one of Körte's cases 10 days after the opening of the abscess cavity in the lung a sequestrum the size of the end of the thumb was removed. In fact, a condition of abscess and

gangrene may both obtain in the same cavity. The prognosis would seem to be better in cases of pure odourless pus.

Foul-smelling purulent sputum containing lung tissue or elastic tissue indicates the presence of pulmonary abscess, or gangrene or both. Traces of blood are frequent and hæmorrhages are not uncommon. If a putrid sputum follows acute lung disease, three things are possible: abscess or gangrene, bronchiectic cavities, or a bursting of pus into the lung from the pleura, subphrenic region, or the mediastinum. In the differentiation of these three conditions, a careful study must be made of the history of the cases, as well as a careful physical examination.

A thin layer of normal lung tissue over the cavity will completely mask the condition. Fluorescopic and x-ray examinations are most valuable aids in these cases, and will often show the location of the cavity when physical signs and other methods of examination fail. They may also show how deep or how far removed from the surface of the lung is the abscess. For instance, the physical signs may indicate that the abscess is at a certain level, but a fluorescopic examination may show clearly that the cavity extends downwards and that its lower end is farther removed from the surface of the lung than the upper end. This knowledge may prove most valuable to the surgeon, showing him where to place his incision, to secure the best drainage of the cavity subsequently.

The diagnosis of bronchiectatic lesions by the fluorescope is much more uncertain. As remarked by Pfeiffer (Zur Diagnose der Bronchiektasen in Rontgenbilde. Beitrage Zur. Klin. Chir. Band 50—1906, pg. 279), the similarity of the symptoms of bronchiectasis when accompanied by fœtid bronchiitis to those of lung gangrene and abscess is very close and the difficulty in differentiating between the two is extremely great. In bronchiectasis the condition, of course, is generally more wide-spread and diffused over one or more lobes in one or both lungs.

The use of the exploring needle as a diagnostic measure is inadvisable because of the danger that the two layers of the pleura are not adherent. The pleural cavity may then become infected and a septic empyema develop. There is also the danger from puncturing vessels and hæmorrhage. I have known hæmorrhage to be quite smart after the use of the exploring needle, although never fatal. Even if the pleural layers are adherent, infection may pass into the over-lying tissues of the chest wall and give rise to a phlegmonous inflammation.

The interesting relationship of bronchiectasis to lung abscess is, however, not alone in the question of differential diagnosis. Bronchiectic

conditions have been known to develop in the neighbourhood of a healed lung abscess as a result of shrinking of the scar tissues and dilatation of the adjacent bronchi. Such cases have been reported by Garré l.c., Helferich-Lichtenauer, Deutsche Zeitschrift f. Chir., Bd. 50, s. 389. Körte also reports a similar case upon which he had operated for acute abscess of the right lung. A month after the cavity was healed, the patient returned suffering from a recurrence of putrid expectoration. Seven months and a half after the first operation an incision was made through the scar and a system of dilated bronchi were found. He reports further three other cases of acute gangrene of the lung, where, in the region of the cavities at autopsy was found beginning dilatation of the bronchi where no healing process was apparent. Körte admits that there may have been in these cases a pre-existing bronchial dilatation which favoured the development of the gangrenous process. Tuberculous cavities are not suitable for operation.

Patients sometimes seem to develop gangrene without a pre-existing pneumonia or lung disease. Emboli may arise from a puerperal infection, retro-cæcal and appendiceal abscess. Embolic abscesses are frequently multiple and in that case are not adapted to surgical treatment. In one, inspiration of water while bathing was a cause. Typhoid fever, measles, facial erysipelas and bronchitis may be etiological factors; in one, tropical dysentery and liver abscess. In acute cases the abscesses are generally solitary.

When once the diagnosis is made and the cavity located it is unwise to delay operation because of the danger of hæmorrhage, extension of the disease in the lung, bursting into the pleura, and the occurrence of metastasis and sepsis.

Reasons which justify delay in operation are persistence of the acute pneumonic process and the desirability of having firm adhesions of the two pleural surfaces. These, however, should not be allowed to weigh against early evacuation of the pus when there are well-marked indications for the same.

In the early stages the abscess walls surrounding the tissue are softer and more yielding than they are later on.

In chronic abscess the conditions of healing are much less favourable, as the walls are hard and unyielding. To bring a chronic abscess to healing generally requires extensive resection of ribs and often of the thickened visceral pleura as well.

While it cannot be denied that certain cases recover after rupture of the abscess into the bronchus, yet experience has shown that this is an uncertain result, and that the mortality in unoperated is very much

larger than in operated cases. In diffuse bronchiectasis the conditions are quite different, the disease is not so localized—operation is not so satisfactory, and the prognosis is not so good. The drainage of localized bronchial dilatations is sometimes successful.

Resection of a whole lobe has sometimes been found necessary, and is sometimes followed by success. The operation, as a rule, is undertaken for the relief of abscess and gangrene.

Operations for the relief of large hæmorrhages are not easy. There is the difficulty of coming directly upon the bleeding point and the danger of the patient bleeding severely into the bronchial tubes while the operation is going on. If one is sure there is only one abscess from which the bleeding comes and if the physical signs and fluorescopic examination show that the abscess is superficial and the patient's life is jeopardized by recurrence of large hæmorrhages, one might be justified in such instances in opening the cavity with a view of controlling the hæmorrhage by ligature, or by packing. If the cavities are multiple, or if the condition is one of the bronchiectasis, operation is certainly contra indicated. Nordman, in the Gaz. des Hôpitaux No. 87—1906, draws attention to the possibility of hæmorrhage occurring in cases of pulmonary gangrene, and to the small mention of this complication in the books. Lannec and Trousseau do not mention it at all. Grisolle, Eichhorst and Nothnagel simply refer to it. Hardy and Beheir on the contrary clearly indicate its importance and gravity. It must be divided into two forms: the small capillary hæmorrhages which are sufficiently frequent and the grave hæmorrhages due to rupture of large vessels, and which are generally fatal.

In some instances there may be some preparation made before operating. Only too often, however, patients are brought to the hospital in a desperate condition, and require immediate relief. When possible these patients should be prepared for operation in the usual way, with the added special preparation to get them to cough up as much as possible beforehand. Many of them know what position to assume to accomplish this end. They know that by turning on one side or the other—by lying on the back, or on the face, or by hanging the head low they can empty out a large quantity of matter, which renders the subsequent operation much safer.

I prefer, when possible, to operate under local anæsthesia, but this is difficult in the case of foreigners, who cannot be spoken to and encouraged in their own language. In such cases I use ether as being probably safer than chloroform, or any mixture containing chloroform.

After portions of one or two ribs are resected over the cavity, the next question is, are the layers of the pleura smelted together and adherent? Tuffier reports 215 cases in which the pleura was adherent in 190 or 95 per cent. It is not always easy to decide this point. Putting in a needle and expecting it to be moved up and down if the pleural surfaces are not adherent is an uncertain test, because it is almost impossible to stop the point of the needle just when it pierces the visceral pleura, and if it goes much further the lung tissues move it up and down. I have usually found that if the parietal pleura was thickened adhesions were present. If in doubt, and the patient's condition permits, one may remove one or more bits of rib and suture the two layers together as recommended by Pean, Tuffier and Roux. In suturing the pleural layers round needles are preferable, and Garré recommends inserting them during expiration and covering the pleura with the finger during inspiration. I have never known any infection to occur from this operation. If the condition is urgent, incision may be immediately made and the lung entered, but it is safer to wait for a couple of days for adhesion to take place. In other cases when in doubt I have applied the cautery, and in others simply packed the cavity tightly with iodoform gauze with equally satisfactory results. The first, however, is the procedure of choice. In one instance, when in doubt, I made a small puncture with the end of a knife—the entrance of a puff of air discovered that no adhesions were present. I packed the cavity with iodoform gauze, and three days later found adhesions sufficient to allow me to go in without any trouble.

If the pleura is accidentally opened and the lung recedes, W. Müller has found it possible to catch the receding lung with a pair of forceps and bring it back into the wound and suture the two pleural layers together. Incision through the lung tissue into the abscess cavity may be made in several ways. In some cases where the tissue is hard and dense, particularly if the fluoroscopic examination has shown the abscess wall to be near the periphery of the lung, one may enter simply by blunt dissection. In these cases I have found it very satisfactory to first insert a director, and when entrance into the abscess cavity was demonstrated by the flow of pus, to pass a pair of narrow bladed forceps along the groove, and by separating the blades to secure an opening sufficiently large to permit the introduction of a finger for purposes of exploration. I have found this a valuable detail, as it enables one to determine the size and direction of the cavity and the location of any communication with a bronchial tube. In one of my cases I found the cavity. This patient did not do particularly well for some weeks after operation. When finally I made a second opening through the chest

wall into the lower end of the cavity, thus securing a dependent drainage, when the cavity closed rapidly, and the patient has remained well ever since. If there is much lung tissue to pass through in reaching the cavity a thermo-cautery enables one to enter with comparatively little loss of blood. An incision, however, may be made if good access has been obtained previously, and any bleeding points caught and ligatured.

In three of Körte's cases, sudden death occurred after operation from arrest of breathing with collapse. The first patient, who had had several hæmorrhages, was operated upon under local anæsthesia, morphia and local infiltration with eucain; a large gangrenous cavity was opened on the left side behind; the pleural layers were adherent. The patient did not suffer from any great pain and the bleeding was insignificant. The pulse was good and the operation was in every way successful. While the bandages were being applied and the patient in a partially elevated position, the breathing suddenly ceased, the pulse became bad and the patient died at once. The autopsy by Prof. Benda showed no good reason for the sudden death. The second case was being operated upon for the second time three months after the first operation. While the fistula was being enlarged under morphia and eucain infiltration, a few drops of chloroform having been given towards the end, breathing suddenly stopped, the pulse became bad and the man died. The autopsy by Prof. Benda showed many bronchiectic cavities in the left lower lobe, but no reason for the sudden death. The third was that of a man 52 years of age. The 6th and 7th ribs on the right side were resected under chloroform anæsthesia, the adherent pleural layers were excised and the bronchiectatic cavity opened. After the operation, just as the patient was being put to bed, breathing stopped, the pulse ceased. Artificial means, tracheotomy, inflation of lungs, venesection and saline infusion into the median vein restored breathing temporarily, but three hours later he died. Körte thinks the only explanation of these sudden deaths is through the reflex action of the pneumogastric nerves. He does not seem to think that the method of narcosis contributed in any way.

The after treatment consists in providing free drainage and easy emptying of the cavity. This is generally accomplished by the insertion of a soft rubber tube. At the time of the operation the cavity may be wiped out with gauze swabs, and sometimes a considerable mass of gangrenous tissue and shreds are wiped away in this way without causing hæmorrhage. Later during the period of granulation, healing may be promoted by packing with gauze, and by using tincture of iodine, nitrate of silver or balsam of Peru.

The incision of the tissues in the chest wall must not be allowed to close until the lung cavity is healed. Small hæmorrhages are not infrequent before operation, as has already been mentioned, and hæmorrhages of considerable quantity sometimes follow the use of the exploring needle. Hæmorrhages after operation and after the cavity is opened sometimes occur. In two of my cases the hæmorrhages were really severe. In one it was necessary to pack the cavity very tightly with gauze. When the packing was removed in 24 hours, bleeding recurred and a similar experience after the next 24 hours occurred. In this case good access had been obtained and one could distinctly see into the cavity where the bleeding was going on. It did not come from any spouter that could be seen, and was controlled with packing. After the third 24 hour interval no hæmorrhage occurred. In the second case although not severe it was necessary to keep the cavity packed 48 hours. If access has been good and a vessel is seen spouting there should be no difficulty in applying a ligature.

The wound has ultimately healed without permanent fistula in all of my cases in which there was not at the time of operation an accompanying empyema. Permanent fistula is rare and may be said not to occur in those cases in which the two pleural layers are adherent at the time of operation. If, however, before drainage is established, the abscess or cavity has burst into the pleura before the pleural layers were adherent, then the same rules for healing apply as for empyema. The visceral layer may become so thick as to seriously retard the expansion of the lung and the healing of the cavity. The cavity seems to close generally by granulation and scar tissue, gradually contracting and obliterating the opening. During this process, as has already been mentioned, the bronchial tubes in the neighbourhood may become stretched and dilated. Mikuliz has reported one and Körte two instances in which the cavity instead of being obliterated by contraction of scar tissue became covered with a layer of epithelium. All three cases occurred in the upper lobe where the anatomical difficulties of bringing about apposition of the walls and the spaces are present. If there has been much contraction during the healing process there will be the usual flattening of the chest and alterations in the spinal curves. In only one instance was I obliged to operate the second time, and that, as has already been mentioned, was where the drainage and the bronchial tube were both from the upper end of the cavity. So far as we have been able to trace these cases the recovery has been permanent—no cough or bronchitis being complained of.

