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## MULTIPLE NEURITIS.

BY

NORMAN VINER, B.A., M.D.

This paper is based entirely on a series of 52 cases in the indoor and outdoor departments of the Montreal General Hospital during the past twelve years.

*Definition.*—Multiple Neuritis may be defined as a general inflammation of the spinal nerves, affecting particularly those going to the limbs, and occasionally those going to the head and trunk. It is associated with muscular paresis or paralysis, sensory disturbances, subjective and objective, trophic changes, and diminution of reflexes.

*Pathology.*—The pathological findings indicate a more or less diffuse congestion or inflammation, which may be parenchymatous, interstitial, or more usually parenchymatous and interstitial, not only of the axone but of the nutritive centre as well, although the latter is hard to demonstrate. In other words there is inflammation of the lower sensory and motor neurones.

*Etiology.*—Relatively three times as frequent in men as in women, it is distinctly a disease of adult life, midway between adolescence and old age, the onset with men being usually ten years later than women. Alcohol is perhaps the most frequent individual cause accounting for 40 per cent., one-third of whom are women. Next in frequency lead poisoning with 13 per cent., followed by diphtheria with 11.5 per cent. Typhoid and influenza each accounted for two cases, diabetes for one. There was one due to some toxic material taken in a glass of whiskey, which had made several other partakers vomit immediately afterwards. Some of the remainder might possibly be accounted for by great exposure, very hard work, and a few more possibly to alcohol also. Occupation except in those working in lead may have been a factor only in so far that the great majority of the male victims followed laborious trades. In previous illness, rheumatism was the most common element, being

present in one-third of the cases, the next frequent, perhaps, being sciatica. Syphilis was noticeable by its relative absence, having been present only three or four times. There were numerous associated diseases their coincidence apparently only being casual, with the possible exception of Cardio-Vascular disease, which was rather frequently present in the alcoholic cases. Recurrences were infrequent, there being one patient with two attacks, one with three, and one who for eight years in succession had an attack every spring. The general condition of the patient was usually good, sometimes very good, and but seldom very poor.

*Symptoms.*—The symptoms, limited in extent though varied in detail, consist mainly of sensory, motor, electrical, trophic, and reflex disturbances. The onset may be sudden or gradual; when sudden it is more commonly with weakness, when gradual with pain, sometimes with both combined. Many complain for weeks or months of numbness or tingling, before they perceive any weakness. Often the onset is with sharp lancinating pains, or there may be itching, burning, or sensations of heat and cold in the limbs. Rarely the patient is suddenly paralysed, as if struck down; more usually there is a feeling of weakness which steadily increases to its maximum.

To obtain a more adequate mental picture of the usual course of the average case of Multiple Neuritis we might adopt a more graphic illustration along the following lines. Suppose we imagine the victim of the malady on "all fours," resting on his fingertips and heels, and the toxine creeping on him from the floor in an icy flood. Soon the cold will be felt in the feet and particularly in the toes, then the fingers and hands will resent it, and, as is often the case with cold, a burning sensation will follow. These sensations will tend to send lancinating advance guards higher up the limbs. By now through weakness the toes are drooping and bunched together, and perhaps the stream has already swept away the Plantar Reflex. The foot now descends until the sole is flat on the floor, and we have "foot-drop," while the muscles there, now weakened to voluntary effort, return an unwilling contraction to the electrical stimulus—there is diminished faradic reaction. And, as we watch and observe the outstretched fingers gradually fold into the palm, the Achilles reflex is carried off, and the cramped calves begin to lose their firm outline and become flaccid, only less flaccid than the more rapidly yielding Anterior Tibial and Peroneal groups of muscles. By now the weakening wrists will flex under the pressure from above and we will have "drop-wrist." The burning pain is now inclined to give way to tingling and feelings of "pins and needles," which may ascend high to knee and elbow, or even to hip and shoulder. The knee-jerk has disappeared and perhaps the Radial and Ulnar reflexes; the muscles lower down now lie

flabby, soft, diminished, and respond no longer to the will or even the faradic battery. Their response even to Galvanism is now lessened, though rarely lost. The Biceps and Triceps reflexes are tottering and the upper muscles of leg and thigh, of forearm and arm, now yield a reluctant response to the faradic cell. As the patient himself becomes sensible of the ascending feebleness, his knees yield under him, and then his elbows. But not only does he sag as a whole—he must needs sag more to the right for he is more vulnerable on that side. The cold, the burning, the tingling, the pins and needles, have now given way in parts to an unappreciated feeling of numbness, which renders the patient insensitive in those areas to touch, to heat and cold, and sometimes even to the prick of a pin. The distal parts of the extremities are cold and blue, the skin is usually dry, sometimes perspiring, rarely oedematous, and frequently thin and shiny, with an absence of hair and occasionally of subcutaneous fat. By now the patient is usually fated to a surcease of suffering, but should greater misfortune be his lot, he sinks on his haunches, and, if his shoulders give way too, he falls to the floor an inert mass. If his trunk has also been involved, when we place him in a sitting position he is unable to maintain that position, or to bend or turn, but must of necessity sink down again, still maintaining an effort to keep his head more or less erect. When that, too, is attacked, excluding the diphtheritic cases, it is an indication of involvement of the cranial nerves, and with the ptosis and strabismus, the lingual, palatal, laryngeal, and, rarely, facial palsies, there is too often a paralysis of the pneumogastric and phrenic nerves, which can only result in death, an event, in this series at any rate, fortunately, of very rare occurrence.

Just as the development of the disease from onset to acme may be of long or short duration, so may the period from acme to culmination or cure, but although we sometimes have a sudden onset, we practically never have a sudden recovery. The dawning convalescence is manifested by a diminution of sensory symptoms, by increase in power, and by the return of the electrical phenomena and reflexes in the order given, which, it will be seen in regard to symptoms as also in regard to parts affected, is in the inverse order of the attack.

A good simile descriptive of the general tendency of Multiple Neuritis has been adopted by Dr. Shirres. It is of a plant or tree whose defective nutrition at the root is first manifested by deterioration at the most distant branches, so here, without carrying the simile too far, it is to be noticed that the earliest and most marked signs of the disease are in the most peripheral parts. The sensory changes, the paresis or paralysis, the trophic and electrical changes, are more marked in the feet than the legs, in the legs than in the thighs, and similarly with the upper extrem-

ities. Again, the lower extremities are more vulnerable than the upper ones, the extensors than the flexors, and—a remarkable fact brought out by the present series—the right limbs are usually more early, more frequently, or especially more severely attacked.

*Special Forms.*—Of the special forms of Multiple Neuritis, only the diphtheritic, the lead, and the alcoholic varieties of this series merit any special attention. The alcoholic cases showed in addition to the features frequently associated with chronic alcoholism, such as tremors of the hands and tongue, Cardio-Vascular changes, nervousness, a rather marked preponderance of sensory symptoms, especially pain. The pain in many cases was severe and constant, often preventing sleep, and lasting for many weeks, and even months. Although in a few cases the motor power was rather good, the vast majority were greatly incapacitated. The involvement, as a rule, was of all the extremities, although there were a few in which the uppers or lowers alone suffered, with a similar number who had the trunk attacked as well as the limbs. In the present series it was questionable whether the uppers could be considered weaker than the lowers, as is said to be usually the case.

The diphtheritic cases showed few sensory symptoms, with an almost total absence of pain. The weakness was more marked in the lowers than the uppers. In addition, there was almost in every case disturbance of accommodation, deglutition, and speech, being due to paralysis of the ocular muscles extrinsic and intrinsic, of the tongue, palate, and larynx. In consequence of these conditions there were strabismus, ptosis, defects of speech, difficulty or pain in swallowing, regurgitation of fluids through the nose, and disturbance of vision, in different cases. The duration of this series was less than the average, and, strange to say, the majority of the victims were adults.

*Lead Neuritis.*—Of the seven who suffered from this condition, three were painters, one an artist who mixed his own paints, one a carter for the White Lead Co., and the remaining two women, who together with a friend of theirs, had used the same lead face lotion and had all suffered similarly as a result. In this series the duration was longest, most of the patients having the disease for over two years, and one for no less than twenty-nine years. There was a somewhat greater tendency to involvement of the uppers than the lowers, so that wrist-drop was generally more frequent and marked than foot-drop. The sensory symptoms were more marked than in the diphtheritic, but less marked than in the alcoholic form, pain being the most frequent sensory symptom. Cramps, especially in the legs, were rather common. In the majority of the cases the supinators escaped. Two of the cases showed some mental symptoms, one being drowsy and dull for a while, the other extremely nervous.

There was almost as much tendency to increased as to diminished reflexes, especially in the old-standing cases.

*Special Symptoms.*—Mental change in this series was extremely rare, and, such as there was, was much more suggestive of an associated condition, due to the primary toxic agent than of an integral part of the neuritis. Insomnia was frequent and due to the pain. Fever was present at the onset in a few cases and persisted for some time in some of them. There was only one doubtful case of sphincteric involvement. Diarrhoea occurred in many of the cases with an acute onset. Constipation was present in almost every case, and was probably due to the change from an active to an inactive life. Headache occurred mainly in the cases suffering most from constipation, and was more likely due to that condition, than to a neuritis of the nerves of the head.

*Sensory Symptoms.*—Subjectively there were itching, burning, heat and cold, tingling, pins and needles, lancinating pains, and numbness; objectively there were tenderness, delayed sensation, referred sensation, and anæsthesia. All these sensations were more marked in the distal parts of the limbs. The extent and variety of the sensory changes varied with the patient, the stage of the illness, and the part of the body affected. Subjective disturbances were almost invariably present, as also was tenderness, which was usually most marked in the calves and in the fore-arms. Anæsthetic areas were by no means invariably present. Tactile sensation was most vulnerable, followed in frequency by confusion to heat and cold, and comparatively infrequently was a pin-prick not felt. Delayed and referred sensations were rare.

*Motor Symptoms.*—The motor symptoms vary from the slightest grade of weakness to the most complete paralysis whether of a single muscle, a group, a whole limb, or all the extremities, and sometimes even the trunk may be involved, as well as some of the muscles of the head and neck. Again, all grades of paresis and paralysis may coexist in the muscles of the same or different limbs, and, as already mentioned, the tendency, in the great majority of cases, is for the more distal muscles of a limb to be more severely affected than the proximal ones. Twitching and spasmodic movements occasionally, and tremor frequently, occur. Wrist-drop and especially foot-drop are among the commonest manifestations of extensor susceptibility, although flexor deficiency, most obviously indicated by weakened hand-grasp, is not far behind. Flexor weakness, however, is often overestimated, owing to its exaggeration by the lack of balance, or disturbance of synergic action, produced by the greater extensor trouble.

Inco-ordination is mentioned in perhaps one-half of the cases and may be present in the hands and feet. It is due primarily to anæsthesia in

the fingers and soles, and this combined with the muscular weakness, and possibly some loss of joint-sensation, renders some of the finer movements such as buttoning clothes, writing, and even walking, very difficult operations.

The gait may be stamping, with a broad base, and more or less ataxic, as in Tabes. In perhaps one-third of the cases there is a distinct step-page gait, and more frequently simply halting, unsteady, or dragging gait, due purely to the weakness. Most of the patients, at one time or another, may be unable to walk at all, on account of the degree of paresis.

Loss of sense of position of the joints is uncommon, and loss of stereognostic sense is not mentioned as often as might be expected.

*Trophic Changes.*—Obvious atrophy occurs in only about 25 per cent. of the cases, and, as with sensory, motor, reflex, and electrical changes, is more apt to occur in the distal than the proximal parts affected. The atrophy is but seldom extreme and rarely as marked as in the local neurites, as, for example, in some of those caused by trauma. The parts involved in Multiple Neuritis may show localised areas of coldness, rarely of heat, infrequently of perspiration, and occasionally of glazing of the skin. The nails at times also show nutritive defects. Cyanosis and œdema of parts are also much rarer than in the traumatic forms. The muscles even of a well-nourished patient are generally soft and flabby, and those most affected may show an extreme degree of flaccidity or loss of tone.

Contracture as a result of Multiple Neuritis was uncommon in this series.

*Electrical Reactions.*—These vary from diminution of faradic reaction to complete reaction of degeneration, the former being almost inevitable, the latter rather exceptional. In different muscles and muscle groups supplied by the same nerve may be found all stages of faradic decrease, frequently of galvanic decrease, and more rarely do we find that the anodal closing contraction is greater than the cathodal. In addition electrical sense, i.e., susceptibility to pain from a strong electrical current is generally diminished. Very rarely do we find increase of electrical reaction or electrical sense.

*Reflexes.*—The reflexes in the areas affected are generally lessened or lost, particularly in the lower extremities. The Achilles reflex and the knee-jerk are usually the first to go and the last to return. Increased reflexes, one or more in number, associated, or not, with abnormal reflexes such as Rectus and Achilles Clonus, Oppenheim and Babinski signs occur in about 10 per cent. of cases. These usually have been found not at the commencement of the disease, as might be expected.

but more usually at later stages. They may, however, have been due to associated conditions.

*Diagnosis.*—The diagnosis in a well-marked case is very readily made from the sensory, motor, trophic, electrical, and reflex changes, and the majority of cases do show all these changes. However, cases appear in which the sensory symptoms are uncertain or absent, where the motor weakness is not marked, where there is practically no atrophy or other alteration of nutrition. But cases in which all of these are absent are extremely rare, and almost invariably some diminution of faradic reaction, and of some important reflex in the area invoked, will establish the diagnosis. What is more important, because more commonly a source of error, is the establishment of the exact amount of territory involved, to avoid the assumption of a localised neuritis for a multiple one. It must be remembered that a patient complaining of pain or weakness in a single limb may have all involved, though to so slight an extent as not to be evident to a superficial examination. It is therefore necessary to go over every limb, in fact every muscle of every limb, very thoroughly; to compare limb with limb, and, in cases of slight or apparently no involvement, to compare with a normal individual, say the examiner himself, especially as regards the electrical examination. Again, different groups of muscles balance each other, so that when one group is weakened, the other through this loss of balance is also weakened. The consideration here then is to estimate how much of, say, the flexor weakness is intrinsic, and how much due to the paralysis of the extensors. A few practical hints of value in order to avoid pitfalls in the particular, rather than the general, diagnosis might now be referred to. Diminished motility and reflexes are due to stiff joints occasionally, caused by the involvement of articular nerve branches, sometimes to the knee, more often to the shoulder. Faradic examination of the extensors will often give an apparent contraction, which, on careful scrutiny, will be found to have been not of the extensors, but of the underlying flexors. This is a particularly common source of error in the forearm, and less so in the leg. Often a muscle that will not contract to faradism, when the electrodes are wide apart, can be made to do so by their approximation. A faradic reaction nearly gone, or barely returned, can often be elicited much earlier than by the ordinary method, by one or two closures with the finger, of the slow vibrator of the faradic battery.

The confusing factors of spasmodic movements, increase or reappearance of pain, or hyperaesthesia, increased reflexes, and rarely increased faradic reaction or electrical sense, all the results of irritative action on the involved nerve rarely all occur in the same patient or at the same



time, and there is practically never any difficulty in arriving at a correct diagnosis, due to the preponderance of symptoms clearly pointing to a depressed condition. The arrangement and nerve supply of the muscles or muscle groups attacked will often serve to identify the general disease, or the etiological factor, thus groups of weakened muscles supplied by an individual nerve suggest neuritis, groups supplied by a special spinal segment suggest anterior poliomyelitis; escape of the supinators usually points to lead as the cause of the neuritis.

About the only diseases which call for differentiation are anterior poliomyelitis and tabes. The former is excluded from multiple neuritis by its abrupt onset, and by its asymmetrical distribution, and from localised neuritis as well, by its segmental distribution and the absence of sensory symptoms. Tabes is excluded by its lack of muscular weakness, and electrical changes, by its different trophic changes, and by the presence of the Argyll-Robertson pupil and of changes in the organic reflexes.

*Course and Duration.*—This condition which seldom attacks two limbs without involving all, seems at times, through the mildness of the infliction, to have allowed the uppers or lowers, more commonly the former, to escape. Such, however, is not the case, and at some stage of the ailment examination will show that all are involved, though may be in very different degree. The duration varies from months to years, although the average attack may be said to last from onset to conclusion about six months. As a general rule the tendency of the disease is to gradually rise to its acme, and, if the cause has been removed, to more gradually descend to normal. Complications and death due to this disease are very rare, the few cases so resulting in the present series, 4 per cent., being caused primarily by the involvement of the phrenic nerve. The general tendency, however, is not only recovery, but complete recovery.

*Prognosis.*—The prognosis in any particular case depends on the cause, its removability, the extent of nerve degeneration it has led to, and the locale of the involvement, i.e. have vital nerves been attacked or not, as for example the phrenic or pneumogastric. It might be apropos in connection with the prognosis to advert to the general value of the faradic battery. This cheap single-celled instrument is an invaluable aid, not only to the treatment, but to the diagnosis and prognosis as well. With its aid we can not only exclude a malingerer who simulates pain and weakness, but establish as genuine the malady of an individual who, on account of the absence or doubtfulness of other symptoms, appears to be malingering. For the diminished or lost reaction of the muscles in question to a normal faradic current will often tend immediately to establish

the nature of the ailment, particularly so has it been found in a considerable proportion of the cases which have been sent to the hospital with the diagnosis of rheumatism. Its value in regard to the prognosis lies in the fact that a muscle, that will not contract to the strongest faradic current, will not get well within six months to two years. In regard to muscles which do react to faradism, the duration is measured in inverse proportion to the amount of reaction, thus, a muscle that reacts almost normally may take one month to get well, whereas one that shows only the least amount of reaction, perhaps to the strongest current, will probably take six months to recover. Diminution of electrical sense in this way is also an aid to prognosis, although not nearly as valuable as in the diagnosis.

*Treatment.*—The treatment for neuritis is first and foremost to remove the cause, if still operating, then for the multiple form rest in bed, especially for the worst stages. General tonic treatment for the local or multiple forms has now been commonly neglected, excepting for the small proportion of patients who happen to suffer from a run-down condition. The main lines of treatment are electricity, passive motion, and massage. Massage should be applied for a few minutes every day, and in hyperæsthetic cases, as in the alcoholic form, should be milder than in others, particularly in lead, where it may be given quite firmly. The passive movements are particularly valuable in stiffening joints and in muscles tending to contracture. In regard to electrical treatment, where there is no faradic contraction, galvanism should be given; where faradic contraction is present faradism or galvanism may be used. In either case an interrupting electrode should be employed; the current, which must be given daily for ten or fifteen minutes, should be just sufficient to elicit a contraction. It is advisable not to crowd the contractions, but to allow each one full scope, and to apply the anode to sensitive parts and the cathode where more stimulation or irritation is required. Sometimes, in order to contract, muscles require a current of rather painful degree. In these cases approximation of the electrodes will often overcome the difficulty. We might now give some consideration to the value of the electrical treatment. It has recently been demonstrated that the sponge of the anelectrode dipped into a medicinal solution and applied to the part will drive the drug into the system, when the constant current is turned on. Iodides, for example, will by this method, which is called Cataphoresis, appear in the urine in one hour. Galvanism therefore has an osmotic action, and on this basis will tend to deplete an œdematous or congested nerve, so that it therefore has a direct curative action. In addition both galvanism and faradism by keeping up muscle function,

maintain muscle nutrition, so that when the nerve is restored to normal, it has a fair amount of muscle to act on. The value of the electrical treatment is best realised in the long-drawn cases especially where there has been nerve degeneration. Here the continuous treatment of many cases has shown a slow and steady improvement from complete reaction of degeneration to faradic response, and finally to complete faradic reaction. But the remarkable and suggestive element in these cases has been, as is common in outdoor practice, that many of the patients would absent themselves for weeks and even months, and almost invariably there would be arrest of improvement or even retrogression, and after a return to the clinic of perhaps a month, improvement, even if only slight, would again be evident. Edema often present, especially in traumatic neuritis, through diminished conductivity, often hides an electrical reaction, which is really present, consequently giving a wrong impression as to the severity of the condition. As it is consequently difficult to give proper treatment, efforts should be made to reduce this condition, which is generally accomplished by the aid of gentle kneading, baths of bran or lukewarm water, and support or elevation of the limb. Cases frequently appear, where owing to an accumulation of dirt, or a condition of the skin approaching ichthyosis, conductivity is diminished, and electrical contractions can be elicited only with painfully strong currents, or not at all. In such cases a few good hot baths, local or general, will often show wonderful results. The sensory symptoms are very troublesome in many cases, and must be provided for. Minor ones such as itching, tingling, or even the sensation of numbness, may at times be readily overcome by a hot compress or bath, or a little gentle friction. But for pins and needles sensation, or severe pain, these measures are ineffective. The antipyretics and opiates, though very efficient, are inadvisable on account of the long duration of the malady. Hot lead and opium fomentations have given relief in many bad cases. Local applications such as blisters, the cauter, and other counter-irritants, are dangerous on account of the risk of producing indolent ulceration, especially in areas where the disturbance of nutrition is already considerable. Milder, soothing and analgesic applications, such as the liniments of aconite and belladonna, may be applied but with very little friction. In applying heat locally especially to an anæsthetic area, great care must be taken to see that there is no danger of burning or scalding. Finally, cases of contracture and permanent paralysis come within the sphere of the orthopedist rather than the neurologist. However, to avoid contracture, say of the flexors of the wrist and fingers, a splint is often very effective, if applied early enough.