No. 3 died suddenly a month after operation from ulceration with erosion of a branch of the pulmonary artery.

No. 6. In this case the accompanying condition and contributory causes of death were acute miliary tuberculosis of the peritoneum; fatty heart, septic splenitis; peri-splenic abscess and acute parenchymatous nephritis.

No. 13 was a case of bilateral bronchiectasis with fœtid bronchitis in which I drained one side. He died from asthenia on the fifth day after operation.

No. 14. Contributory causes of death were broncho-pneumonia; emphysema of lungs; chronic interstitial nephritis; acute interstitial nephritis and fatty liver.

Resection of one lobe of the lung has been carried out by Kummell, Gluck Krause and Heidenhain. Garré and Lenhartz seem to think it the only rational procedure in certain extreme cases with a limited disease. It is said to be feasible and may be carried out largely by ligature *en masse*. So far, I have had no experience with this procedure. Good access obtained by the removal of portions of several ribs would seem to be a necessary detail thus securing control of the field of operation.

In conclusion it may be said that while some lung abscesses and some localized bronchiectatic cavities may, under favourable circumstances, when communicating freely with a large bronchus, empty themselves sufficiently to permit of cure, yet on the whole the results of medical treatment only in lung abscess and gangrene are bad. Much better results are obtained by incision and drainage, so that not more than a few weeks should be spent in medical treatment. Operation in a rarified atmosphere, from what I saw of the method in Breslau, and from what I have read of it since seems to promise a good deal, and should enable one to operate on these cases more independently of the union of the two layers of the pleura, and enable one more freely to explore the cavity, to ligature, suture, and to do better work generally.

The mortality in lung abscess and gangrene varies under surgical treatment. In 28 cases following pneumonia operated on by Körte 20 recovered and eight died, a mortality of 28½ per cent. Of eight cases of putrid empyema associated with gangrene one recovered and seven died, a mortality of 87 per cent.

Tilton reports a mortality of 50 per cent. in 20 cases. In the 14 cases reported in this paper including one of putrid empyema there were four deaths, a mortality of 28½ per cent.

The case complicated by putrid empyema is making a very satisfactory recovery, but further operation may be necessary to obliterate the pleural cavity, as the lung is tightly bound down and is expanding very slowly.

The following brief reports of 14 cases:

Case I.—Male aged 38. Dr. Lafleur. Alcoholic and epileptic. Gangrene. Following a prolonged spree developed a severe pain in the side and began expectorating blood-stained greenish sputum, measuring 20 to 25 oz. in 24 hours. Cavity 2½x2½ inches with smooth walls opening into a bronchus from the upper corner. The pleural surfaces were adherent. Drainage. Recovered. His habits were such as would point the clinical history to this being originally an aspiration pneumonia. The absence of elastic tissue and the smooth walls of the cavity suggest bronchiectasis, but the gangrenous odour of the sputum, the fever and the pleurisy point to its being gangrene.

Case II.—Male aged 33. Dr. Molson. Alcoholic. Illness began with chills and rigors. Two months after had chills with profuse perspiration and fœtid expectoration. Signs of consolidation in the right lung, but difficult to localize. The sputum had a gangrenous offensive odour and contained elastic tissue. The patient was transferred to the surgical service and rib resected. Drainage. Recovery.

Case III.—Male aged 48. Dr. Finley. No alcohol nor epilepsy. Illness began with chill followed by daily chills and night sweats. Signs of cavity at the base of the upper lobe of the left lung. Fluoroscopic examination showed a shadow in this region and foul pus was drawn by the exploring needle. Sputum frothy mucopurulent, and contained elastic tissue. Patient was transferred to the surgical service, where, previous to operation, he expectorated 40 ounces of fœtid sputum. At the operation a large gangrenous cavity was explored and packed with gauze. The patient improved, but died suddenly a month later from ulceration of the posterior left apex with erosion of a branch of the pulmonary artery.

Case IV.—Male aged 45. Dr. Ridley MacKenzie. Alveolar abscess causing trismus. Dr. MacKenzie administered ether to relax the jaw, and the removal of the tooth liberated a lot of foul smelling pus, and a sub-maxillary abscess formed later which was opened. Three weeks afterwards dry friction rub of the right side which improved after strapping. A week later a dull area developed with signs of consolidation and gangrenous expectoration. An exploratory aspiration was performed below the angle of the scapula and gangrenous foul smelling pus was found. The expectoration was profuse and gangrenous, but no elastic tissue was found. He was transferred to the surgical service and a piece of the 9th rib excised, and a fœtid smelling abscess was opened lying between the diaphragm and the lung, almost fæcal in character. Drainage. Recovery. The man is now in perfect health.

Case V.—Female 26. Dr. Ridley MacKenzie. Illness commenced with alveolar abscess in the upper jaw. The tooth was removed under

an anæsthetic, the anæsthetic being prolonged preparing the teeth for bridge-work. A week later a pleuritic friction rub developed in the right axillary region, followed by signs of consolidation with blowing breathing, accompanied by muco-purulent fœtid expectoration, but no elastic tissue. An effusion developed, and gangrenous pus was aspirated. Resection of the 9th rib liberated a large quantity of greenish gangrenous pus. The pleural layers were adherent, the lung cavity presenting irregular sloughing walls. The patient's condition was very bad. She was septic with acute dilatation of the heart. The apex of the heart was in the anterior axillary line and the pulse was not countable. Good drainage was secured, and expectoration ceased and the patient's recovery was perfect. Dr. MacKenzie accordingly regards this condition as one secondary to aspiration-pneumonia, the gangrenous abscess not being in direct communication with a bronchus. It was in the outer aspect of the lung, rupturing into the pleural cavity.

Case VI.—Aged 20. Died April 1st, 1907. Primary tuberculosis of the ovary resulting in acute miliary tuberculosis of the peritoneum. Gangrene of the lung. Right inguinal fistula. Acute fibrinous pleuritis. Fatty heart. Septic splenitis. Peri-splenic abscess and acute parenchymatous nephritis. The patient was a very large fat girl, weighing about 180 pounds.

Case VII.—Age 31. Pulmonary abscess. Chloroform anæsthesia. Was discharged well and gained in weight. Incision 2½ inches long of the 8th rib in scapula line. Rib resected. Pleural layers adherent. Abscess approached by blunt dissection and one ounce of pus evacuated. Tube put in. On November 14th, the abscess was re-entered and 150 c.c. of bloody fluid withdrawn.

On October 14th, the patient was brought to the Hospital, having fallen about 40 feet and was bruised and sore, especially over the back and abdomen. There was a hæmatoma of the left side of the neck. This was followed by an abortive attack of pneumonia mainly confined to the base of the left lung. Pleurisy followed this with effusion. Pleural surface adherent. No tubercle bacilli were found. Elastic tissue was present. Recovered.

Case VIII.—Age 29. Pulmonary abscess. Lobar pneumonia. Marked scoliosis. Diminished expansion. Resection of 8th rib—left side in scapular line. Pleural surface adherent. Pulmonary abscess opened by blunt dissection. About one ounce of greenish pus evacuated. Illness began with pain in the left side and cough.

On admission to the Hospital there was a friction rub over the left anterior axillary line. Cough with muco-purulent bloody sputum.

Developed from lobar pneumonia left side and septicemia. Culture obtained—Staphylococcus pyogenes albut-Streptococcus pyogenes. No tubercle bacilli.

Case IV.—Mrs. J. M., age 39. Pulmonary abscess. Complication, Hæmorrhage. Recovery. A small opening still persists at the time of discharge, but the patient feels very well.

Part of the 8th rib resected in scapular line. Pleural layers adherent. Pulmonary abscess opened by blunt dissection, 6 oz. dirty pus evacuated. Tube inserted. Examination through this by reflected light showed a pulmonary abscess immediately in front of incision.

The patient was confined December 1st. On December 3rd, had a chill and a second one on the following day, accompanied by very sudden and severe pain in her right side far down towards the base of the chest and thorax. Had no cough or expectoration with pain. Severe headache after the chill and very feverish. On December 4th she spat up a mouthful of blood-stained material. Was brought to the Hospital on the same day. Would seem to be embolic in origin. The pulmonary abscess was opened on December 13th. On the 21st and 23rd of December there were profuse hæmorrhages from the pulmonary cavity, requiring packing twice a day with gauze. Calcium lactate and stimulants were administered.

Case V.—Mrs. K., age 26. Operation 15th November. Abscess of right lung. Abscess of three months' duration. Fœtid expectoration and pneumococcus—no tbc.—a great deal of elastic tissue. Abscess located in the right base. The aspirating needle was used to locate it exactly. Several punctures were made before it was found just under the spine of the scapula. Very little pus was aspirated. Incision 3 inches long over the 8th rib and 2 inches resected. Pleural layers adherent. Pleural surfaces seemed to be moving freely over each other, and an actual cauteral was applied with a view of promoting a pleuritis. The wound was then plugged with iodoform and gauze.

On November 13th had quite a large hæmorrhage. There was considerable difficulty in locating abscess, but finally a tube was inserted.

Present illness began on the 2nd of March, shortly after an operation for the removal of the left eye. On March 5th, pain developed in the right side of the chest, followed by cough and expectoration.

About May 1st, sputum was blood-stained, and May 12th, she spat up a wine glassful of bright red blood, and was admitted to the Hospital where she remained till July 25th. The diagnosis at this time was fœtid bronchitis. Came back September 27th saying that she had another hæmorrhage the day before, spitting up a half cup of bright red

blood after a fit of coughing. Examination proved negative. Discharged improved 5th October. 1907.

On October 23rd, she began to notice blood in the sputum. In the evening she coughed up two or three spoonsful of bright red blood.

Case XI.—W. P., age 27. Was very healthy until two years ago, when he began to have epileptic attacks which persisted ever since. Has used alcohol in excess for past seven years in all forms. No venereal history.

On December 23rd, 1907, sudden sharp catchy pain in left side, so severe that it kept him awake at night. Next morning pain was easier and he worked all day. December 26th, when entering his house, tripped and fell to the ground striking his head. Walked four or five steps and fell in an epileptic convulsion—became unconscious and rigid all over and remained so for three minutes. During the attack he frothed at the mouth, bit his tongue and passed urine. Had three more similar convulsions the same night.

On January 14th, pain in the left side became more severe and required morphia to relieve it. This pain had been present a little more or less since it first started. January 15th, breathing rapid, and pain present, but not very severe. January 20th, coughed and expectorated a large quantity of very effusive thick greenish matter. Later the sputum became watery. In bed since January 14th. Well-marked pyo-pneumothorax. No tubercle bacilli.

Operation: Two inches of the 8th rib resected in the line of the angle of the scapula. About eight oz. of foul-smelling sero-purulent material was evacuated. I think this was the most horrible fœtid stuff that I have ever had to do with in my hospital experience, and continued so for 10 days or a fortnight. Recovery.

Case XII.—Male aged 28. Inmate of Verdun. Epileptic. Large pulmonary abscess—left side. Excised portion of 8th rib in line of angle of scapula. Fœtid ichorous pus and air escaped from cavity. On introducing the finger, cavity was found to be the size of a small orange and to be especially connected with the upper surface of the lower lobe. The two lobes were quite separate, the abscess evidently lying between the two, but apparently taking origin from the lower. The cavity was wiped out and drainage established. Recovery.

Case XIII.—E. J., aged 45. Bronchiectasis: autopsy. Diagnosis. While working in bush got wet from which an attack of pleurisy followed some three years ago, and was in R. V. H., Montreal, eight months. Previous to entering the hospital, would spit up pus and blood as much as a tumblerful. Expectoration greenish, not fœtid. No pain. Matter rises up in throat whenever he stoops down.

Operation: Left lung. Died fifth day after operation.

Case XIV.—Dr. Finley. M. W., age 38. Abscess of lung. Operation: Resection of ribs and suturing of pleura. Temperate in habits. Illness began about a month previous to operation after a bad wetting which was followed by a severe cold. Had no chills nor pain except when coughing. During severe fits of coughing expectorated about a pint of almost pure blood in a night, sputum rancid, tenacious, rusty coloured and foul-smelling. Neither tubercle bacilli nor elastic tissue. Behind right lung area of dulness beginning at 4th dorsal spine above and extending downward for about 4 in. Died day after operation.

Autopsy:—Abscess R. Lung (upper pt. lower lobe); bronchopneumonia (all stages) (left lung L. lobe); emphysema and blood of lungs; old adhesive pleurisy; acute muco-purulent bronchitis: thoracotomy: chronic interstitial nephritis and acute interstitial nephritis; cysts of pelvic kidney wall and of trigone of bladder. Fatty liver: Suppuration of gland at base of appendix and of bronchial glands.