# VOLUMINOUS SARCOMA OF THE BULBO-PALPEBRAL CONJUNCTIVA.

BY

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The following observation seems to us to have a certain interest if we examine, either separately or collectively, the symptoms noticed in our little patient. Primary sarcoma of the bulbo-palpebral conjunctiva is indeed a comparatively rare affection in which the seriousness of the prognosis increases with the advance of the growth towards the orbit. Having for its origin the conjunctival chorion, or the adjacent connective tissue, the tumour in growing raises the oculo-palpebral mucous membrane which is stretched over it. In this case, the rapidity of the evolution of this unpigmented sarcoma, which in the short space of seven weeks developed in a child of six years of age, should especially attract our attention. Although neither the preauricular nor the cervical glands were enlarged, we nevertheless considered the condition as very serious, since the tumour had already begun to spread to the orbital vault and the capsule of Tenon, and as a previous microscopic examination of the growth had shown its sarcomatous nature. We did not hesitate, therefore, to sacrifice this still healthy eye in making the exenteration of the orbit.

*Case report.*—The child, T. R., aged six years, was brought to us at the Hôtel-Dieu on January 11th, 1908, suffering from a tumour of the right eye. According to his mother, the tumour showed itself a month previous, at which time she noticed that this eye was smaller than the other. The ptosis, having one day attracted her attention more particularly, she attempted to open the child's eye wider, and found that there was "a kind of reddish skin" between the eyeball and the upper eyelid. No other symptom had previously been noticed, and this tumour, which had a tendency toward hemorrhage, began from that time to secrete a sero-purulent liquid, which increased in proportion to the rapidity of its development.

*Family history.*—Our patient was one of nine children, one of whom had died at the age of three years of tubercular meningitis. The others were in good health. We found a certain tuberculous diathesis, but no trace of cancer.

*Personal history.*—The patient had a good constitution, was rather robust for his age, and had had no illness except a suppurating sebaceous cyst on the right side of the neck which had persisted intermittently for five years. However, the mother admitted that his respiration was not

normal, that at night he slept with his mouth open, and that his breathing was noisy.

There was no record of traumatism, or of foreign bodies in the right eye, nor even of conjunctivitis.

*Present condition.*—On examination, we observed a tumour hanging on the cheek by means of a large pedicle inserted at the bottom of the superior cul-de-sac of the right eye. This neoplasm was of granular appearance, bled at the slightest touch, and was of an angry red colour. It was partly covered by the conjunctiva of the upper everted eyelid. A sero-purulent discharge escaped continually from this eye, causing a slight redness of the cheek. The tumour measured in its antero-posterior diameter about two centimeters; it was five centimeters in length and seven centimeters in width. On lifting it we observed that the cornea was normal, and that the pupil reacted well. The ocular tension was not increased; there was no exophthalmos, nor any depression of the eyeball. The movements of the eye were naturally limited, but the direct vision was as good in the right as in the left. There had been no pain since the beginning of the illness, and there was an absolutely normal condition of the left eye. Anterior rhinoscopy of the two sides showed nothing very interesting, but the posterior rhinoscopy allowed us to observe adenoid growths.

There was slight hypertrophy of the tonsils. The ears had never been diseased, and there was no hypertrophy of the cervical nor preauricular glands. No symptoms of hereditary syphilis or of tuberculosis were discovered.

A small piece of the neoplasm was removed for microscopic examination and entrusted to Dr. St. Jacques, who was good enough to send the following report: "The microscopic examination of the preparations shows a mass of cells arranged without order. Here and there, debris of the conjunctival fibres are observed. One of the preparations shows a tendency towards alveolar arrangement. The cells are small and round, the nuclei rather large, very variable in size, presenting numerous karyokinetic figures. In the field there appeared a large number of vascular formations, very characteristic of sarcoma, among others, openings whose walls were formed by the cells of the growth itself. The greater part contained no blood corpuscles.

"There was no epithelial covering visible on the surface of the tumour. Near the periphery are found capillaries containing red corpuscles. These capillaries are seen sometimes in transverse, sometimes in longitudinal section. Some, however, contained comparatively large number of white corpuscles, which is easily understood seeing that from the



January 26th, 1908.



January 12th, 1908.

"surface of this tumour exuded a rather abundant muco-pus. There is a slight inflammatory infiltration.

"These preparations contained no pigment.

"Diagnosis: Round celled sarcoma of apparently rapid growth."

During the time following the first examination we witnessed the truly remarkable development of this tumour, as the two following photographs show: the first taken on the 12th of January, and the second on the 26th of the same month.

*Treatment.*—As the microscope had shown us the malignant nature of the tumour, we proposed to the family to make an immediate removal and the operation being decided upon, took place on the 28th of January.

*First operation.*—The patient having been anæsthetized with chloroform, and the field of operation rendered aseptic, we first made a large canthotomy. Having raised the growth, we were able to incise the ocular conjunctiva which was separated from the upper two thirds. We then observed that Tenon's capsule had been invaded, and raised from the underlying sclerotic now plainly visible. The pedicle was implanted the whole length of the superior cul-de-sac, and embedded in the orbit for a depth of one and one-half centimeter. The everted eyelid did not, however, adhere to the tumour, which was easily separated from the healthy tissue and removed. It was found to weigh fifty grams. This marked destruction of the capsule of Tenon and of the roof of the orbit, left us no doubt as to the gravity of the condition, and obliged us to continue the operation by proceeding to a complete exenteration of the orbit. We then sacrificed this eye, which was normal internally, as well as the retrobulbar tissues. Great care was taken in the cleaning of the orbit. All doubtful tissue was then removed from the eyelids, and the operation completed by a careful cleansing of the wound, some sutures at the external canthus, and an appropriate dressing. We also took advantage of the anæsthesia to curette the suppurating sebaceous cyst to which we applied tincture of iodine.

The bacteriological examination of this pus revealed nothing particularly interesting except absence of tubercle bacilli and actinomyces. The post-operative care was most simple. The cavity washed daily with hydrogen peroxide suppured very little, and became rapidly covered with a layer of healthy granulation tissue; everything that showed a tendency to hemorrhage was cauterized or removed by curetting. At the end of a month, the little patient was considered nearly cured, and we proposed to perform the following week a median tarsorrhaphy when serious complications occurred to prevent this. Scarletina and varicella were brought to him simultaneously by his relations who came to visit

him at the Hôtel-Dieu, and we were obliged to send him to the St. Paul's Hospital for Contagious Diseases where he was admitted February 28th. March 5th being in full eruption with scarlatina, varicella was noticed and spread from him to all the other little patients in that ward. From this time, this combination of diseases caused a very serious illness and on March 13th, acute nephritis came on. Two days after endocarditis was diagnosed and on March 20th generalized œdema appeared.

To complete this series of striking symptoms, on March 26th there came on a general œdematous infection of the scalp. In spite of all these complications, his temperature never passed 103° F., and the improvement was such during the month of April that the little patient was allowed to return to the Hôtel-Dieu on the 29th entirely recovered from his eruptive fevers. We then continued to treat the orbital cavity, which had become infected during his stay at the St. Paul's Hospital, removing from it the granulation tissue which had accumulated in the lower part only. These granulations examined under the microscope revealed no trace of sarcoma, and reassured us as to the possibility of a relapse. At the end of a month's time, the wound in the orbit was healed, as was also that in the neck, which had been curetted and to which wet dressings had been applied.

The adenoids having been removed, only the æsthetic treatment of the orbital cavity remained. The upper eyelid being retracted, left the cavity slightly opened, which, aside from causing a disagreeable appearance exposed the patient to infection from the outside.

As the orbit was partly filled with a solid granular tissue, we decided to perform a median tarsorrhaphy which took place on June 4th.

*Second operation.*—Again under chloroform, we detached the eyelids circularly even to the bony margin. After having trimmed the median part of the meibomian lips for the length of a centiméter, we applied two sutures, preserving the normal position of the ciliary field. Hemostasis being complete, we finished this little intervention by applying a moderately compressive dressing. During the days following we used anti-septic washing, and on the 13th of June, the little patient returned home entirely cured.

We were pleased to observe that the palpebral opening was entirely closed, and in spite of the tarsorrhaphy the orbicular muscle had retained a certain power of action. The orbital depression is but slightly noticeable, and the eyelids are applied directly to the bottom of the cavity.

Is the cure permanent? If we consider on the one hand the rapid development of the sarcoma before removal, and on the other the fact that the cure has already lasted for ten months, we have cause to hope so.



# CEREBRAL AND EPIDURAL ABSCESSSES OF OTITIC ORIGIN.

BY

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Some degree of apology might consistently be offered for introducing so large a subject as Brain Abscess to be discussed in the short time allotted to the reading of a paper, when I consider the fact that we might profitably occupy an entire evening in the consideration of its diagnosis alone, if we took up the matter *in extenso*. It must be therefore in a very superficial way that I will refer to some of the salient features of this disease, which is or should be of intense interest to every practitioner of the healing art, whether he or she be general or special.