Greater New York Number.—An unusual feature of medical jounalism will be presented in the March issue of the AMERICAN JOURNAL OF SURGERY. The entire original subject matter in this issue will be contributed by New York City surgeons of note, and a number of new operations will be first presented therein. Among the contributions to appear are: "A New and Simple Method of Intestinal Anastomosis" (illustrated), Howard Lilienthal, M.D., attending surgeon, Mt. Sinai Hospital. "Sigmoiditis and Perisigmoiditis, James P. Tuttle, M.D., Professor of Rectal Surgery, N.Y. Polyclinic, New York. "Sacral Suspension of the Uterus—A New Technic" (illustrated), James Van Doren Young, M.D., surgeon, St. Elizabeth Hospital, New York. "Cancer of the Breast," Willy Meyer, M.D., Professor of Surgery, Post-Graduate Medical School; attending surgeon of German Hospital, New York. "A Modified Operation for Inguinal Hernia" (illustrated), Albert E. Sellenings, M.D., New York. "The Localization and Removal of Foreign Bodies with Especial Reference to those in the Skeletal Tissues" (illustrated), Dr. Walter M. Brickner, Assistant Adjunct Surgeon, Mt. Sinai Hospital; Editor-in-chief "American Journal of Surgery." New York. "An Operation for Direct Blood Transfusion with a Description of a Simple Method," John A. Hartwell, M.D., attending surgeon to Bellevue Hospital, New York. "Plastic Mastoid Operation: A New Method of Operating in Acute Mastoiditis," T. F. Hopkins, M.D., Assistant Surgeon Oral., N.Y. Eye and Ear Infirmary, New York. "Dislocation of the Cervical Vertebrae" (illustrated), James P. Warbasse, M.D.

THE

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

EDITED BY

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DR. C. W. DUVAL'S DEPARTURE.

We regret that the Montreal General Hospital and McGill University are about to lose the services of Dr. Charles W. Duval, who has for the last two years and a half been Pathologist at the former institution and lecturer in Pathology at the latter. Of late, Dr. Duval's collegiate duties had been transferred to the department of Histology. Dr. Duval has been appointed Professor of Pathology in Tulane University, New Orleans, and his position there will place him in a place of larger responsibility and greater opportunity, upon which we offer him our heartiest congratulations. At the same time we regret that his advancement entails our loss, for the institutions with which he has been connected, and his colleagues with whom he has associated have profited by his presence and assistance. An enthusiastic bacteriologist and a faultless laboratory technician, Dr. Duval's influence has made itself felt not only upon those who have worked under him, but also upon his colleagues who have been stimulated by his example as well as assisted by his knowledge. We extend to Dr. Duval our best wishes for his continued prosperity.

TYPHOID FEVER IN MONTREAL.

There is something which is worthy of wonder in the fatalism with which Montreal accepts its annual scourging of typhoid fever, as if it were the will of Providence which should be endured with proper

submission. On January 17th the hospitals contained 255 cases of the disease, and on that day six new cases came in. So far as we are able to learn, no enquiry has been undertaken which, in the least degree probable, is likely to lead to useful information. The civic health officer, without committing himself to an opinion, refers to a "theory" that "typhoid is in the air"; but he has not called upon the authorities to supply him with the means of making further investigations.

The Medico-Chirurgical Society, by a committee, has gone to the length of making some observations upon the water supply. The value of this means of sanitation is by no means to be despised, but anyone who is in the habit of drinking water from the tap may be trusted to make observations upon the subject for himself, which are more expressive of the situation than the scholarly considerations of the committee.

The *Standard* with most commendable zeal has undertaken an investigation on its own account. The remarkable feature about its report is that in one sample no colon bacilli were found. The performance of civic duties by newspapers has much to recommend it, though zeal does not always take the place of scientific exactitude. An investigation can hardly be accepted as final, in which we are informed that a cubic centimetre is "equal to about two square inches."

We have nothing but praise for the efforts of the same newspaper in exposing the foul conditions under which the milk-supply is obtained, though it does produce a feeling of disgust at the sight of the cream-pitcher. The array of figures which it sets forth may arouse some qualms of conscience in the milkmen, though we can scarcely expect that it will stimulate the authorities to a show of activity. They look upon it as a feat in municipal management that they should supply any water whatever.

INSANITY IN MONTREAL.

In the annual report of the Hospital for Insane, Dr. T. J. Burgess, the superintendent, comments upon the increase of insanity. There were in the hospital on January 1st, 1908, 535 patients, inclusive of two out on trial, and during the year there were admitted 197, making a total under treatment of 732. Patients discharged numbered 109, 36 died and one escaped, leaving in residence at the close of the year 582 patients, exclusive of four out on trial. This was a net increase of 47, as against 26 in the previous year, and represented the largest number that had been under care since the opening of the institution.

This large addition was due in his estimation, to the inferior class of

immigrants landed on our shores. Through the action of the Immigration Department fifteen inmates of the hospital were deported last year, but a careful examination of records revealed the fact that seven per cent. of the patients still in residence either should never have been admitted into the country, or should have been deported. At the present moment nearly 39 per cent. of the inmates were of foreign birth, and among them were a number who, it was almost certain, fell within the scope of the deportation laws.

Reviews and Notices of Books.

DISEASES OF THE NOSE, THROAT AND EAR, MEDICAL AND SURGICAL, by WILLIAM L. BALLENGER, M.D., illustrated with 471 engravings and 16 plates. Lea & Febiger, Philadelphia & New York, 1908.

A new work, superadding itself to the already rich literature on the nose, throat and ear, should justify its creation by some special features which may claim the attention of students and practitioners. Accordingly, it may be said of the present volume, in the first place, that it includes the whole range of these three subjects, instead of dealing fully with the nose and throat, and only with the associated affections of the ear. It is no longer necessary to explain the advantages of considering these closely interrelated separately without missing most important connexions. The relation of the eye to diseases of the sinuses is also introduced, though the significance of its relationship is not yet fully understood. Moreover, our knowledge of the inflammatory diseases of the nose and accessory sinuses, and of the throat and ear, has been increasing with such strides that the time seems to have arrived for presenting the subject on a new and higher plane. The causes of infection and inflammation of the cavities lined with mucous membrane are better understood, and it has accordingly become possible to give them in their true relation to the diseases. Instead of their mere enumeration, each has been discussed here with the purpose of showing its exact relation to the disease under consideration.

The attempt has been made to show the effects of anatomical and pathological obstructions in the various portions of the nasal chambers upon chronic catarrhal inflammations of the nose and upon chronic catarrhal and suppurative inflammations of the accessory sinuses. The advantage of this viewpoint is that it affords a more satisfactory explanation of the etiology and rationale of the treatment of infectious and inflammatory diseases of all three regions.

The author has long believed that surgical technique could be most clearly elucidated by describing each step of the various operations in numbered paragraphs and by complementing them with suitable drawings. Nearly every operation is therefore illustrated, some with more than twenty drawings.

Tracheo-bronchoscopy and œsophagoscopy have been brought to such a high degree of perfection and the occasions for this employment are so numerous, that a fully illustrated chapter is devoted to their consideration.

Dr. Ballenger is to be congratulated in carrying out to the smallest details the work thus outlined in the preface. It is the results of many years of experience and was several years in the course of preparation. It is questionable, however, whether so extensive a work as this is suited to the needs of the general practitioner and the medical student, but rather to the specialist in these departments of medicine. It is to be regretted that more reference has not been made to the work of Continental writers, especially in the advances recently made in diseases of the internal ear. The work reflects great credit upon the publishers and the book will be found to be a valuable addition to the specialist's library.

A MANUAL OF DISEASES OF THE NOSE AND THROAT, by CORNELIUS G. COAKLEY, A.M., M.D., 4th Edition, revised and enlarged, illustrated with 128 engravings and 7 colored plates. Lea & Febiger, New York and Philadelphia, 1908.

The author is to be congratulated upon the appearance of a fourth edition of his work in so short a time succeeding the last, and it speaks volumes for the popularity of the work. The book has indeed been written with the idea of meeting the requirements of the general practitioner. Each article has been carefully considered and changes made to conform to the advances in diagnosis and treatment. The article on deformities of the septum in the present edition includes spurs and deflection of the septum, which we think has simplified the subject considerably. The technique of the radical operation has been more fully described than in previous editions. The work is entirely up to date and we strongly recommend it for those whom it is especially written for, *viz*: the medical student and the general practitioner.

GONORRHŒA IN WOMEN. BY PALMER FINLEY, M.D. Professor of Gynæcology in the College of Medicine in the University of Nebraska, Omaha. Gynæcologist to the Clarkson Memorial Hospital and Wise Memorial Hospital; Fellow of the American Gynæcological Society. C. V. Mosby Publishing Co., St. Louis, Mo.

This is a neat book of 110 pages, including the Bibliography and Index, printed on good paper and well bound. There are chapters on the history, etiology, pathology, diagnosis, effects on society, and treatment. The author quotes very extensively from Morrow to show the great danger of men marrying before the disease has been cured. He lays great stress on diagnosing by means of the microscope and Gram's stain. He points out the curious fact that a husband and wife can have gonorrhœa without knowing it, but if a third person has connexion with one of them it will be promptly followed by the most severe symptoms. He explains this by their being accustomed to or immune from infection. There is a short chapter on prevention in which he recommends the physician to inform all parties concerned so that if married they may live apart, or if engaged their engagement may be broken off. But he says nothing of any mechanical means of preventing infection, although he is known to be a great advocate of rubber gloves in abdominal surgery. He quotes at length from Grandin, of New York, to show that more care should be taken to prevent men from infecting prostitutes, instead of taking so much trouble, in examining the latter, which is ineffective. He quotes from Boldt for treatment of the urethra, a quarter of one per cent. of protargol solution. The chapter on systemic infection is particularly good. For gonorrhœal rheumatism he recommends arsenic and iron, salicylates being of no avail.

A. L. T.

On "Infantilism from Chronic Intestinal Infection," by C. A. Herter, M.D., published by the MacMillan Co., New York. 118 pages.

This is a monograph of a study of the clinical course, bacteriology, chemistry, and therapeutics of arrested development in infancy. The work is based upon five cases more or less typical which have come under the author's observation. Another group of five cases of shorter duration and running an acute course are included in this study.

Most of these patients were under the care of Dr. L. Emmett Holt whose assistance the author acknowledges at the outset of his work.

The study is most painstaking and thorough, and the author concludes that the pathological state giving rise to what he calls "infantilism" is primarily due to the over growth and persistence of bacterial flora, belonging normally to the nursling period, which give rise to a chronic intestinal infection.

The author states that the chief manifestations of intestinal infantilism are "arrest in the development of the body; maintenance of good mental power, and a fair development of the brain; marked abdominal

distension; a slight or considerable degree of anæmia; the rapid onset of physical and mental fatigue; irregularities or intestinal digestion resulting in frequent diarrhœal seizures." The organisms concerned are the Bacillus bifidus type, the Bacillus infantilis type and the coccal type. The absence of the B. coli and the B. lactis ærogenes type, not only from the fæces but from material collected through the use of a cathartic is noteworthy. The urine changes are characteristic.

Fat is in excess in the stools. There is an excess of calcium and magnesium in the fæces which accounts for the impaired skeletal growth.

The author considers that there is no evidence present that infantilism has any other origin than a purely intestinal one.

The author's use of the word "infantilism" in these cases is possibly open to some criticism, as the term is usually applied to those cases in which the persistence of the mental attributes, as well as the physical of early childhood persist after puberty.

However, the class of cases dealt with has received considerable attention from several writers, and the chronic malnutrition resulting from intestinal indigestion in young children forms a very common clinical entity to those who are called upon to attend children's diseases. To such Dr. Herter's little book will prove most interesting and instructive reading.

The whole study is of the very best type of modern medicine which we commend heartily to those interested in children's diseases.

OBSTETRICS FOR NURSES. By JOSEPH B. DELEE, M.D., Professor of Obstetrics in the Northwestern University Medical School, Chicago. Third Revised Edition. 12 mo of 512 pages, fully illustrated. Philadelphia and London: W. B. Saunders Company 1908. Cloth $2.50 net. Philadelphia, London; W. B. Saunders Company; Canadian agent, J. A. Carveth & Co., Limited, Toronto.

The third edition of this well-known book has been brought up-to-date, the chief improvement being in the glossary. No maternity nurse who wishes to keep abreast of the times can afford to be without a copy of this book for frequent reference. In the training schools it is simply invaluable.

TEXT-BOOK OF NERVOUS DISEASES AND PSYCHIATRY. By CHARLES L. DANA, A.M., M.D., LL.D. Professor of Nervous Diseases in Cornell University Medical College; Visiting Physician to Bellevue Hospital; Neurologist to the Montefiore Hospital; Neurologist to the Woman's Hospital; Consulting Physician to t' Manhattan State Hospital; ex-President of the American Ner ological Asso-

ciation; ex-President of the New York Academy of Medicine; Corresponding Member of the Société de Neurologie, etc. Seventh Edition. 782 pages 8 vo. 261 engravings and 3 plates. William Wood and Company, New York. Price, $5.00 nett.