To begin with, it is rather humiliating to admit, as we must, that notwithstanding all previous endeavours, it often happens, brain abscess is first discovered at the autopsy. The causes of a mistaken or delayed diagnosis of a brain abscess of otitic origin are various. Every intracranial complication, which has its origin in a purulent otitis, may make its appearance in a sharply defined and easily diagnosed picture. For certainty of diagnosis, however, a fully developed symptom complex is necessary. Many signs pointing to brain abscess may belong to a complicating meningitis. When we remember how intimately in the course of their development, the complications are intertwined, and how the signs of ear disease, functional nerve disturbances and other brain lesions, can closely simulate this condition, we realize the difficulties of diagnosis. So great a master as Schwartze was uncertain of a diagnosis which seemed to lie between an abscess of the temporal region and a meningitis. The autopsy proved it to be a cerebellar abscess. The variations and latent course of brain disease may make the diagnosis very difficult, indeed sometimes impossible. A patient may have an acute or chronic inflammation of the ear with no evidence of brain implication, and be discharged as cured, having only a slight headache perhaps, and feeling well enough to resume his ordinary occupation. In such a case cerebral abscess may develop; indeed instances are on record where a couple of weeks after apparent convalescence the patient has suddenly died from brain abscess without previous signs of its existence. On the other hand this abscess may be latent for many years and long after its origin be excited to renewed activity.

A localized purulent focus within the brain tissue may be either acute or chronic. Acute cases are rare, while the most common cause of chronic cerebral abscess is purulent otitis. These abscesses may involve any region of the brain, may follow a simple inflammation within the tympanum

with pus, by direct extension of the infection through the tegmen and dura, or may follow other avenues by veins and lymphatics; or pus in the mastoid may cause them; or indeed it is claimed and seems proved that a collection of pus in any part of the body may, through metastases, cause the formation of a cerebral abscess. The locality most frequently affected through purulent otitis is the temporo-sphenoidal lobe, and the next in frequency the cerebellum. If it be located so that the increase in size causes pressure on the motor tract, or upon the motor area of the cortex, then localizing symptoms ensue. When the abscess is chronic the increase in pressure develops so gradually that paralysis may occur without convulsions. In chronic cases a marked impairment of health may be the first sign of cerebral abscess. The temperature is seldom above 99 F. the pulse normal, subnormal or intermittent. Headache is apt to be present and is dull or diffuse in character. Sometimes sleeplessness is the only symptom for which the patient seeks advice. Again you may have anorexia, irritability, sleepiness and a stuporose state, gradually deepening into coma. It is well to remember that an otitis on one side may produce an abscess in the opposite hemisphere. Examination of the eyes is sometimes a useful aid, for optic neuritis is often present.

When there is pus between the dura mater and the osseous wall of the cranium it is only necessary to perforate the skull in order to evacuate the fluid. The decision as to the exact location of an epidural abscess is sometimes a difficult matter, but experience has shown that the most usual location (Dench) for such abscesses has been either in the posterior cranial fossa, or the middle fossa. In emptying these abscesses it is unwise to remove the bone beyond their limits, for there is danger of breaking down the firm adhesions which protect the cranial cavity from the purulent collection. If a perisinus abscess is opened it is most important to separate this cavity from the mastoid wound to prevent infection of the exposed dura, which might result in general purulent meningitis, and hence if the cavity be large the dressings may require changing daily or oftener. The results generally of operative treatment in simple epidural abscesses are very favorable.

Apropos of these remarks I beg to report to the Society a case wherein there occurred simultaneously one temporo-sphenoidal abscess, two epidural abscesses, and one sub-periosteal abscess in the same subject all of otitic origin, within a comparatively short time.

Mrs. M. entered the Western Hospital on 28th December last complaining of pain and swelling behind the right ear, with occasional headaches. She was 37 years old, the mother of eight children in 10 years of married life, and was again pregnant. She had "pleurisy" 2

years ago and poor health ever since. At the beginning of November last the patient had a severe earache lasting 6 to 8 hours. Then a watery discharge from the ear began and lasted for 3 weeks, after which it changed to pus and continued for a week or so longer when it ceased. After the pus stopped a swelling started behind the same ear accompanied by great pain. This condition lasted with more or less severity for about a month when she sought relief at the hospital. Her father and sister died of tuberculosis sometime ago, otherwise the family history was negative. The patient's condition on entering hospital was as follows:—Behind the right ear over the mastoid, a large area of swelling is seen. This area extends backwards from the auricle 2 inches and from a horizontal tangent corresponding with the tip of the auricle, it extends downwards to the mastoid tip. It is red oedematous and boggy and has thickened the tissues throughout the region indicated, but especially over a portion of it to thrice their normal state. This whole area is extremely sensitive on palpation and causes much suffering. There is a superficial sinus on the same side, an eighth of an inch in diameter undermining the cellular tissue, beginning at the digastric fossa and extending along the border of the sterno-mastoid muscle downwards five inches, which discharges some pus. In the external auditory canal the postero-superior wall is sagging, and largely obscuring the membrana tympani which is whitish, owing to epithelial necrosis and exfoliation. A perforation is seen in the posterior inferior quadrant. A little pus present. The patient's condition generally was most unsatisfactory, being emaciated and greatly reduced in health, first by too frequent childbearing and secondly by the almost constant suffering of the past 6 or 8 weeks. To make matters worse she was again pregnant.

Operation.—After the usual preparation the patient was anaesthetized, a free opening made in the drum membrane, and the ordinary curvilinear incision behind the auricle. At right angles to this another incision was necessary across the swollen tissues. Considerable pus was evacuated below the periosteum. After cleansing this region I opened the tympanic antrum. The tegmen antri showed a slight superficial change in its condition, and did not give the ordinary resistance of healthy tissue. No pus was found, however, on curetting it. In the aditus, attic and hypo-tympanum the probe and curette communicated good resistance. The mastoid cells were then opened, including the tip of the process, pus being found everywhere as far as the inner table of the skull. An area of necrotic bone was encountered in the mastoid, directly behind the external auditory canal, and in curetting this away it led to the lateral sinus, the dura of which had to be exposed before reaching healthy bone. At this point a peri-sinus abscess was tapped, which

contained about two teaspoonfuls of creamy pus. This was cleaned and drained, special packing being inserted to ward it from the generally infected mastoid cavity. From the antrum to the external auditory meatus the channel was found quite patent, and free for drainage. The wound was therefore closed in the usual way, after inserting proper drains into it and the superficial sinus. The hospital laboratory reported staphylococcus infection. From the date of this operation the patient's temperature, pulse and general condition were practically normal for over two weeks, the wounds were healing satisfactorily and for a time she gained in strength. Maximum temperature, 98 4-5 F., pulse 72 to 84. On the 14th January, however, a wave of temperature rose one and a half degrees, for 6 hours, then remained normal for 2 days further, when a low septic condition asserted itself, with headaches, some irritability and occasional emesis. A lumbar puncture showed the cerebro-spinal fluid clear, no turbidity or sediment, no meningococci or other bacteria, the specimen being practically normal. The hospital pathologist, Dr. Nicholls, reported that the blood corpuscles were normal in size, shape and number. The hemoglobin was 85 per cent. with, he thought, slight leucocytosis. Examination of the eyes did not give evidence of any pronounced meningeal trouble, neither was there any clinical evidence of sinus thrombosis. On 27th January, after consultation, a second operation was decided upon. On the morning of the 28th, just before this operation was begun, some new symptoms developed, and the hospital neurologist, Dr. Robins, reported as follows:—the patient is semi-stuporose for the first time, but can be roused to answer simple questions; there is external squint of right eye; the pupil in this eye is larger than the left, showing weakness of third nerve; at times a left sided Babinski, not constant; left hemiplegia noticeable; deep reflexes all active. Sensation normal as far as could be tested. Second operation,—Assisted by Drs. England and Kerry the former mastoid wound was reopened. The granulations in the mastoid were found satisfactory, but this time the instrument passed through the tegmen antri into the floor of the middle cerebral fossa with hardly any resistance, and a quantity of thick pus was here released from an epidural abscess. A button of bone was then trephined through the squamous portion of the temporal, and the dura exposed. This was opened and a trocar and canula inserted into the temporo-sphenoidal lobe, directly inwards and downwards. On withdrawing the trocar a stream of very fluid pus followed, which measured about an ounce. On again examining the tympanic cavity, the channel to the external meatus was found patent; drainage was then inserted into both abscesses; the wounds cleaned and dressed. The patient rallied well and the result seemed promising for 48 hours. It was noted

that the left Babinski had disappeared, there were fewer headaches, patient readily replied to questions, and voluntary power was returning in the left arm and leg. However, on the third day a change occurred, collapse supervened and the patient succumbed. An autopsy was made on the brain only and was as follows:—A trephine opening was found in the squamous portion of the right temporal bone, and evidence of a former mastoid operation. On the floor of the right middle cerebral fossa an operative opening was found  $1\frac{1}{2}$  by 1 centimeter in size, leading to the tympanic antrum. The tympanic cavity proper and contents were free from necrosis. A large abscess cavity was found in the right temporo-sphenoidal lobe of the brain, extending from almost the apex of the lobe backward to a point approximately opposite to the upper end of the fissure of Rolando. The cavity, which was empty, measured antero-posteriorly 6.5 centimeters and transversely 6 c.m. The wall consisted of a zone of condensation, covered with detritus (an attempt at the formation of a pyogenic membrane) surrounded by a line of congestion. Towards the posterior part of the right island of Reil, above the posterior extremity of the cavity, was an area of incipient red softening, which involved to a slight extent the internal capsule on that side, just before it reaches the crus. Above the centre of this was a more definite area of red softening 7 millimeters in diameter. Anteriorly this area of red softening was continuous with the abscess cavity. The right internal capsule and the tissues between it and the abscess showed well marked yellow softening.

Conclusions.—Although no pus came from curetting the tegmen antri in the first operation, I think in the light of later events and in view of the known frequency of abscesses occurring in this region, from purulent otitis, I would in future be disinclined to follow the custom and advice of those who, like Lambert Lack, say "in the majority of cases the mucous membrane, unless very extensively diseased, will soon become healthy when free drainage has been provided, and its removal by baring the bone, only delays the cure and opens the way to spread infection." At the first operation, no fistula was found leading to the middle fossa, nor any evidence of dehiscence in the petro-squamous suture, yet under similar conditions again, I would enter the middle fossa if any suspicion of the tegmen presented itself, even in the absence of pronounced clinical signs. Should no pus be found after exposing the dura it could be protected by frequent dressings. The occurrence of the temporo-sphenoidal abscess seemed the last straw necessary to preclude my patient's restoration to health. Did this arise from the epidural focus of pus in the middle fossa? From the proximity of the two and the experience of others, it seems reasonable to suppose it did, but we know that such in-

fection could have originated elsewhere, and if elsewhere then breaking down the tegmen would have availed nothing and been no barrier to the formation of the cerebral abscess. Finally having opened two abscesses already, in the area where the intensity of the disease had manifestly expended itself, viz.: the mastoid sub-periosteal abscess, and the abscess over the lateral sinus and good drainage afforded, it was reasonable to conclude that the source of existing symptoms had been eradicated when these foci were removed. Although unfortunately, the case had not a successful termination, it was, I think, both interesting and instructive, and as such I offer it to the Society, feeling as I do that the tendency of the profession to report successful cases only, is generally too prevalent. For that matter, the results of a so-called successful operation are not always lasting in these cases, for repeatedly it has happened that one, two, or four weeks after the pus has been evacuated, an unfavorable outcome has supervened.