In the present edition, which has been largely rewritten, much new matter has been incorporated, but enough old or unimportant material has been omitted to prevent any material enlargement of the book.

Conciseness—which, however, has not been permitted to interfere with clearness—has been the author's watch-word, and it is difficult to to see how, within the limits he has set for himself, he could better have carried out his aim of furnishing "a book.....suitable for the student and practitioner and not valueless to the specialist." The work is throughout such an excellent one that it is difficult to particularise. The chapter on Anatomy and Physiology of the Brain is highly to be commended. A series of case reports illustrative of various forms of mental disease has been added and forms a helpful feature of the section on Psychiatry. The illustrations are clear and helpful and the printing and binding good.

One could wish to see some reference made to Edinger's nerve exhaustion theory in relation to tabes, and it is impossible to treat the subject of brain tumours adequately in the space of 20 pages; but the faults of this capital work are essentially those of over-condensation, and a remarkable amount of information has been compressed into its comparatively small bulk.

PROGRESSIVE MEDICINE, VOL. IV, DECEMBER, 1908. A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and Materia Medica in the Jefferson Medical College of Philadelphia. Octavo, 333 pages, with 26 engravings and 2 colored plates. Per annum, in four-bound volumes, containing over 1,200 pages, $6.00, net; in cloth, $9.00 net. Lea & Febiger, Publishers, Philadelphia and New York.

The Contents of Volume IV are:—"Diseases of The Digestive Tract and Allied Organs, The Liver and Pancreas," by David L. Edsall, M.D.; "Diseases of the Kidneys," by John Rose Bradford, M.D., F.R.C.P.; "Surgery of the Extremities, Tumours, Surgery of Joints, Shock, Anesthesia, and Infections," by Joseph C. Bloodgood, M.D.; "Genito-Urinary Diseases," by William T. Belfield, M.D.; "Practical Therapeutic Referendum," by H. R. M. Landis, M.D. An Index completes the volume.

Dr. Edsall who belongs to the Philadelphia School describes the clinical bearings of recent physiological research on the stomach and of psychic influences on digestion. His investigation of the diseases of the pancreas is peculiarly illuminating. Dr. Bloodgood's contribution covers the progress of surgery during the year with special reference to the surgery of the blood-vessels and joints. He devotes 20 pages to tumours and completes a most important monograph on the subject. The writers have taken knowledge of the best medical literature and present a concise statement of the latest developments in the whole field of medicine. This publication is so well known that one needs do nothing more than call attention to its contents.

SURGICAL MEMOIRS AND OTHER ESSAYS, by JAMES G. MUMFORD, M.D. Instructor in Surgery, Harvard Medical School. Publishers, Moffat, Yard and Company, New York. Illustrated. 1908.

This is a book by a scholar who has a nice taste for subject and a fine perception of the meaning of words. It contains 18 essays, seven of which are of ancient historical interest; these include a consideration of Hippocrates, Galen, Versalius, Ambroise Paré, Von Haller, John Hunter and Joseph Lister; but one turns with even greater interest to his accounts of the American surgeons, John Collins Warren and Jacob Biglow. There is a peculiar interest in the description of early American surgery, which is marked by sound scholarship and careful research. The memoir of John Collins Warren is done with affection and grace, and it conveys a singularly clear notion of the practice of the time. As early as the end of the eighteenth century Dr. Warren observed that "one of the great traits of the manners of the time was the way in which young persons were accustomed to treat persons older than themselves," which shows that young persons in those days were much the same as they are in these. We commend the book to anyone who desires a quiet and pleasant evening. It is full of matter, and the presentment of it will be found a relief to those who are obliged to read many works on modern medicine.

THE NATIONAL STANDARD DISPENSATORY, Containing the Natural History, Chemistry, Pharmacy, Actions and Uses, of Medicines; by HOBART AMORY HARE B.Sc., M.D., CHARLES CASPARI, Jr., Ph.G., Phar. D., and HENRY H. RUSBY, M.D., Second edition, thoroughly revised and much enlarged. Lea and Febiger, Philadelphia and New York, 1909. Cloth $6.00 net. Full leather $7.00.

This is a splendid volume of over 2,000 pages with 478 engravings. There is a general index of 123 pages of three columns each containing the names of drugs in all the modern languages. There is a therapeutic

index of 20 pages of three columns each arranged under "Diseases." The use of this book extends far beyond the medical profession and is essential to all who have to do in any way with drugs. Of the high authority of any work emanating from Hare, Caspari, Rusby, Greisler, Kremers, and Base, it is unnecessary to speak. In short, this great encyclopedia of the latest pharmacology, pharmacy, and therapeutics is recognized as the leading reference for every one concerned with drugs, their manufacture, dispensing, and medicinal uses.

TRANSACTIONS OF THE AMERICAN SURGICAL ASSOCIATION, Vol. XXVI., 1908, W. J. DORNWN, 701 Arch. St., Philadelphia.

This volume, the twenty-sixth, is edited for the American Surgical Association by Richard H. Harte, M.D., and contains a record of the transactions of the meeting held in May, 1908. In the Obituary notices we find mention of Markoe, Brinton, Senn, Annandale, and Von Esmarch. At page 324 we note a paper by George E. Armstrong, M.D., upon "The Diagnosis and Prognosis of Tuberculosis in Sceptic Conditions of the Kidney." At page 372 there is a paper by Francis J. Shepherd, M.D., upon a case of "Melanotoic Sarcoma of the common bile duct and the ampulla of Vater. The amount of work presented and the quality of it is entirely creditable to American Surgery.

THE SEXUAL DISABILITIES OF MAN, by ARTHUR COOPER, Consulting Surgeon to the Westminster General Dispensary; formerly House Surgeon to the Male Lock Hospital, London. H. K. Lewis, 136 Gower St., London, W.C., 1908.

We have never been able to satisfy ourselves that matters of the nature of those contained in this book required consideration apart from the general subjects of medicine and surgery. There is in the book much of surmise and much repetition of statements which have gained currency without sufficient examination.

Medical News.

In connection with the meeting of the British Association for the Advancement of Science to be held in Winnipeg, August 25th to September 1st, 1909, the office of the Honorary Local Secretaries has been organized in the University Building. All enquiries and communications on matters connected with the meeting should be addressed: To the Local Secretaries, British Association for the Advancement of Science, University of Manitoba, Winnipeg.

REPORT ON MONTREAL WATER.

The Montreal Medico-Chirurgical Society appointed a committee to make a report upon the supply of water to Montreal. The report was presented at the meeting of January 8th, and is as follows:—Your committee find that there is a very general and growing interest in the water supply of cities and towns; that the people rightly demand a plentiful supply of pure water that they and their children may use with impunity, and the state is recognizing more and more the importance of supplying to the people a liberal quantity of pure water for economic reasons.

There would seem to be a great unanimity of opinion with regard to the method of obtaining a good water supply That obtained from watersheds has proved expensive, difficult to control, and unsatisfactory in its purity. The most satisfactory results are obtained from earth water and filtered water.

In Europe, the filtration of the public water supply has been in use for more than 75 years. In Germany it has now been made practically obligatory on cities by the Imperial Board of Health. Indeed, the adoption of filters in Europe is not confined to thickly populated districts, the city of Liverpool takes its water supply from an almost uninhabited district in the Welsh mountains. This water, however, is carefully filtered.

One or two instances will illustrate very clearly the benefits derived from filtration of the public water supply. The death rate from typhoid per 100,000 of the population before and after filtration in the city of Lawrence is an example.

Before.		After.	
1889	127	1894	47
1890	134	1895	31
1891	119	1896	19
1892	105	1897	16
1893	80	1898	16

The city of Albany affords another instructive example. During the five years before the filtration of the water supply was carried out the death-rate from typhoid was:

Before.		After.	
1895	119	1900	37
1896	64	1901	21
1897	80	1902	28
1898	87	1903	19
1899	69	1904	19
		1905	19
		1906	16
		1907	20

This is a very marked reduction, although it must be noted that one-third of the water supply of Albany is unfiltered water from gravity streams.

If we now look across the water, we find that the death rate from typhoid per 100,000 of the population is:

Berlin	8
Breslau	10
The Hague	6
London	15
Rotterdam	5
Zurich	8

Perhaps the most striking illustration of the benefits of filtration was afforded by the well-known experience of the cities of Hamburg and Altona during the cholera epidemic of 1892. These cities are situated side by side on the right bank of the Elbe, and both take their water supplies from that stream, the Altona intake being placed but a few miles below the point where the sewers of Hamburg discharge into the Elbe the sewage of nearly 800,000 people. The two cities are practically one being built thoroughly to the dividing line on both sides. In the winter of 1892-93, when the cholera visited the valley of the Elbe, Hamburg, which used the unfiltered water of the Elbe, suffered severely, as is well known, from the disease, while Altona, which used the same water, after it had been further polluted by the cholera polluted sewage of Hamburg, but filtered it, had only a relatively few scattered cases, which were generally traceable to the use of Hamburg water by transient visitors to the adjoining city.

The Montreal death rate from typhoid per 100,000 of the population was as follows:—

1903— 90	31.45	per 100,000
1904— 94	31.89	" "
1905— 55	18.11	" "
1906—130	37.08	" "
1907—122	33.26	" "

The difficulty of finding typhoid germs in the suspected water has sometimes raised the question as to whether the water supply was responsible for the typhoid fever so prevalent in so many cities. In these conditions it must be remembered that the germs probably enter the water only at intervals, and pass away. As to how long they can live in the water will depend very largely on the amount of food, the temperature and other factors in the water. There seems to be some difference of opinion among authorities as to how far running water purifies itself, particularly when flowing over rapids.

Dr. Thos. Darlington, Commissioner of Health, New York city, states that, "It is an old but fallacious idea that flowing water purifies itself. Within a short distance of its course the impurities discoverable by chemical methods may be entirely lost; bacteriologically, or rather, from a pathogenic standpoint, however, it does not change perceptibly."

Pittsburg, Philadelphia, and Washington are now expending large sums of money in establishing filtration plants for their entire water supplies. Filtration will remove 98-100 of the bacteria from the water. Over 500 cities and villages in the United States have filtration plants, and many more are in the process of construction.

The milk supply is often responsible for the spread of typhoid, but, on the other hand, the milk itself is contaminated by the water. The contamination of the water in the country districts is often due, doubtless, to the people who contract typhoid in the cities. The benefits arising from a supply of filtered water are no longer matters of debate, but have been demonstrated by the large number of cities and villages that have already adopted the system.

Your committee are of the opinion that this society should now act with a view of influencing the City Council and demonstrating to the citizens and aldermen of Montreal the advantages of a liberal supply of filtered water, and the advisability of taking steps to secure it. Your committee think that it might be advisable for this society to invite the co-operation of the Society of Civil Engineers, with a view to determine more definitely the best means of securing a supply of pure water. It has also been thought by the committee that it would be well, also to invite the co-operation of the French Medical Society.

WESTERN HOSPITAL.

The annual meeting of the Western Hospital was held January 19th, 1909. Dr. F. J. Hackett read the medical report.

During the year there were treated 1,361 patients, an increase of 639 over the previous year. Of these 1,361, 797 were Protestants, 488 Catholics, 72 Jews, and 4 of other faiths; 478 were medical cases, 754 surgical; 1,289 were from Montreal and 73 from other outlying districts. There were 702 men and 589 women and 70 children under twelve years of age. Of the 61 deaths occurring during the year, 21 took place within 48 hours of admission into the institution, making the death rate 4.48 in all, or 2.93 over 48 hours' admission.

The general secretary's report, read by Dr. George T. Ross, showed that the last year had been the best one in the history of the hospital. While the increase in the out-door department had been 10 per cent. over the previous year, the number of the resident patients had doubled.

The following were yesterday elected life governors: Messrs. A. McDougall, John Patterson, F. D. Lawrence, W. I. Gear, Thomas O'Connell, J. J. Westgate, William Rutherford, Andrew Rutherford, William Morrison, Charles B. Esdaile, William Hanson, Mrs. Colin McArthur, and Drs. Howard M. Church and Richard Kerry.

The election of officers for the ensuing year resulted in last year's officers being re-elected, by acclamation, as follows: Honorary presidents, Messrs. Randolph Hersey and Clarence Smith; president, Mr. Peter Lyall; first vice-president, Mr. Robert Backerdike; second vice-president, Mr. J. C. Holden; treasurer, Mr. H. A. Hodgson; secretary, Dr. George T. Ross; committee of management: Messrs. P. W. McLagan, Alderman Gallery, W. H. Trenholme, T. J. Rutherford, Thomas Gilday, J. T. McCall, John Murphy, Dr. James Perrigo F. J. Hackett, J. Pitblado, C. W. Davis, Jas. A. Ogilvie, jr., Clarence F. Smith, J. A. Mathewson, and Charles M. Hart.

ROYAL VICTORIA HOSPITAL.

The annual meeting of the Royal Victoria Hospital was held January 19th, 1909.

The following officials were appointed for the ensuing year: Miss M. F. Hersey, lady superintendent of the training school for nurses. Dr. John McCrae, assistant physician to the hospital, Dr. F. Tooke, assistant opthalmologist.

The following appointments to the staff were made for the year ending the 31st: Associates in Medicine—Dr. H. B. Cushing, Dr. F. M.

Fry. Associate in Medicine—D. F. Burnett, in charge of dermatology. Associates in Medicine—Dr. C. K. Russell, Dr. G. D. Robins, in charge of neurology. Associate in Gynæcology—Dr. J. R. Goodall. Clinical Assistants in Medicine—Dr. W. W. Francis, Dr. D. W. McKechnie, Dr. J. Meakins, Dr. C. A. Moffatt. Clinical Assistants in Surgery—Dr. W. E. Nelson, Dr. F. C. McKenty, Dr. J. W. Hutchinson. Clinical Assistants in Oto-Laryngology—Dr. H. C. Muckleston, Dr. E. H. White, Dr. J. F. Rogers. Clinical Assistant in Opthalmology—Dr. A. G. McAuley. Assistant Pathologist—Dr. O. Klotz. Registrar in Pathology—Dr. J. McCrae. Assistant Bacteriologist—Dr. A. C. Rankin. Registrar—Dr. H. B. Cushing. Assistant Registrar—Dr. A. G. McAuley.

During the year 3,699 patients had been admitted, an increase of 301 from the previous year. There were 2,106 Protestants, 1,154 Roman Catholics, 387 Hebrews and 52 of other faiths 1,863 were free patients, 1,154 public ward patients, paying 50 cents and one dollar per day, and 735 private ward patients; 2,680 were residents of Montreal, and 1,019 came from districts outside of the city. The total days of hospital treatment aggregated 84,204, as against 81,902 during the previous year, an increase of 2,302 days, The average number of days' stay in hospital per patient was 22.9, as against 24.10 the previous year. On the 1st January, 1908, there were 218 patients in the hospital remaining from 1907, and during the year 3,688 were discharged, of whom 2,133 were well, 1,076 improved, 143 not improved, 125 not treated, and 211 died. Remaining in hospital 31st December, 1908, 229.

During the year the improvements of the pathological department had been carried out, thus completing the whole of the fireproofing of the hospital and the necessary additions to the buildings.

The mortality during the year was 211, of whom 68 expired within 48 hours after being taken to the hospital. The mortality rate for the year counting all patients was 6.07 per cent., while deducting patients who had died within 48 hours of admission, the deathrate was 4.11 per cent.

The highest number of patients in the hospital on any one day was 253, on October 2nd, and the lowest 196, on July 16th. The highest monthly average was 244 in October, while the lowest 211, occurred in July. The daily average for the year was 231, as compared with 224 for the previous year, an increase of 7 per day. In the out-patient department 4,756 patients were treated, their visits to the hospital aggregating 31,314. The hospital ambulance made 1,155 trips.

The income for the year amounted to $172,171.14, while the ordinary expenditure was $165,396.71. The balance of $6,774.14 was applied to the indebtedness for new buildings and other improvements.

The total cost per day per patient was 1.16. Of this 23¾ cents went to provisions, which was an increase of 3¼ cents over last year. The balance of 93 cents went for maintenance, including staff, servants, employee, etc.

Retrospect of Current Literature.

SURGERY.

UNDER THE CHARGE OF DRS. ARMSTRONG, BARLOW, ARCHIBALD, AND CAMPBELL.

E. Muller and A. Peiser. The Technic of the Antiferment Treatment of Suppurative Processes. *Beiträge Zur Klin. Chir.*, Oct., LX., Nos. 1-2, 1908.

In the *Münchener Medizinische Wochenschrift*, April 28, 1908, Müller and Peiser first described their method of treating suppurative processes by means of an antifermentative serum, pointing out at the same time that one of the factors in hyperemic treatment was the increase secured in the local supply of antiferment. Peiser obtained excellent results in the treatment of 100 cases with direct irrigation of pus cavities with fluids rich in antiferment, and demonstrated that all acute infections leading to abscess formation yielded to this method of treatment.

In the present paper the authors point out that the most suitable fluid for antiferment treatment is human blood serum;—also fluids obtained by puncture from the thoracic and abdominal cavities, and rendered bacteria free by filtration. Normal animal serum is not suitable. Where puncture fluids are not available, Müller and Peiser have used the serum of the individual, obtained by venous puncture and aspiration, it being necessary to secure one-half as much again of blood as the quantity of serum required. The serum may be separated from the blood either by beating with a sterilized stick and then filtering; by centrifugalizing; or, where not required for immediate use, by allowing it to separate from the clot at ice-chest temperature.

The cases most suitable for this form of treatment are:—

(1) *Abscesses.* In such cases the pus aspirated from the abscess cavity is replaced by an equal quantity of serum through the same needle. This is re-aspirated and the cavity again filled with fresh serum. The needle is then withdrawn. If the inflammatory signs persist, the above procedure is repeated in twenty-four hours. A third inoculation is said to be seldom called for.

(2) *Septic Ulcers.* In such cases dressings saturated with serum are applied daily until the discharge has disappeared.

Where the individual has recently suffered from an acute general infection, it is important to use a serum obtained from a healthy subject. In hospital practice the use of puncture fluids has been found very satisfactory. Sera rich in antiferment, taken under aseptic precautions, may be kept indefinitely at ice-chest temperature.

E. M. v. E.

MEDICINE.

UNDER THE CHARGE OF DRS. FINLEY, LAFLEUR, HAMILTON, AND HOWARD.

L. M. Warfield. "Arterio-sclerosis." St. Louis, 1908.

In his book Warfield defines the term, and describes anatomically the sels; points out the importance of the small arterioles; the effect that a shutting-off of one part of the circulation has on another part, provided the heart force remains the same.

He points out the strain in the aorta—50-100 cc. of blood 70 times a minute into an already filled aorta; the large vessels of the arch take much strain, but no large vessels come off after this till the diaphragm: thus the thoractic aorta is liable to be the seat of disease changes.

With regard to pulse tension, he says that ordinary arterio-sclerosis is not necessarily accompanied by high blood tension. When the latter exists, there is either renal disease, sclerosis in the splanchnic area or of the aorta above the diaphragm: High tension can occur (1) by stimulation of the constrictor centres and (2) by direct action on the muscle cells in the arterial walls. Adrenal secretion, and the secretion of chromaffin cells, probably do both.

In dealing with the radial artery, the author states that the changes are mainly medial; calcification in the media gives the "beaded" quality to the vessel, and such areas become bulged: thus, he says, a series of small aneurysms occurs.

Experimental arterio-sclerosis affects most the thoractic aorta, because the diaphragmatic opening acts as a kind of regulating flood gate—a point that is difficult to believe. The tortuosity of arteries is due to their lengthening, because of increased pressure when they are no longer capable of retracting after the pulse wave has passed.

In dealing with the etiology there is nothing new offered. As early signs of arterial change, the symptoms that mark "neurasthenia" in the young may in those over 45 mean arterial change. Epistaxis in the middle aged is sometimes a symptom: progressive emaciation may ensuet the dyspeptic symptoms of arterio-sclerosis are given some space; ocular changes are important. Arcus senilis means arterio-sclerosis, but arterio-sclerosis does not necessarily mean arcus senilis.

Under symptoms and signs he divides the classes into cardiac, renal, abdominal, cerebral, spinal and local. The first two are readily understandable: abdominal sclerosis as an entity—"angina abdominalis"—is that degree of sclerosis necessary to give hæmochromatic changes (brown atrophy), and fatty infiltration of the organs. A sense of oppression, weight or pressure, epigastric tenderness, pain after eating, vomiting and hæmatemesis may be present; or again, epigastric tenderness and dizziness with sweating after a meal (Perutz) have been described. With sclerotic abdominal vessels, thrombosis leading to necrosis may bring on an acute surgical ailment. Spinal sclerosis, he describes as an entity: weakness and easily induced fatigue of the legs, jerking, numbness, heaviness and even pain in the legs, progressive incontinence of urine and progressive paraplegia. In diagnosis, Warfield says the man who "gets up at 7, works all day, plays golf, drinks 3-6 whiskies and is proud of his physical development and has not seen a doctor in ten years", is the man whom an observant physician can sometimes warn in time.

WM. RUSSELL. "Arterial Hypertonus, Sclerosis and Blood Pressure." Edinburgh, 1908.

Russell points out the tone of the arteriole; also its "pulsatile movement" partly stimulated by nervous mechanism, partly mechanically by blood-flow: hypertonus is the contraction over a generalized area. He applies the term arterial-sclerosis to all thickened arteries, except to local thickenings occurring in endarteritis obliterans: this diffuse permanent thickening is clinically to be recognized as separate from atheroma.

One may consider that when the arteries are contracted, the actual pressure falls there and lower down; but is raised necessarily behind the affected area, unless there be a compensating relaxation elsewhere.

Hypertonus can be clinically distinguished. In a non-thickened artery, before middle life, if chronic kidney disease be absent and syphilis, and he adds, an alcoholic history, it may be assumed that the thickening is hypertonic. An ordinary sized or large vessel with a thick wall is usually structurally thickened; a small vessel with a thick wall is usually hypertonic.

In thickened vessels, hypertonus can still arise. Russell says recognition of this may be acquired. An artery which is lumpy and in which rings and patches can be felt may at times fail to give this impression; when it is so, it means that hypertonus is necessary to make these areas palpable.

As to the causes of hypertonus, he thinks the nervous influence has been over-emphasized; and lays great stress on the toxic materials cir-

culating in the blood. He bases this on the effects obtained experimentally from the use of chemicals. The contraction is a means of diminishing the supply of impure blood to the tissues.

Hypertonus is set up by "muscular excitants," and recurrence or continuance of it leads to hypertrophy of the muscular coat of the artery; this happens if the hypertonus be long continued and if the blood pressure be maintained: blood pressure maintenance depends on the left ventricle: thus thickened arteries appear in the young. "The physiological corner stone of my contention is that the vessels contract under the direct influence of irritating substances, which also act upon the intima." This hypertonus gives high "readings" on the Riva-Rocci instrument.

Relaxation of the vessels by drugs, etc., makes this lower; sometimes after relaxation the pressure is heightened, because the relaxation gives the heart greater freedom and therefore more vigor. But though the artery wall always enters into these readings, they are not valueless; with hard arteries the readings will keep high, but the variation will show the readings between which hypertonus is effective.

The causes of hypertonus exist most in the alimentary tract and result from proteid (putrefying) foods rather than from carbohydrates: "suppressed gout" is closely allied to this; constipation is thus an active agent and alcohol is also.

In connection with the old idea that the adrenal, being stimulated, gave out constrictor substances (referring to Dr. Rolleston's address here), Russell harks back to an old idea: "Is the cortical part of the adrenal meant to destroy or transform the nedullary substances?" That is, does the medulla extract harmful substances from the blood, and are these neutralized in passing through the cortex? With strain of overwork, the adrenal might then allow constrictor substances to accumulate in the blood.

To return to hypertonus, it is highly necessary to recognize it, not that one may "lash the heart with tonics," but that one may restore a lower aortic pressure by relaxing the hypertonus of the arterioles.

He takes hypertonic spasm as the cause of angina pectoris; also the cerebral arteries are liable to it, because the cerebral, coronary and pulmonary vessels are not linked with the vaso-motor centre.

Such cerebral symptoms vary from slight numbness to hemiplegia and aphasia; and the suggestion is here put forward: Is not the pitutitary to the cerebral what the adrenal is to the general circulation?

GUBB, "Arterio-sclerosis." *Lancet*, July 11th, 1908.

Gubb details some of the premonitory signs of arterio-sclerosis, such as migraine, epistaxis, alopecia, diminished energy and power of concentration, psychical depression, irritability, neuralgia, tingling, numbness and paresis. He points out that the "stability" of the pulse is useful; *i.e.*, the pulse is 8 or 10 more in the erect than the recumbent posture; should this difference fail, the assumption of arterio-sclerosis is a safe one, and if it be reversed, *i.e.*, the standing pulse be less than the recumbent one, it indicates actual organic disease (regurgitation?). The writer somewhat favours Russell's view that the hypertension of the early stages may be dependent on the spasm of the arteries.

He notes that high arterial tension, if united with renal disease, may be the cause directly of arterio-sclerosis.

LANCEREAUX. *Bull. de l'Acad. de Méd.*, June 2, 1908.

Lancereaux says arterio-sclerosis is often a disease of those between 30 and 40 years of age. Gout and lead are strong causative factors; eating, drinking and smoking are only good assistants to these. Gouty people should seek prophylactic treatment early, even if their only claim to gout be the pedigree. Lancereaux's favorite method of treatment is pot. iod. (grs. 15 to 45) per diem, through years, three weeks in the month with purgatives to promote iodine excretion. Baths, rubs, douches, etc., assist elimination.