#### A CASE OF MULTIPLE TRAUMATIC PERFORATION OF THE SMALL INTESTINE.

BY

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The following case appears to me to be of sufficient interest to report, showing as it does, what the peritonæum may do under certain circumstances with no more surgical aid than a mere drainage incision.

N. P., a Siamese lad, 14 years of age, was admitted to the Police Hospital on the evening of January 12th, 1909, having some two hours previously been shot in the abdomen at close range with a large calibre revolver. He presented an irregularly circular wound about one-half inch across just inside the ant. sup. spine on the right side. There had been very little bleeding from the wound; there was no escape of gas or fluid nor any viscus present. The abdomen was generally resistant, both flanks were dull, but the dullness was not movable. Liver dullness appeared normal. The pulse was over 160 respirations, rapid and shallow, pupils dilated and expression anxious. The patient did not complain of pain and had passed clear urine since receiving the injury. The bowels had not moved. There was a good deal of shock, nevertheless the abdomen was opened immediately in the mid-line, below the umbilicus, by an incision about 3 inches long. Much blood and some fecal material of small gut consistency came away. The small intestine was delivered and almost at once a wound perforating both sides of the gut was found. Near it was a laceration on the anti-mesenteric side of the gut about one and one-half inches long. There was also much bruising of the mesentery between these two. The three wounds were closed up

in the usual way—considerable difficulty being found in case of the laceration, as there was none too much tissue. In the meantime the patient's condition had become very bad.

Strychnia and brandy had very slight effect on it, and haste was very clearly indicated. Further examination, however, showed seven more traumatic perforations of gut and mesentery within a distance of six feet.

All this and his condition made the case seem so hopeless, that the abdominal opening was closed with through and through sutures after a large drainage wick had been placed in the lower angle extending freely into the abdomen.

For the next two days the condition was:—tongue dry and glazed, pulse 160-170, temperature 100°-102°, respiration shallow and rapid, *Facies Hippocratica*, stercoraceous vomiting, mental state clear, much distended board-like abdomen, free faecal discharge through the wound and no motions per rectum. He was freely stimulated, given all the milk he could take and repeated large enemas. The drainage wick was removed on the second day and not reinserted. On the third day a small amount of faecal matter was passed by rectum, and daily thereafter the quantity coming away naturally increased, and that by the wound decreased. With the first stool by rectum the boy's condition improved and it did so steadily and without further set back until on February 6th the fistulous opening had closed spontaneously and completely. On February 12th the boy was up and about and it was found that he had been eating rice, bananas, fish and cakes for ten days previously. He was discharged well on February 19th.

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## A CASE OF CHOLECYSTITIS, VOMITING OF GALL-STONES.— RECOVERY.

BY

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The following case is reported on account of its rarity.

Patient is a Mexican woman aged 60, married, 7 children. Personal history: Has suffered from flatulent dyspepsia for 30 years. She has had numerous attacks of colic, accompanied by vomiting during this same period. These attacks never lasted long, and though severe at the time never laid her up for more than one day. The pain was always worst on the right side and was frequently referred to the right shoulder. She never was jaundiced, or noticed clay-coloured stools.

In September, 1908, she was laid up with some fever, of what nature she does not know. She was in bed for two weeks, five days of which she was delirious. She had no pain nor cough at this time.

Present illness: On April 24th, 1908, I was called to see her, and found her complaining of great pain in the abdomen, and vomiting. The pain had commenced three days previously, in the right upper quadrant of the abdomen, and was referred to the right shoulder. She had vomited several times and had had no passage by the bowels since the pain began. She had had chills every day; but they did not come regularly.

On examination I found the following condition: Temperature, 103.2; pulse, 108; resp., 26; time, 9 p.m. Heart and lungs, normal. Arteries very sclerosed. Pulse regular in volume and rhythm, bounding, high tension. Abdomen distended, especially in the right upper quadrant, where a bulging was distinctly visible, extending from the costal margin to the level of the umbilicus and from the middle line to the anterior axillary line. This mass was seen to move up and down with respiration. Respiration was very shallow. There was no visible peristalsis.

On palpation the abdomen was resistant, especially over the mass. The whole abdomen was tender; but it was extremely so over the mass. This mass had a definite rounded outline, was firm to the touch, and was attached to the liver. It could be felt extending into the loin. Nothing else abnormal was found. Spleen not palpable. Urine 1022, acid, no albumen, no bile, no sugar.

A diagnosis of empyema of the gall-bladder was made and operation was advised. This was absolutely refused. Hot linseed meal poultices were applied constantly, changing them every half hour. The bowels were moved with an enema. For about ten days she had recurring chills every day and sometimes two or three in a day. However, the mass gradually diminished in size, and the pain gradually disappeared. During this time she had no colic; but just the steady pain of localized peritonitis. She was delirious at night for seven nights. The temperature and pulse gradually came to normal, by the end of three weeks. She got up at the end of a month, although there was still a mass in the region of the gall-bladder the size of an orange. This, however, was no longer tender. She had two mild attacks of pain during the summer, lasting two and three days respectively. She had another severe attack in September, 1908, similar to that in April, complaining of pain in the right upper quadrant of the abdomen and vomiting and chills. The same condition was found as in the first attack. There was distension of the abdomen with very marked muscular resistance of the abdominal walls. The mass was about the size of a fist and very tender; it gave a sensation of fluctuation when palpated with one hand in the loin and the other hand on the abdomen.



She was again advised to submit to an operation, but she again refused, and so was treated as before with hot poultices. She rapidly improved and was able to get up in ten days. The mass still remained about the size of an orange. On October 16th, 1908, she was again seized with pain and vomiting and chills. That night she was delirious all night, and when I saw her in the morning she looked very ill and complained that the pain was nearer the middle line than usual. The same abdominal conditions were found. While I was there she had a sudden very acute pain accompanied by a feeling of faintness, and then the pain in the abdomen seemed less acute. Shortly after this she vomited up eight faceted gall-stones about the size of a pea, along with some stinking pus. In the afternoon she had a repetition of the pain and she vomited up eight more gall-stones. She rapidly improved from this time on and was able to get up in three days.

Since then she has had three attacks of chills, but has not been in bed for more than a day at a time. The pain has never been severe since she vomited the gall-stones. The last attack was in the latter part of January. She has gained greatly in flesh and says that she no longer suffers from flatulency or distress after eating. When I last saw her, March 23rd, 1909, she still had the mass in the region of the gall-bladder; but it was only about the size of a hen's egg.

The rarity of cases vomiting gall-stones is seen by the fact that Mayo Robson mentions only two cases in his work on "Diseases of the Gall-Bladder and Bile Ducts," one of which he saw himself. This one vomited several gall-stones, and recovered without operation. The second was reported by Jeafferson. (1) She vomited a gall-stone and died a week later; a fistula leading from the gall-bladder to the stomach was found post-mortem. Murchison (2) says that in all probability all vomited gall-stones must have entered the stomach by a gastric fistula. These fistulæ are comparatively rare as is seen by referring to the figures collected by Courvoisier and Naunyn of all published cases. Out of 384 fistulæ leading from the biliary passages, only 12 lead to the stomach. Eight lead from the gall-bladder to the stomach, and four from the liver to the stomach; there being no case of fistula from the hepatic, cystic, or common, bile ducts to the stomach.

The figures of Courvoisier and Naunyn are as follows:—

Fistulæ between the biliary passages themselves . . . . .	8
Fistulæ between the biliary passages and stomach . . . . .	12
Fistulæ between the stomach and liver . . . . .	4
Fistulæ between the stomach and gall-bladder . . . . .	8

Fistulæ between the biliary passages and duodenum . . . . .	108
Fistulæ between the duodenum and common bile duct . . . . .	15
Fistulæ between the duodenum and gall-bladder . . . . .	93
Fistulæ between the jejunum and gall-bladder . . . . .	1
Fistulæ between the ileum and gall-bladder . . . . .	1
Fistulæ between the biliary passages and colon . . . . .	50
Fistulæ between the colon and gall-bladder . . . . .	49
Fistulæ between the colon and common bile duct . . . . .	1
Fistulæ between the biliary passages and urinary organs . . . . .	6
Fistulæ between the biliary passages and thoracic organs . . . . .	10
Fistulæ between the biliary passages and abdominal walls . . . . .	184
Fistulæ between the biliary passages and retro-peritoneal tissues . . . . .	4

384

Thus it is seen that only .03 per cent. of all biliary fistulæ lead to the stomach, and in these cases the patients very seldom vomit the gall-stones. These figures also show that by far the greater number of the fistulæ begin in the gall-bladder. During his operations Mayo Robson has only found a gastro-biliary fistula on one occasion. These references are all found in Mayo Robson's work on "Diseases of the Gall-Bladder and Bile Ducts."

## CAPSULE FORCEPS IN CATARACT EXTRACTION.

BY

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The introduction of a subject of such an essentially practical nature, including as it does pathological features of a more or less simple yet none the less interesting character, is I feel sure in accordance with the wishes of your committee who requested that the papers brought before this section should be made as practical as possible. The almost universal practice of my teachers, Axenfeld, Fuchs, DeLapersonne, and Treacher Collins, the experience which I have obtained from cases of my own, experimental work done upon the cadaver, added to a pathological appreciation of operative technique, warrants the selection of the subject. It is my wish to appeal to all interested in ophthalmic surgery and more particularly to those whose practice it has been, either from ultra conservatism or from inexperience with capsule forceps, to adhere to the older method of employing the cystotome in all cases of extraction.

The special technique in the use of forceps is briefly as follows. After the initial corneal incision has been made, preferably with a conjunctival flap covering its uppermost point, an iridectomy is usually performed. After the segment of iris has been excised, when one wishes to release the lens cortex from its enveloping capsule and zonule of Zinn, the capsule forceps are now employed. The instrument is held in the right hand and the patient directed to look downwards when the globe is held with a pair of fixation forceps held in the left hand, if movement of the eyeball cannot be kept under reasonable control by the patient. The tips of the capsule forceps are now introduced, closed, through the lips of the corneal incision into the anterior chamber, and are carried downwards as far as the lower pupillary margin, or even slightly lower, beneath the iris and to one side. With the blades of the instrument in this position within the chamber, they are allowed to open, and after very gentle pressure upon the underlying capsule the membrane is caught between the sharp teeth of the tips when they are brought together again. The first rent in the capsule is made by a gentle to and fro movement and the tear is continued in a crescentic or semilunar direction, following the margin of the pupil, the forceps being withdrawn at the point where they were originally inserted. Should the details of this technique have been followed correctly, a piece of hyaline capsule tissue should be seen included between the teeth of the forceps and this one may float off in a watch glass of distilled water in order to demonstrate its presence. The subsequent course of the operation is proceeded with in the usual way.

Some of the advantages to be gained by following this procedure are briefly as follows: One pair of forceps is suitable for either eye, not requiring to be bent or twisted into various shapes as is so frequently necessary in the case of the cystotome. An additional advantage is that frequent sharpening of the instrument is not necessary, a precaution which must often be attended to in the case of the cystotome.

After the torn capsule has been removed from the chamber, no post-operative cataract or capsule shreds remain about the pupillary area requiring subsequent discission; as soon as the eye has recovered its equilibrium a refraction is possible and a correction may be prescribed at once without having to submit the patient to a second operation, a procedure as frequently unexpected by the patient as undesired by the operator. Although much may be claimed for peripheral capsulotomy, a tag or adhesion may escape section at one point or another, the membrane falling back over the pupillary area after the lens cortex has been expelled. One is therefore only able to feel confident when one sees for oneself that a piece of membrane has actually been removed from the

anterior chamber, by noting it included between the teeth of the forceps, or after floating it off in distilled water.

With removal of the lens capsule and after the employment of mydriatics, or occasionally of myotics, the formation of synechia from a post-operative iritis is less likely to occur. Further, a great deal of the post-operative toilet of the wound to remove particles of capsule from between the lips of the incision is not rendered so necessary. Again, when a large piece of capsule has been removed, the whole cortex is more likely to be extracted and fewer lens fibres are consequently retained in the posterior chamber.

A feature of the utmost importance, for which the capsule forceps is mainly responsible, is the more ready tendency towards healing by first intention. By the older and more conservative method of employing the cystotome some shreds of capsule very frequently find their way between the lips of the wound, and primary union is in consequence not only occasionally delayed but actually prevented. With the remains of the capsule completely removed and with the additional support of a good conjunctival flap, primary healing is almost positively assured, and such unfortunate complications as a break of the incision with loss of aqueous after some involuntary spasm as coughing or sneezing, are seldom if ever met with.

To emphasize my last argument, I have prepared sections from a series of cataractous eyes, each eye having been removed post mortem, practically an equal length of time having elapsed after operation before death occurred in each case. Fig. 1 is an instance of a normal case, where after a perfectly clean and uncomplicated incision, primary union is seen to be well under way. The bridging over of the wound by new fibro-connective tissue elements has produced a globe where weakness at the point of incision need not have been subsequently feared. The healing at this point has been complete, although Descemet's membrane and the stump of the iris have barely escaped inclusion. A second case shows a section of a perceptibly weakened globe: union here is of the weakest possible kind, consisting of a form of granulation tissue which has extended from the epithelial elements of the bulbar conjunctiva downwards into the wound. Union of any kind in the lower two-thirds of the incision has been completely prevented by the inclusion of a large piece of hyaline tissue. A sudden break in the chamber with loss of aqueous, not to mention other equally serious complications, would not be unexpected in a globe so evidently weakened by an included membrane. (Fig. 2) A definite measure of support to this incision has been afforded by a conjunctival flap which, superficially at least, has succeeded in hold-

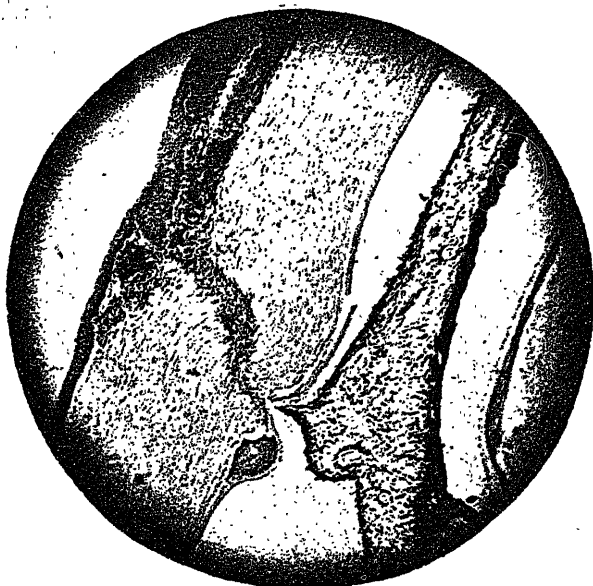


Fig. 1. Section of eye removed post mortem two weeks after operation. Healing of corneal incision by primary intention



Fig. 2. Section of eye removed post mortem thirteen days after operation. Healing retarded, due to included membrane between the lips of the corneal incision.

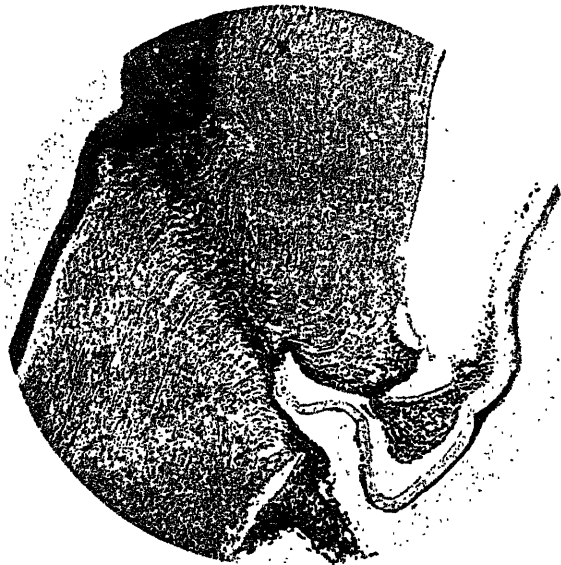


Fig 111. Section of eye removed post mortem. A distinctly weakened globe shown to be due to inclusion of anterior lens capsule. Infiltration of leucocytes in anterior chamber as well as about the base of wound due to the same cause.

ing the lips of the incision together. Another instance of impaired union is seen in Fig 3. The globe, it is true, is not weakened to the same extent as in the last case where union has practically had to be maintained by a conjunctival flap and some granulation tissue. The outer half of the globe is held together by definite fibrous tissue, as well as by a good conjunctival flap, although a distinct element of weakness must result from the non-union of the lower half of the wound due to an included anterior lens capsule. An infiltration of the new connective tissue elements about the wound, the presence of leucocytes in large quantities about the innermost part of the incision in the neighborhood of Descemet's membrane, as well as on the anterior surface of the lens capsule within the chamber, would point to an inflammatory reaction for which the included capsule should be held responsible.

I am ready to admit that there are certain cases where other procedures might be followed more safely; cases of a very friable zonular ligament, as well as those where a cataract has complicated myopia, might perhaps be better treated with the cystotome, the fibres and capsule being subsequently removed by the very careful use of an irrigator. Yet all must agree that the employment of an irrigator is attended with its own dangers as far as loss of vitreous is concerned.

The objection is held by some that by employing forceps additional pressure has to be exerted upon the lens, and that possible rupture of the suspensory ligament and dislocation of the cataractous lens into the vitreous may result. This, however, need not of necessity follow. In order to obtain a grip of the capsule very little extra pressure need be exerted upon the lens than when the point of the cystotome punctures the capsule; quite naturally if roughness is resorted to, or if the eye is not able to be kept under control, accidents will happen with one instrument as with the other.

The pattern most commonly seen resembles in many respects an ordinary iris forceps, with the tips curved slightly upwards, the main point of difference being that the small, sharp teeth are directed downwards, as well as inwards, instead of inwards only as is the case of the iris forceps. A pair of forceps which I have found most useful and which I have employed a number of times at the Royal Victoria Hospital with satisfactory results was made for me by Messrs. Wulffing-Luer, of Paris. The handle is approximately 8 cm. long, tapering to a slender tip, where an extension arm of about 8mm. is welded at an angle of  $120^{\circ}$  to each blade. These tips are curved concavely below and conform with the underlying convex surface of the lens. The tiny, sharp teeth are directed downwards and inwards and interlock at the distal ends of the tips.

This instrument has one or two advantages over other patterns which I have so far seen in use. After inserting the tips into the chamber, pressure may be more evenly distributed over the whole zonnular ligament, and consequently minimised at any one particular point where it must of necessity be exerted in other patterns where one point only is directed, as well as in the case where the cystotome is employed. The blades or tips of the forceps being curved concavely downwards an entanglement of the iris fibres need not occur. I am considering the advisability of further modifying this instrument, and of inserting an additional set of teeth nearer the heel of the tips in order that a more complete grip of the capsule may be obtained and that the removal of a larger piece of capsule from the pupillary area may be assured.

In conclusion I wish to acknowledge with gratitude the kindness of my friend Dr. Byers for supplying me with the specimen illustrating Fig. 3, a pathological representation of a number of the more important clinical findings which I have attempted to bring before you for consideration in this paper.

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The Alberta Medical Association meets in Calgary on August 18th, 19th and 20th. This is just before the meeting of the Canadian Medical in Winnipeg and is intended for the convenience of the Eastern men who visit the West. The Association extends a cordial invitation to all members of the profession to attend.

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# Montreal Medical Journal.

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

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MAY, 1909.

No. 5.

## PREVENTION OF TUBERCULOSIS.

The campaign against tuberculosis has become general throughout Canada. There are few towns without a well-organized association for propagating knowledge of the means by which the disease may be prevented or cured, and the intelligence is spreading to the remotest homes. Few diseases are so well understood as tuberculosis; and, according as knowledge becomes more general, we may well expect a diminution in the death rate and in the misery which it entails. Probably the most efficient method of preventing the spread of the disease is to insist that spitting in public places is not only a disgusting nuisance, but a crime against the public welfare, and, what is more to the point, against the civic by-laws. Few communities are now so benighted as not, in theory at least, to enact suitable regulations against the practice.