STENZEL, A. *Amer. Jour. Med. Sc.*, February, 1908.

Stenzel's paper is devoted to an appeal not to consider all the associated conditions which appear in arterio-sclerosis as the result of it. Often they are merely senile.

WALTON AND PAUL. *Jour. A. M. A.*, January 18th, 1908.

These authors think that arterio-sclerosis produces apoplectiform attacks, vertigo, loss of memory, etc., *but not headache*. Does it cause "elderly" neurasthenia? The hypertrophied heart they think dependent on renal degeneration, and arterio-sclerosis without these two is not usually accompanied by high blood pressure. If either of these is present with arterio-sclerosis, there will be moderate tension; if both, high.

THAYER AND FABYAN. *A. J. Med. Sc.*, December, 1907.

A thickened radial in the old is normal: in the middle aged or young, it means either that the vessel has had excessive strain or by inherent weakness, it has had to fortify itself against normal work. The mesenteric artery and the aorta generally show similar changes.

F. P. Henry. *Month. Cyclop. and Med. Bulletin,* June, 1908.

Arterio-sclerosis is not a disease *per se* of age; there are many toxins which may cause hypertension. Is hypertension itself a cause? In favour of this view (1) adrenalin causes experimental arterio-sclerosis; (2) In arterio-sclerosis, the adrenal is often hypertrophied; (3) The removal of the thyroid and ovary, depressive organs, allows arterio-sclerosis. Regarding the first of these, Waterman (Virchow's Archiv., Feb., 1908), found that when hypertension was prevented by the simultaneous use of amyl nitrite, the adrenalin caused arterio-sclerosis all the same. Josué considers that hypertension is not necessary to arterio-sclerosis, but its presence is a valuable corroborative sign. J. McC.

OTOLOGY.

UNDER THE CHARGE OF DR. BIRKETT.

An examination into the condition of the vestibular apparatus in a series of cases of deafness of non-suppurative origin. Norman H. Pike, M.B., B.S., London. Journal of Laryngology, Rhinology and Otology. November, 1908.

The total number of cases examined was seventy-four, all of which were suffering from a high degree of deafness in one or both ears. The examination of each case was conducted after the method of Barany, of stimulating the vestibular apparatus, and observing the resulting nystagmus.

The turning and caloric tests were employed to elicit the nystagmus.

The subjective symptoms, such as vertigo, nausea or vomiting, seemed to depend more on the temperament of the individual than the condition of the vestibular, for vertigo was noticed when the vestibular irritability was normal, increased and diminished. Where, however, one, or both, vestibular apparatuses did not functionate there was no disturbance of equilibrium. Two classes of cases, viz., brain tumour and congenital syphilis are deserving of special notice. In all ten cases of brain tumour the vestibular irritability was diminished on the same side as the tumour. The importance of these findings lies in the application of Barany's test as a further aid in the localization of brain tumour.

All the cases of congenital syphilis, seven in number, showed a diminished, or absent, irritability of the vestibule. That there was in congenital lues "such a constant obliteration of the labyrinth was up till now not known."

In the total seventy-four cases of non-suppurative deafness that were examined, the vestibular irritability was normal, or increased, in thirty-nine, and impaired or not functioning in thirty-five. J. T. R.

Report of the Imperial Cancer Research Fund, 1908.—E. F. BASHFORD, Supt. of Research Laboratories.

This is the third report which has been issued by the British Cancer Commission. As the second report appeared in 1905, a great deal of material has accumulated to make up the third report.

The ethnological data concerning the distribution of cancer, the zoological distribution of cancer, the study of spontaneous mouse cancer, and the minuter histological structure of cancers and sarcomas, are all discussed at length in separate papers by the investigators who have devoted years of study to the subject. There are seventeen papers in all.

In the introduction Bashford says that "much of the pessimism with which the future of the investigation of cancer is still regarded, is due to the persistence of the widely disseminated but ill defined idea that malignant new growths, as a whole, are of congenital origin." The study of the incidence of cancer as determined by irritants in man, demonstrates absolutely that the generalization of the idea of a congenital or embryonic origin is incorrect, and this conclusion agrees with the results of experiments, and notably with the experimental production of sarcoma.

Ethnological distribution of Cancer. Bashford.—The author finds that very little reliance can be placed on the vital statistics of various countries. This discredit which must be placed upon the figures of the incidence of cancer, is dependent upon the improper methods of death registration. In France, Denmark, Sweden and Bulgaria, the causes of death are not tabulated except for the towns. The number of deaths assigned to cancer increases in one country or another, in a manner parallel with the increasing accuracy of the vital statistics, and the low death rates in Servia, Hungary and Spain are probably the result of understatement. Switzerland shows the largest number of deaths due to cancer, which may be the result of the customary medical diagnosis of the dead bodies. The death rate from cancer in England is 0.79 per 1,000 population. These figures, Bashford believes, are nearer the truth than in most countries. Some Governments permit lay-men or lay-women to register the diagnosis of death, which is apt to lead to cases such as cited by Prinzig. In one an ignorant peasant was authorized to certify the causes of death, all of which he reported due to cardiac failure; while another returned fifty deaths from diphtheria in Filest, at a time when that disease was quite rare.

Still more are the reports of cancer among the savage races to be discredited. The assertion that cancer is a disease peculiar to Europeans, and when occurring in the natives of other parts of the globe is due to a communication of the disease to them, is without foundation. When a definite search is made among the savages, cancer of various parts of the body is noted among them. There is, however, this peculiarity that certain races have cancer in certain regions of the body more commonly than others. Thus the Irishman with his short pipe has cancer of the lip, and in Egypt where Bilharzia infection of the bladder is frequent, there too is cancer of this organ quite common. Natives of Kashmir, who wear small earthenware pots with charcoal fire, about their waists, are commonly affected with epithelioma of the abdominal wall, resulting from frequent Kangri burns. Cancer of the mouth is frequent in India among the natives who chew a mixture of betel nut, tobacco and slaked lime, and in Ceylon more than half of the recorded cases of cancer are of the mouth and lips. The frequency of cancer of the penis is apparently associated with chronic irritation, due to the accumulation of dirt and secretion under the prepuce, and it is practically unknown in the Mohammedan races who practice circumcision.

Again, although cancer in civilized countries seems to be on the increase, this is probably only apparent from the improved records. Diagnoses are made with much greater accuracy to-day, and the methods of precise registration of death have been much improved.

In short, all races are affected with malignant growths; the sites of these growths vary, however, among different races, dependent upon certain race or individual customs.

These conclusions are borne out by the report of Dr. Seligmann, who notes that tumors both benign and malignant are to be found (although infrequently) among the Melanesians and inhabitants of New Guinea.

Zoological distribution of Cancer.—Evidence is rapidly accumulating that malignant new growths occur in all vertebrates, from mammals to fishes. Although the frequency of the occurrence appears to be on the increase, this is to be attributed to the closer observations that are made. Sarcomata are known to occur in the following mammals, jackal, bear, lioness, tigress and dog, while cancers have been found in jackal, opossum, lioness, rabbit, cow, cat, sheep and others.

Cancers and sarcomata too, are reported in birds, the most frequent site being the intestinal canal. Likewise tumors of various kinds are found in reptiles and amphibians. Quite a number of skin cancers have been reported in frogs, but these have shown the peculiarity of not producing metastases.

Over 2,000 cases of cancer of the thyroid in fishes have been collected by Murray. Although cancer is universal in vertebrate animals escaping the effects of many chronic forms of irritation affecting man, its occurrence is frequently associated with other external irritants and it may not merely be the ease with which lesions on the surface are observed, which has led to the accumulation of our knowledge of the skin cancers. As in man, so in animals, no one form of external agency is constantly associated with cancer. The fundamental common factor is the peculiarity of the living cell to exhibit malignant growth under the action of the most diverse agencies in different forms of life. The wide zoological distribution of malignant growths, while affording the completest answer to the myriad speculations on the etiological association of conditions peculiar to mankind with the incidence of cancer, cannot be expected to furnish other than the most general indications of the essential factors in its development.

Among the tumors of animals which afford special interest are the cancers of mice and rats which lend themselves so well for experimental purposes. Some thousands of these mice cancers have been observed and studied, and it is found that the laws governing their growth and effects are comparable to those found in man. Considerable criticism has opposed the study of spontaneous tumors in animals. These, such as the denial of metastases of Jensen's mammary mouse cancer, are no longer possible. It has been shown that the inoculated tumors do give metastases when observed for a sufficient length of time.

Experimental Cancer Studies.—The mammary cancers of the mouse have served the greatest usefulness for the study of experimental transplantation. Aside from these cancers various other malignant and benign tumors have been observed in the mouse. Inoculation experiments are usually made into the abdominal wall and into the peritoneal cavity. Besides the local development of the cancer, metastases develop most commonly in the lungs but also in the glands and other organs. The lung metastases apparently develop from cells transferred by way of the blood stream.

Comparable to the human mammary cancer the matrix of the tumor may undergo various changes. In some instances a sarcomatous tissue replaces the usual connective tissue stroma, while again in other instances the matrix develops a framework of bone or cartilage. In one instance Murray observed the development of 142 spontaneous tumors in the same animal.

In some instances a metaplasia is noted in the mouse cancers. Tumors of a purely adenomatous character may develop squamous-celled cancers,

and the reverse has also been noted. Such tumors which have taken on new characters, may entirely lose their former type and be entirely replaced by the modified growth.

The course of spontaneous tumors is usually progressive, although spontaneous absorption occasionally takes place. Observations were made on the course of all the tumors and charts indicating the increase or decrease of the primary growths, and the occurrence of secondaries were prepared.

In transplanting tumors to new animals, small bits of tumor are obtained from the living infected animals and inserted into the peritoneum or under the skin of the new host. The percentage of successful transplants varies greatly with the tumor to be transplanted and with the new host. Ehrlich explained the unsuccessful transplants, in assuming that these tumors possessed a lower avidity for the foodstuffs than did the normal tissues. There are others who refer the cancerous proliferation to a disturbance of the intracellular equilibrium, the cells being unable to remain in a resting stage. However, the cancerous proliferation cannot be considered alone, without taking into account the individual resistance presented by the other tissues of the animal.

Gierke has demonstrated very well how a certain tumor will often retain its characters through many generations, and how, on the other hand, its structure becomes much modified by transplantation. The hæmorrhagic mammary cancer of the mouse may take on an adenomatous appearance, retaining, however, its malignant characters of destruction and metastases. He points out that the histological characters of a tumor may not represent its biological characters of malignancy. Tumor tissue often becomes modified in its appearance by the stroma into which it is implanted. It is found that the sites of an unsuccessful primary inoculation offer greater resistance to subsequent implantations. This he believes may be due to the "stroma-reaction." There may be some relation between this stroma-reaction and scirrhus cancers.

Gierke's results on immunizing mice against cancer agree with those of Ehrlich. It is found that animals treated with a primary dose of cancer material, resist to a considerable extent the transplantation of the same tumor, and have also developed an immunity, although less, against tumors from other sources.

On the other hand, Gierke found that mice which had been successfully infected with a tumor were more susceptible to a reinoculation of that tumor than normal mice. This finding is opposed to the views of Ehrlich. It not infrequently happened that the second tumor implanted grew much more rapidly than the first one.

Bowen undertook a series of experiments to test the effect of interfering with the blood supply on the growth of tumors. His results are what one would expect. Complete obliteration of the blood supply is in many cases impossible, with the result that temporary regression of the tumor and later recurrence of the growth results.

Considerable has appeared in the literature of the occurrence of cancer and sarcoma in the same tumor; and further, Apolant and others have reported this development in their experimental animals. A very complete study of this subject has been made by Haaland in Bashford's laboratory. He has observed the development of a sarcomatous stroma in a transplanted cancer in nine cases. To all appearances (microscopically), the original tumor was of a pure cancerous type, having the usual connective tissue stroma. When such a tumor is transplanted there are degenerative changes and there is some loss of the connective tissue elements of the stroma of the cancer. These cells are replaced by the fibroblasts and invading blood vessels of the host, so that in part at least the stroma of the next transplant contains some of the elements of the second host. In the early stages of the transplant the tissues are very cellular, and it is difficult to determine with accuracy just at what stage the malignant features in the connective tissue were developed. In the later stages the sarcomatous interstitial tissue has overgrown the cancerous elements, and has little resemblance to the connective tissue stroma of the original tumor.

Some question has arisen whether these sarcoma-like tumors are true malignant growths, and not merely granulation tissue. The proof of this lies in the development of metastases in various organs, and in the destructive invasion of all the tumors.