The Railway Commission is the most recent public body to make drastic regulations, and every one is aware by this time that what the Railway Commission says must be done will be done. Application for a rule was made by the Montreal Board of Trade and the Commission now orders every railway company as follows: (1) to keep all its passenger stations, waiting rooms, and closets clean, ventilated and regularly disinfected, and have monthly reports from employees in charge of such work as to the state of these rooms; (2) to keep all its passenger cars clean, ventilated and in cold weather, properly heated, and to have at least one employee on every train whose duty it will be to see that this

is done; (3) to adopt a by-law prohibiting spitting in stations, waiting rooms, closets, or other premises of the company or on the platform of cars except in receptacles suitable for the purpose, and providing a penalty for breach, such notices in Quebec to be in French as well as English; (4) to provide cuspidors in stations and in the smoking compartment of passenger cars and to have them cleaned at least every 48 hours; (5) to fumigate promptly all cars known or suspected to have carried a passenger suffering from an infectious disease; (6) to fumigate all sleeping cars regularly in service at least once in every thirty days. A penalty not exceeding \$50 is provided for every infraction of the rules by the company, while every employee whose duty it is to carry out the order shall be liable to a penalty of not less than \$2 nor more than \$15 for every failure to do so.

Every person who has occasion to travel by railway should constitute himself an agent for putting these regulations in force, until at length to spit in a public place will be considered an act of obscenity.

#### THE COMMON HOUSE-FLY.

We have mastered malaria and yellow fever by fixing the guilt for the propagation of these diseases where it belongs, upon two varieties of mosquito. Let us not be content with that, but institute a fresh campaign against the common house-fly, which is one of the worst pests of country life. We can no longer affect ignorance of the evil results which are wrought by this ubiquitous insect, not only in the annoyance which it causes but by the actual causation of disease. There is clear evidence that the typhoid bacilli are transmitted as well by flies as through impure milk and a polluted water supply. In a report made to the Merchants' Association of New York it was shown by Dr. D. D. Jackson that raw sewage discharged into large or small bodies of water furnished feeding ground for flies from which they gathered and spread the germs of typhoid fever and other intestinal diseases. Dr. L. O. Howard, of the Bureau of Entomology, at Washington, has collected specimens of the house-fly from all parts of the United States from Maine to California, and whilst he has differentiated at least five varieties he concludes that all may be the means of conveying infection.

So far as we are aware nothing has been done in Canada to minimize the evils of this pest. This division of public education might well be included in the campaign against tuberculosis. The remedy is cleanliness as is well set forth in the rules of the Chicago Board of Health:

Screen all food and keep flies away from it. Keep the streets clean. Keep stable manure—breeding place for flies—in a vault or pit or

screened inclosure and sprinkle its surface with chloride of lime. Quickly cover up food after a meal and bury or burn table refuse. Keep damp cloths near meat dishes, milk jugs, and other food receptacles. Burn pyrethrum powder in the house. It will kill most of the flies and those it does not will fall stunned, when they may be swept up and burned. Sticky fly-papers are a second-rate palliative. Remember that the exposure of any kind of refuse near a dwelling furnishes a breeding place for flies, and if food is exposed the flies will deposit germs upon it.

A rather more extensive series of rules has been prepared by the Merchants' Association, of New York, which we take pleasure in calling to the attention of the profession and of the public:—Keep the flies away from the sick, especially those ill with contagious diseases. Kill every fly that strays into the sick room. His body is covered with disease germs. Do not allow decaying material of any sort to accumulate on or near your premises. All refuse which tends in any way to fermentation, such as bedding straw, paper waste and vegetable matter should be disposed of or covered with lime or kerosene oil. Screen all food. Keep all receptacles for garbage carefully covered and the cans cleaned or sprinkled with oil or lime. Keep all stable manure in vault or pit, screened or sprinkled with lime, oil or other cheap preparation. See that your sewage system is in good order; that it does not leak, is up to date and not exposed to flies. Pour kerosene into the drains. Cover food after a meal; burn or bury all table refuse. Screen all food exposed for sale. Screen all windows and doors, especially the kitchen and dining room. Burn pyrethrum powder in the house to kill the flies. Don't forget if you see flies, their breeding place is in nearby filth. It may be behind the door, under the table or in the cuspidor. If there is no dirt and filth there will be no flies.

### Reviews and Notices of Books.

AIDS TO MEDICINE. By BERNARD HUDSON, M.D., M.R.C.P., London.  
Baillière, Tindall & Cox, London.

This little book is a brief, concise, but accurate ready reference handbook for students and general practitioners giving at a glance the principal salient points in the Etiology, Pathology, Symptoms, Physical signs, Diagnosis, Prognosis and treatment of the various diseases. It takes up the specific infectious diseases, diseases of the respiratory and cardio-vascular systems, of the blood and ductless glands, of the nervous system, of the digestive system and the various constitutional diseases, intoxications, and those due to animal parasites.

OPERATIONS UPON THE UTERUS, PERINEUM AND ROUND LIGAMENTS.  
By W. J. STEWART MCKAY, M.B., M.Ch., B.S.C., Senior Surgeon  
Lewisham Hospital for Women and Children, Sydney; Member of  
the Royal Society of Medicine, London; Ballière, Tindall & Cox,  
1909; Crown 4to xvii, 454, 148 plates. Price, 21s. net.

The express object of the book is "to point out how the obstetrician should deal with the immediate lesions of the vagina and perineum, and in the next place to describe how these lesions, when neglected, may be dealt with later on by the operator, whether he be a general practitioner or specialist."

The first chapter deals with the anatomy of the pelvic floor, the mechanism of lacerations, and the treatment of recent tears. This, probably the best part of the book, is very clearly written and unusually well illustrated. The author believes that certain median tears do not require immediate suturing, but it is doubtful whether his explanation of which should, and which should not be sutured, will be clear to the average practitioner, already too willing to extend the latter class, and we consider it would have been better to advise immediate repair of any laceration, however slight. When operation is necessary, those suggested are those usually described in modern text books.

Chapter II deals with Lawson Tait's perincorrhaphy, both the "V" and "H" operation being extensively described, though the "V" operation is admitted to be of comparatively little value. The "H" operation, as described by its originator, is altered by the author, who suggests dissecting out and suturing the ends of the torn sphincter; a step the necessity of which is evident to anyone who has ever undertaken the operation. It is doubtful whether the after treatment recommended, namely, to open the bowels on the third day, will find favour with many operators.

In Chapter III the author deals with the operations for relaxed vaginal outlet, and in this follows closely the teaching of Howard Kelly. He omits, however, the most recent feature introduced by Kelly and what is probably the most important step, i.e. the piercing of the fascia, the drawing in of the levator ani from either side and their fixation into the perineal body. Chapters IV, V, and VI, deal with rectocele and cystocele and operations on the cervix; the usual procedures are described.

Chapter VII deals with displacements of the uterus. The author evidently favours Alexander's operation, and would widen the scope to include cases in which adhesions are present, and advocates freeing these

adhesions by means of the finger passed through the internal ring into the peritoneal cavity. Other more modern operations for suspension and fixation of the uterus are also described, and the danger of fixation during the child-bearing period is pointed out.

Chapter VIII, the longest in the book, deals with curettage of the uterus. The indications for this operation seem to be very varied, and some ten pages are devoted to the danger of perforation of the uterus when it is undertaken. There is slight mention of the value of microscopical examination of scrapings, though this might occasionally determine the justifiability of the operation. The curette is recommended in the treatment of post partum infection and in certain instances "the finger may be introduced and curettage performed by the nail."

The last chapter deals with dysmenorrhœa and contains a description of a cervix splitting operation which we believe might have been also attributed to Howard Kelly. The book is sufficiently well written to render unnecessary the frequent use of italics and heavy type which mars an otherwise good appearance. It is unusually well illustrated, thanks to adaptations from the recent and more extensive works on gynecology as well as some drawings from sketches by the author. It will probably find favour, for, in the words of the introduction, "it is common knowledge that the bulk of the profession are fired with the desire to operate."

H. M. L.

TEXTBOOK OF EMBRYOLOGY. By FREDERICK RANDOLPH BAILEY, A.M., M.D., Professor of Histology and Embryology, College of Physicians and Surgeons, New York, and ADAM MARION MILLER, A.M., Instructor in Histology and Embryology, College of Physicians and Surgeons, New York. Published by William Wood & Co., New York.

This is a well written and well illustrated textbook of 640 pages. The letter-press is clear and good, and the illustrations are well executed. The scope of the work is the development of the human embryo, with just enough reference to other forms to make the processes in the human embryo intelligible. It is therefore a book pre-eminently suited to the needs of medical students. The authors are particularly to be praised for the clearness with which they have dealt with the most difficult subject of the "formation of the layers." Under this phrase are understood the processes of segregation, of ectoderm, endoderm and mesoderm. These processes in the human subject and in mammalia generally have been profoundly modified by the relations which have for so long sub-

sisted between the embryo and the womb of the mother. In order therefore to explain the formation of layers in mammalia Messrs. Bailey and Miller have given a number of excellent figures of the eggs of reptiles and amphibia in early stages of development, by means of which the steps in the modification of the "formation of the layers" can be distinctly followed. It is satisfactory to note that they have shown a wise conservatism in *not* following the latest theories on the subject. These, as expounded by Hubrecht Lwoff and others of the same school, would turn all our conceptions topsy-turvy, and we venture to predict that their popularity will be of exceedingly limited duration. In the accounts which they give of the detailed development of the various organs, the authors of the work under review have distinguished themselves by the number of reconstructions from sections which they have figured. From an experience of many years in teaching embryology, we are convinced that the average student finds great difficulty in picturing to himself the anatomy of organs from mere sections, however carefully chosen or well-figured. The value of these reconstructions is therefore very great and it is a distinct pleasure to come across a text-book containing so many of them. Finally we commend the manner in which the student's attention is constantly directed to the explanation of congenital defects, which is afforded by embryology. We warmly recommend this text-book to all readers of the JOURNAL.

E. W. M.

DISEASES OF THE HEART. By JAMES MACKENZIE, M.D., M.R.C.P.  
Price: \$7.50. London: Oxford Medical Publications; Toronto: D.  
T. McAnish & Co., 1908.