In the development of the sarcomatous stroma, some difficulty arises in distinguishing the cancer cells from the neighboring sarcoma elements. Apolant has also spoken of this recently, and even hints at the possible origin of the sarcoma cells from the epithelial tumor. Haaland denies any association in the origin of the sarcomatous elements with the previously malignant epithelial cells.

This author is rather inclined to believe that the irritation and altered conditions brought to bear on the stroma of the cancerous tissue by the repeated transplantation, has enhanced the power of regeneration and proliferation of the connective tissue stroma, leading to the development of sarcomata.

General Results of Propagation of Malignant New Growths. — The general results of the work on experimental cancer have been summarized by Bashford, Murray, Haaland and Bowen. It may be said at the

beginning that the experimental reproduction of the lesions of cancer in sound animals occurs only under such conditions, rendering it highly improbable that the disease is usually or even occasionally communicated from one living being to another.

There are many difficulties attending upon the success of experimental transplantation of tumor tissue. The race of mice, age of the animals, method of introducing the tissue and mode of collection are important factors requiring attention in performing the experiments. In primary transplants there are only about 10 per cent. of "takes." It is an interesting observation that the tumors of mice of one country are not readily transplanted to those of another. When, however, a tumor has been successfully propagated in a new race of mice, the tumor tissue adapts itself to the new hosts and the proportion of successful transplants increases.

It is an interesting fact that with the adaptation of the tumor tissue to the host the virulency,—or, more properly speaking, the successes attending transplantation increase rapidly. Thus, in a propagated tumor, whereas the first transplant gave only 15 per cent. of takes, after nine generations the percentage steadily rose to 84. It is, therefore, apparent that cancer cells follow the same laws governing all living cells, that they may adapt themselves to their environment and then proliferate without hindrance in their new surroundings.

Induced Resistance in Mice against Cancer.—In 1901 Jensen observed the complete disappearance of tumors from mice that had been inoculated successfully, but he reported that the results of attempts to cure mice of tumors had hitherto been uncertain.

Bashford's school pointed out the great care which must be taken in attributing unsuccessful tumor transplantations to an immunity possessed by the animal. There are so many factors necessary for the uniform success of transplanting neoplasms in mice, that until such an experimental technique is acquired which will give 85 to 100 per cent. of success, the conclusions drawn from such experience would be fallacious.

Aside from the technique of transplantation, the growth of tumor cells is dependent upon two factors, firstly the inherent growing activity of the cells and secondly the resistance of the tissue in which the cells are proliferating. When the energy of growth of the tumor cells is great, the resistance of the surrounding tissue becomes of small importance, but the reverse is true when the tumor cells are of low growing powers.

In order to obtain comparable results attention must be paid to (1)

dose of the tumor material, (2) the age of the animals, and (3) the site of inoculation. Young mice are considerably more susceptible than old ones, and are used in preference. It is also better to use the smallest doses of the tumor emulsion which will give a constant high percentage of successes.

It has been found that the ventral regions gives better results for cancer transplantation than the dorsal. The explanation is offered, that the connective tissue reaction in the mammary region is more marked and more favourable for the propagation of the tumor cells.

It is an important observation that animals in which tumors have developed, and have then been absorbed, are highly refractory to further inoculation. This fact has been repeatedly demonstrated. It is also of importance that the animals in which tumors have disappeared after exposure to radium are just as refractory as those in which absorption took place spontaneously.

It has also been shown that the inoculation and absorption of tumor tissue in animals leads to a low grade of protection, so that small amounts of tumor inoculated into animals, will protect them so that subsequent transplants of the same tumor will give fewer successes than normal animals. The same mild type of protection is also induced by the inoculation of normal tissues.

Russel has undertaken a very complete histological study of the changes taking place in the introduced cancerous tissue in cases of normal and immune animals. He has followed the proliferative processes which occur on the one hand and the degenerative changes occurring on the other. There are a number of points which are very interesting. In successful transplantations there is a progressive degeneration of the stroma of the introduced tumor tissue, while there is a concurrent development of fibroblasts and new capillaries on the part of the host. This newly developing tissue becomes the stroma of the transplanted tumor and is essential for its development. In immune animals there is an entire absence of this stroma reaction, and the introduced tumor mass remains devoid of a supporting framework and of capillaries. In consequence a process of slow aseptic necrosis of the tumor results.

Russel is of the opinion that the immune animal possesses qualities in its serum which rob the cancer cells of a chemiotactic property of attracting a vascular stroma to it.

It is pointed out by these observers that the word "immunity" as applied to cancer-work must not be interpreted in the same sense as is used for micro-organisms. Cancer immunity refers more directly to a

diminished number of successes, distributed over a large number of animals. No serum has been obtained which shows any protective or curative influence over experimental cancer.

The numbers of experimental inoculations which have been made in mice have exceeded many thousands, and although none of the results obtained are directly applicable to man, yet our knowledge concerning the nature and development of cancer has been greatly enhanced.

O. K.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The fifth regular meeting of the Society was held Friday evening, December 4th, 1908, Dr. J. Alex Hutchison, President, in the chair.

DOUBLE SYMES AMPUTATION.

E. W. Archibald, M.D., presented this case before the Society.

I bring this case before the Society merely to show the result of a double Syme's amputation at the ankle joint. This patient was referred to me by Dr. Howell last April. On March 11th both his feet had been frozen and he came into hospital on April 11th. At this date the whole anterior half of each foot was in a state of dry gangrene, and there was also a large circular area of gangrene over each heel. The problem here was whether one could save half the foot by the Chopart operation, covering the ends of the bones and the heels with Krause skin flaps later on, or whether one should go above this line and cut away at the ankle joint by the Syme's or Pirogoff operation; or again whether one should go still higher and amputate at the junction of the middle and lower third the old "point of election." The man himself was opposed to any long stay in the hospital; and my own impression, in which Dr. Bell in consultation coincided, was that the Chopart amputation was more likely to give a poorer result than the Syme's, and in the second place we believed this would give a better result than with the older method of the higher amputation. The Syme's amputation was done. On account of the area of gangrene over both heels the ordinary posterior heel flap could not be used and was substituted by an anterior one taken from the dorsum. This man is a machinist and made his artificial feet himself at a total cost for the two feet of $4. (The mechanism was here demonstrated.) As is seen, the patient walks without limp, and with a reasonably firm step. He can walk for several

hours without fatigue. He can step up on a chair and down from it without danger of falling. In a general way he is able to do his work about as well as before the amputation.

INTUSSUSCEPTION IN INFANTS.

J. M. Elder, M.D., read the paper of the evening.

James Bell, M.D.—Dr. Elder is to be congratulated on his success in this class of cases. It is a subject which interests every surgeon, especially those who have to deal with children. A tentative diagnosis should be easily made. What impresses me is that Dr. Elder has been able to reduce the intussusception in three successive cases; that is I think excessive good fortune. In a large proportion of the cases which I have had to deal with I have been unable to reduce it at all. With regard to the treatment which used to be recommended as palliative, inversion, inflation and distension of the bowel, I cannot help thinking that it is of very little use, not always safe, and always dangerous from the delay which it necessitates. The difficulty I have had in reducing these intussusceptions with the bowel actually in my hands has led me to think what the effect would have been had the child been inverted and water or air or shot or some other material forced into the bowel. I cannot think it would have had the slightest effect for good. I do think that many cases are reduced spontaneously, but there is no doubt at all that early operation is the saving of the baby; there is no doubt that the time comes, when one waits, that the swelling, œdema and moulding of the parts makes reduction an impossibility. A great many of the cases I have had have been of that kind. In these cases what I have endeavored to do has been a resection after the Maunsell method. Withdrawing the incarcerated portion of the bowel through an incision, cutting it off and resecting. This can be done pretty rapidly and removes the gangrenous portion.

D. J. Evans, M.D.—Dr. Elder is also to be congratulated for having brought before us a surgical subject which appeals to every general practitioner. In the last fifteen years I have seen six or eight cases of intussusception. The vomiting in such cases has always impressed me as being rather peculiar and suggestive. It is more like an exaggerated hiccough, small quantities being brought up with each effort, and it is practically never projectile. This regurgition continues for some time, when there may be an interval of quiet, then another vomiting period.

The early diagnosis of this condition is so important that great attention should be paid to detail in making a study of the case. It is my habit to have the child practically stripped and placed upon the

table in preference to a bed, in a good light so that all the movements of the abdomen can be studied. It is impossible to satisfactorily examine the abdomen of an infant lying on a nurse's or a mother's knee.

In intussusception cases with the child stripped on the table the trained eye after watching the abdomen for a short time can frequently detect the site of the tumour; on palpating this area with gentle ballotting movements with two fingertips, its outline can be defined. This manœuvre must be carried out with extreme care so as to avoid straining or resistance on the part of the child. The tumour is usually of very definite sausage shape outline and rarely of great hardness.

If there is much resistance on the part of the abdominal wall an anæsthetic should be employed, when if a tumour is present it will rarely escape the fingers of the examiner.

I agree with Dr. Elder that palliative treatment by means of injections ought to be tried in every case before it is submitted to operation. I have had one experience in which I obtained a brilliant result from the early use of a high injection into the bowel. An infant nine months old was seized with pain and vomiting at mid-day and I saw it within one hour of the onset of the symptoms. A tumour could be palpated just above the umbilicus, running transversely across the abdomen. The symptoms were quite typical. A saline injection with the child in the inverted position caused the tumour to disappear inside of twenty minutes, when the child fell asleep. On waking two hours later there were two large bowel movements containing a quantity of blood and mucus. Dr. Shepherd saw the case with me and agreed that the symptoms were undoubtedly due to intussusception.

There is no question, I think, that repeated palpation and extended examination, associated with delay, results in the case going into the surgeon's hands with small chance of success following the operation. Careful, gentle examination by the method suggested, early diagnosis, high saline injections with the child inverted; which if unsuccessful should be followed immediately with laparotomy, performed as rapidly as possible and using but a small quantity of a general anæsthetic. Such a course would probably give a large proportion of successful cases.

The chronic cases of intussusception which usually occur in marantic infants suffering from diarrhœa are the most difficult to recognise. Fischl points out that the microscopical examination of the stools may be of assistance in making a diagnosis in these cases.

Where the case is one of chronic ileo-colitis there is usually in the stools a large quantity of bacteria, while the epithelial elements though present are not specially plentiful; whereas when intussusception has

occurred the epithelial elements are abundant, while the bacteria present are of a different type and are not specially numerous.

I have not had an opportunity to verify this observation of Fischl's, but mention it as offering assistance in so-called chronic intussusception.

F. R. ENGLAND, M.D.—With Dr. Elder's permission I would like to ask Dr. Bell what his results have been in cases of intussusception where resection of the bowel had been found necessary. I reported before this society about twelve years ago a successful case of intussusception after operation. At that time the necessity of early diagnosis was emphasized and it was considered very exceptional indeed to get a recovery in a case which had been left so long as to make resection necessary. The success obtained in my case was due to early recognition and prompt operation. The case was of the ilio-cæcal variety, and the cæcum had passed around to the descending colon. The patient was an infant at the breast seven months old.

DR. C. GURD.—I would like to ask Dr. Elder if he noticed anything particular about the cry of the child. In two cases I had what impressed me was the severity of the cry; it gave one the impression of intense agony.

JAMES BELL, M.D.—With regard to operation in these cases, my contention is that when one opens the abdomen in a case of late intussusception which cannot possibly be reduced, something must be done. The child is already in a very serious condition and as young children bear prolonged operations very badly, it is most important that operation should not be unnecessarily prolonged. The results in these late cases are very bad indeed albeit I cannot say anything at the moment about the statistics, either in general, or from my own experience. I think if we imagine ourselves, as we must all have found ourselves at some time, with the young child before us when the intussusception cannot be reduced and when it is necessary to secure relief to save the patient's life, we must conclude that if an artificial anus will effect the purpose, it is the best thing to do under the circumstances. But in most cases, resection will be necessary and may be very speedily carried out by Maunsell's method. This is generally necessary because the intussusceptum is probably gangrenous or if not, is likely to become gangrenous very soon and the production of an artificial anus does not relieve the whole condition.

J. M. ELDER, M.D.—With regard to Dr. Bell's remark I may say that I considered myself fortunate in securing reduction in one or two of these cases; I pretty nearly gave it up in one case, but by persisting a little longer managed to reduce it. In late cases when you have a

large intussusception and serous adhesions have formed, it is no easy matter to get that out. I did not take up the question of the treatment of those cases which did not come out, but I agree with Dr. Bell that it is probably better to establish an artificial anus and do an anastomosis later. I think the method which recommends itself most to me is Barker's, in a case where one could not reduce the intussusception. This is simply a modification of Maunsell's method. An incision is made into the bowel tumour, and the invaginated portion is then pulled out through the incision, next pass sutures and cut away the intussuscepted portion. That occurs to me to be the method which would give the least amount of shock, and you are always sure of the two bowel ends meeting. Watson Cheyne lays great stress upon what he calls the combined method of reducing these intussusceptions. He does a laparotomy, gets out the bowel tumour, and then begins the high enema, It often took 15 to 20 minutes of pressure below to effect a reduction. He says you can succeed in this way where you cannot hope to do so by manipulation. I am very much interested in the palpation method which Dr. Evans has described, but I am sure one would have to learn to do it. Moreover you would have to be a specialist in order to be allowed to strip the child entirely. As to the peculiar cry mentioned by Dr. Gurd, I have heard that cry, and though it was not present in the cases I had, it is indicative of the agonal or acute cases. An agonizing cry is very typical of these cases, and if you get that condition in an infant there is no doubt but that it is intussusception. Here there is a peculiar pull upon the mesentery, which is very painful and continuous.

METASTIC GONORRHŒAL CONJUNCTIVITIS WITH CULTIVATION OF THE GONOCOCCUS.

HANFORD MCKEE, M.D., read the report of this case.

M. LAUTERMAN, M.D.—This society is indebted to Dr. McKee for the excellent work he has done in connection with these cases. The amount of work done is tremendous, personally I unfortunately would not have been able to do as much detail work as Dr. McKee has done in this individual case, and I fear that many of us would not have had the patience. I have seen a good number of cases of conjunctivitis that in the light of our former knowledge were difficult to explain, there being no evidence of direct infection, and until I was over in Vienna I was not aware that anyone had noted what was considered a systemic conjunctivitis due to the absorption of toxines or to the presence of gonococci in the blood.

It has been noted that such attacks of conjunctivitis usually came on after excessive sexual indulgence, and that these patients were as a rule men whose prostates or seminal vesicles or both, were infected, although in the majority of instances they presented no external signs of any latent disease.

The popular impression is that when the discharge ceases, the patient is cured, and I am sorry to say that this erroneous impression is not limited to the laity alone. These cases still harboring infection are allowed to go about, and later develop articular pains or other conditions which are the after results of this systemic infection. Two cases of periarthritis that I had showed no external evidence of disease, and yet a pure culture of gonococci was isolated from the joints.

I would like to ask Dr. McKee if he has had any experience with the anti-gonococcus serum manufactured by Parke, Davis & Co. I have used it in a series of twenty cases with fairly satisfactory results, one of these cases was characterized by the presence of a very marked conjunctivitis, and incidentally I could find no gonococci in the smear I made from the conjunctiva although on massaging the prostate gonococci were found in the secretion so expressed.

The most important point in this communication to my mind is that Dr. McKee has been able by careful work and application, to demonstrate the cause, possibly a remote one, but nevertheless with every necessary assurance, of this condition and if it does nothing more it should serve to impress us with the importance of carefully attending to every case of gonorrhœa that comes under our observation, in view of the far reaching effects that so often attend these cases.

TYPHOIDAL PERFORATIONS.

W. G. Rielly, M.D., F. R. England, M.D., A. G. Nicholls, M.D.—The patient, aged 26, was taken ill October 11th with a series of chills. Several days later she complained of more or less colicky abdominal pain, particularly so on the 18th. She was admitted to the Western Hospital October 19th, when, on examination, a diagnosis of typhoid fever was made. There was some diarrhœa, many rose spots, palpable spleen, and the blood gave a positive Widal reaction. The temperature ranged around 103⅘° for quite a few days, but nothing unusual was noted until November 3rd, when it was noted that the spleen was very tender on palpation. On November 4th and 5th she had two slight hæmorrhages for which calcum lactate and opium in small doses was given. She seemed to be doing well until November 9th, when she complained of severe pain along the course of the descending colon. By midnight

this had become very intense. The temperature had been gradually coming down for a week not more than 100° in the evening and dropping to 98⅘° towards morning. The pulse was 108, respirations 20. At noon November 10th the pain was very severe, the pulse suddenly rose to 140, although the general appearance of the patient did not suggest anything very serious.

Operation was advised, believing there had been a perforation, but permission was not obtained until well on in the afternoon.

F. R. ENGLAND, M.D.—When I saw the patient she was very ill indeed, the pulse was small and rapid and could hardly be counted at the wrist. All the usual symptoms of peritonitis were present, pain, tenderness, and rigidity. The abdomen was opened by a median incision. A small amount of purulent fluid escaped on opening the peritoneal cavity. On passing the hand towards the right iliac region the finger tips passed through a large perforation in the cæcum directly into the bowel causing a large amount of fæcal matter to be poured out into the peritoneal cavity. Very extensive ulceration of the cæcum was found. The mucous membrane around the perforation was loosened and dissected away from the muscular coats, the whole cæcum seemed softened and the seat of extensive ulceration. The perforation was sutured after trimming the margins of the ulcer as well as several other points of ulceration in the neighbourhood where perforation threatened. The ilium was inspected and appeared to be in good condition. The patient's condition being desperate the peritoneal cavity was cleansed and the abdomen rapidly closed.

A. G. NICHOLLS, M.D.—The specimen speaks for itself. In making an examination of the body I found the usual signs of severe typhoid, with a certain amount of bronchitis and cloudy swelling of the glandular organs. The chief interest was in connection with the intestines. A small quantity of thin fæcal matter was found in the right flank about the cæcum and also in the true pelvis; a small quantity of gas bubbled up through the fæcal matter. I removed the intestines carefully *en masse*. The usual site of the chief typhoidal ulceration is, of course, in the ileum. In this case, all I could detect in this situation was some depression of the Peyer's patches, but no sign of recent inflammation or ulceration at any point. I concluded from this that at some time or other there had been typhoidal inflammation, but that the patches had healed up, and I feel inclined to think that this had occurred weeks or even months before, because had not this been the case, one would have thought that some at least of the lower Peyer's patches would have manifested traces of acute inflammation. Practically the whole mucous

membrane of the cæcum was dissected off from the underlying muscle, and, on immersing it in water, it floated up in shreds on the surface quite away from the bowel wall. There was, about five inches from the ileocæcal valve, an area of ulceration which Dr. England had sewn up, and about one inch further down there was an ordinary pin-point opening from which exuded the gas I first noticed on opening the abdomen. The extraordinary part was the enormous ulceration of the mucosa. There were in one spot four or five ulcerations in which you could pass a probe quite easily from one to the other beneath the mucosa. On examining the large bowel more fully I found ten perforations in all; two near the ileocæcal valve; one about the splenic flexures of the colon; three about the middle of the descending colon; and four in the sigmoid. These perforations were enormously large, one being at least 1½ inches long. The question arose in my mind as to whether they could have occurred post mortem as a result of pressure within the bowel. It seems to me, however, that this could not be. At autopsy, there were no evidences of any great pressure within the bowel, further, the rent Dr. England sewed up was fully as large as those found subsequently, and finally, the occurrence of one such large perforation would suffice to lessen tension from gas. The extraordinary points in this case are the following: (1) The lesions were confined to the large bowel, a sufficiently rare thing in itself; (2) The great number of perforations; there were at least ten; and (3) Their enormous size.

J. M ELDER, M.D.—I have had some little experience in operating upon typhoid perforations, but I have no experience whatever of perforation of the cæcum or colon. To my mind it is very disheartening to a surgeon to think that you can go in and attempt to close a typhoid perforation and find such a state of things. One point struck me was Dr. England's incision in the median line, I think the President will bear me out in saying that our practice has always been in favour of the appendix incision.

F. R. ENGLAND, M.D.—I only wish to add to the clinical history that for at least ten days the patient had indefinite abdominal pains with some vomiting.

1.—EXCISION OF THE LARYNX AND PHARYNX FOR CARCINOMA.

2.—TOTAL EXCISION OF THE LOWER JAW AND FLOOR OF THE MOUTH FOR SARCOMA OF THE JAW.

JAMES BELL, M.D.—

Case I.—Miss McA., aged 46, first suffered in March, 1908, from difficulty of swallowing and hoarseness. The hoarseness disappeared but

the difficulty in swallowing increased. She came to hospital on the 19th of October, 1908, and was operated upon the 21st of October.

Dr. Birkett found on examination the condition which had been described by Dr. Minnes of Ottawa who had sent her to me. There was an area of epithelioma at the upper end of the œsophagus and pharynx closely adherent to the lower part of the larynx.

In this case as in the other, the larynx, the upper portion of the œsophagus and the involved area of pharynx were removed in one mass from below upward without preliminary tracheotomy. The stump of the trachea was fixed to a skin wound just below the lower end of the vertical incision. In this case as the removal of pharyngeal tissues was not complete, I endeavoured to maintain a communication with the mouth cavity by connecting portions of the pharyngeal mucous membrane above and below.

This has been unsuccessful to a great extent and the patient has suffered a great deal more than she would have done had I not attempted so much.

In this case also the stump of the trachea seemed to come so readily into the skin wound which I had prepared for it that I did not divide the isthmus of the thyroid. I also sutured the stump of the trachea to the skin, contrary to my usual practice, with celluloid thread (Pagensticker) instead of silkworm gut. The result has been that infection took place in the lines of suture which cut through and the pressure of the thyroid caused some retraction of the stump of the trachea.

In all my previous cases I had been able to maintain the integrity of the stump of the trachea flush with the wound in the skin. In this case, however, there was some retraction and it will be necessary to wear a tracheotomy tube at least the greater part of the time.

It is still necessary to feed her by tube and it is doubtful whether she will ever be able to swallow very satisfactorily or not. In all other respects she is well and I have not much fear of recurrence.

Case II.—Mrs. S., aged 32, was admitted to the hospital on the 19th of October, transferred to the surgical side by Dr. Birkett later, and operated upon on October 31st.

She had suffered from soreness in the throat for four years. She had no other symptoms until last winter. Then she had tickling and a scratching feeling in the throat. She has had difficulty in swallowing since April and has not been able to take any solid food since. The larynx with the upper portion of the œsophagus and the large area of the pharynx were left as in the previous case. It was quite impossible,

however, to attach any portion of the pharyngeal mucous membrane. I therefore brought out the stump of the œsophagus just alongside the trachea but in a separate opening. She has had a very smooth convalescence and has suffered much less than the previous patient. She can feed herself quite satisfactorily through a tube introduced through the opening in the neck. There is of course no communication between the mouth cavity and the stomach. She is quite well and comfortable and I think has a reasonable prospect of immunity from recurrence.

Case III.—Mrs. J. P., aged 32, had a tumor of the lower jaw and a very remarkable history. She had small-pox at ten years of age, which was followed by a skin eruption which lasted six or seven months and some thickening of the jaw which has persisted ever since. In May, 1906, definite swelling first appeared in the submental region. In September, 1907, she had a considerable tumour beneath the chin which was opened and drained for some time and never disappeared. During the last few months, the tumour has grown rapidly and on the 30th of November, I removed the whole of the lower jaw from the angles forward together with the floor of the mouth and most of the skin down to the hyoid bone. I put a temporary support in the form of a piece of vulcanite into the space from which the bone had been removed and sutured the mucous membrane within the mouth. I was obliged to close the wound externally by dissecting up the skin and making lateral incisions. She has made an excellent recovery but I have no hope for an immunity as the disease was so far advanced. Dr. Keenan pronounces the growth to be a round celled sarcoma of very malignant type, probably engrafted upon myo-sarcoma—thus explaining, to some extent at least, the very extraordinary history.

Since February, 1898, I have removed the larynx in eleven cases. Seven of these operations were for intrinsic laryngeal cancer.

In four, the primary disease was in the pharynx and invaded the larynx secondarily.

Out of the eleven cases seven recovered: one of the seven however died on the 58th day from recurrence or rather extension along the carotid glands in the mediastinum.

Of the four deaths, three were from pneumonia, four, seven and fifteen days after operation respectively.

In one unfortunate case, in which the patient was suffering from complete obstruction in the œsophagus, I was unable to get below the disease and all I could do was to fix a tube into the œsophagus after operation. This woman died within a few days.

In the first four cases I did a preliminary tracheotomy and removed

the larynx from below. One of these died of pneumonia. In the last seven cases no preliminary tracheotomy was done and the mass was removed from below upwards. I consider this a much better method of operating than by operating after preliminary tracheotomy. In all cases operation was done with the patient in an exaggerated Trendelenburg position and the patients were kept with the foot of the bed elevated for days after operation. The intention here was to allow of the excretions gravitating upwards rather than gravitating downwards into the trachea and infecting the lungs. I am of the opinion that this attention to posture is important. In all cases the pharynx was closed and no attempt was made to prepare the patient for an artificial larynx.

In all the cases which survived, a satisfactory amount of whispering speech was developed. Case I. lived several years and died of recurrence in the lung. Case II, also lived several years and died of apoplexy. Case III. lived seven years and seven months and died of recurrence in the glands of the neck, about the base of the skull. Case VI, as already stated, died on the 58th day from recurrence in the glands of the neck. Case IX, was operated upon March last and the tenth and eleventh cases, are those which I present to you to-night.