The appearance of this work has made the world richer. Much of the information contained in it is based on observations first made by Dr. Mackenzie himself. Much also is derived from experiments made by younger men under his direct inspiration and guidance. No other man could have written a book to fill just the place that this does. Dr. Mackenzie has probably done more than any one else in the English-speaking world to apply the facts and methods of physiology to the diagnosis and treatment of heart disease. He regards diseased hearts from the functional view point. His chief enquiry is not what valve is diseased, but what function of the heart muscle is threatening to become exhausted. He has developed a technique based largely upon the graphic methods of the physiological laboratory by which he is able to diagnose the functional condition of the heart. The outstanding feature of his technique is the use of simultaneous tracings the arterial and venous

pulses in addition to the physical and symptomatic examination of the patient as ordinarily practised.

The author has established the relationships between the symptoms and signs and the functional capacity of the heart in such an enormous number of cases by means of the graphic method that he is now able to teach others how to estimate the state of the heart in many cases without the graphic method. He has done much to bring order out of chaos in the differentiation and explanation of many types of arrhythmia. He has recently given special attention to the absolutely irregular hearts of advanced mitral disease, and believes he has found an explanation in the shifting of the seat of origin of the heart beat from the mouths of the great veins to a mass of primitive or embryonic cardiac tissue situated in the wall of the right auricle and known as the auriculo-ventricular node.

Dr. Mackenzie has approached the question of treatment along new and original lines, and has done much to determine the effect of physical procedures of various kinds and also of drugs upon the functional capacity of the heart. The book is written in as simple a style as the subject permits of, and the reader's attention is not diverted from the great outstanding facts and principles by an undue mass of detail. The chapters are short, the division of subjects is clearly made, and the publisher's work is only surpassed by the value of the text.

W. S. M.

DISEASES OF THE EYE. By STEPHEN MAYOU, F.R.C.S. London, Oxford Medical Publications, 1908; Toronto: D. T. McAnish & Co.

The author in his preface presents this little work as one intended to help those who are beginning the study of ophthalmology, or as a short work of reference for the general practitioner. As such this volume will certainly serve its purpose well. It is a clear, concise presentation of the subject following the generally accepted ideas, although several of the more recently introduced methods with which the author has had practical experience are included.

The section on diseases of the fundus oculi is dealt with rather briefly, as in the writer's opinion those who are sufficiently advanced in the subject as to be able to use the ophthalmoscope should consult larger works for reference. Elementary optics and refraction are treated in an unusually interesting manner, the orderly description assisting naturally in an intelligent appreciation of a rather difficult branch of ophthalmology.

One point in particular in which the work is to be commended is the admirable and liberal manner in which the book is illustrated. Mr.

Mayou as a pathologist has appreciated his particular advantage over writers of the majority of small text books, and, in addition to a clinical picture of diseased conditions, has prepared a large series of microscopic sections which very materially assist in demonstrating the morbid changes occurring in the various ocular disorders. The way in which the book is printed and the number as well as the quality of the illustrations would do credit to a more pretentious volume.

An appendix giving a number of the commoner prescriptions used in eye surgery, as well as the indications calling for their employment, lends an added value to this little book. The work will be welcomed by the student who wishes a brief yet intelligent conception of ophthalmology before he has occasion to resort to the larger treatises.

F. T. T.

**REFRACTION AND HOW TO REFRACT.** By JAS. THORINGTON, A.M., M.D.  
Philadelphia: P. Blakiston's Son & Co., 1909. Price, \$1.50, net.

The fourth edition varies little from the third edition of this deservedly-popular text-book. The plan of the work is good, and the author makes his subject very clear. Criticisms can, of course, be made, though they may not always concern essentials. Distinct omissions, however, are the failure to take note of the spherical aberration of the lens, in refracting under mydriasis, and of the variation in the power of the ciliary muscle from the supposed fixed standards of Donders, as recently pointed out by Duane. Further, the paragraph dealing with convergent strabismus inefficiently expresses the modern conception and treatment of this condition. But for beginners and for those who do not wish to go too deeply into the subject (for those, indeed, for whom it was primarily written) the work can be highly recommended.

W. G. M.

**A SYSTEM OF DIET AND DIETETICS.** Edited by G. A. SUTHERLAND, M.D., F.R.C.P., London. Oxford Medical Publications, 1908. Canadian Agents: D. T. McAnish & Co., Toronto; pp., 893. Price: \$9.00.

In these days of bulky "systems" of five to ten volumes it is peculiarly pleasing to find one that is comprised in a single manageable volume of 893 pages, and yet contains a sufficiently full and elaborated account of the matters whereof it treats, written in good English and in coherent style without any evidence of haste. As stated in the preface, the intention has been to produce a work in which "contributors were asked to



give their own views and experiences, rather than to make a collection of all the views of different authorities." Although the book is thereby rendered more dogmatic in tone, it may prove of more value to the practitioner, and serve as a guide in his work rather than be a mere cyclopaedia of facts and opinions. At the same time the views of the leading authorities have been included and critically considered.

Certainly this plan has produced a far more readable volume than is usual where the text is marked by exasperatingly frequent references and foot-notes—to which the average reader has neither the time nor the inclination, and possibly not the means, of referring. The volume is divided into XXVIII chapters. Chapters I-IX deal with general and preliminary considerations, while the remaining chapters are devoted to the practical application of dietetic principles in disease, with sections on diet in old age and in infancy. In a work of such general excellence it is difficult, not to say invidious, to select any particular contribution for special commendation. Without, however, detracting from the merit of any of the other sections, it may be said that the chapters on "The Evolution of Man's Diet," and on "Alcohol in Health and Disease," by Dr. Harry Campbell, will probably be read with peculiar interest on account of their "unusual" quality. Some of the statements in the latter must be rather a shock to prohibitionists, e.g., that alcohol is beneficial in hastening the elimination of congenital degenerates, and that the degeneration caused by alcohol is not inherited. Among the more elaborate articles may be mentioned the chapters on "The Results of Experimental Work on Diet," by Dr. E. D. Spriggs, "Patent and Proprietary Foods" (with analysis), by Dr. Edmund Cantley, "Diet in Tuberculosis" (with excellent diet lists for all classes and conditions of individuals), and "The Feeding of Infants and Children in Health," by the Editor.

The chapter on "Diet in Diabetes" is not very satisfactory. It is too general and does not give standard diets for diagnostic and prognostic purposes.

The publishers must be commended for producing a volume that is well printed, opens easily, and (owing to absence of glazing) is light and easily handled—a pleasing contrast to most medical books published in America.

**THE SURGERY OF THE EAR.** By SAMUEL J. KOPETSKY, M.D., illustrated with sixty-three half-tone and line drawings, eight charts and four coloured plates. New York, Rebman Co., 1123 Broadway.

The author, believing that the present tendency towards specialism is increasing, and as a result, there will be those who will devote them-

selves exclusively to the treatment of the surgical diseases of the ear; in order, therefore, to meet the needs of such a class, he has attempted to supply a book which shall embody all the additions to our knowledge of the surgery of the ear. In this work, he has correlated the extensive literature with personal experience and observation, the whole being adapted to the needs of the medical student, the practitioner, and the specialist. The author, in attempting to deal with the subject in so comprehensive a manner necessarily falls short in certain of his endeavours; for example, it is to be noted that, under the subject of new growths, only one variety (the polypoidal) has received consideration. Inflammatory affections of the cartilage are not even touched upon, nor do we find any reference to examination of the blood as an aid in diagnosis. The more recent work of Barany on the diagnosis of affections of the labyrinth, has been quite overlooked. The illustrations are fairly well represented, but the type and paper do not commend themselves. One may well hope that, in any subsequent edition, the treatment of the subject under consideration will be more comprehensive.

### Medical News.

#### INTERNATIONAL MEDICAL CONGRESS, BUDAPEST.

The following are the "accommodation orders" for the XVIIth International Medical Congress, to be held in Budapest. The period of validity for such accommodation-orders is 7 days with hotels and 8 days with private dwelling-houses, and it is to be understood, that the day of the arrival with the hotels is the 28th of August, but with private dwelling houses the 27th of August. Should the arrival in Budapest take place after the 27th of August—(with hotels after the 28th of August)—and the departure from Budapest before the 4th of September, no reimbursement will be made for the time the lodgings are not used.

#### IN HOTELS.

*Arrival on the 28th of August.—Departure on the 4th of September.  
Rent for a stay of 7 days.*

Prices in Kronen.—Ser. A., single bedded, K. 70-140; double bedded, K. 84-210; three bed, K. 105-245. Ser. B., single bedded, K. 48-69; double bedded, K. 64-83; three bed, K. 80-104. Ser. C., single bedded, K. 21-47; double bedded, K. 35-63; three bed, 42-79.

## IN PRIVATE DWELLING HOUSES.

*Arrival on the 27th of August.—Departure on the 4th of September.  
Rent for a stay of 8 days.*

Prices in Kronen.—Ser. D., single bedded, K. 51-70; double bedded, K. 15-100; three bedded, K. 91-115. Ser. E., single bedded, K. 31-50; double bedded, K. 46-75; three bedded, K. 61-90. Ser. F., single bedded, K. 16-30; double bedded, K. 30-45; three bedded, 45-60.

Such chambers may be engaged in the following way:—The person who orders lodgings indicates in which series and at what price he desires a single bedded, a double bedded chamber, or one with three beds and whether in an hotel or in a private house. It is left to the choice of him who engages the room to fix the price between the maximum and the minimum rent of the respective category. The amount corresponding with the price chosen is to be transmitted in advance. In return for it, and in conformity with the order received, the Committee will remit to the sender an accommodation order for appropriate lodgings. For this service a charge of 8.50 kronin per person will be made and should be sent with the order.

In case the renter should be prevented from taking possession of the lodgings—notice of which, however, has to be received before the 20th of August—the rent paid in advance will be refunded against reception of the “accommodation order,” however, with a deduction of 10 kronen a head; should such notice arrive after the 20th of August, 20 kronen will be deducted per person.

Communications should be addressed to Central Ticket Office of the Hungarian State Railways.

# Retrospect of Current Literature.

## GYNÆCOLOGY.

UNDER THE CHARGE OF DRs. GARDNER, CHIPMAN, AND LOCKHART.

### CANCER OF THE UTERUS.

NORRIS, C. C.—“Primary Cancer of the Fallopian Tube and the Report of a Case.” *Surg., Gynæcology and Obstetrics*, March, 1909, p. 282.

The older writers denied the possibility of the occurrence of primary cancer of the Fallopian Tube, but about eighty-six cases have been recorded.

In the laboratory devoted to gynæcological pathology in the University of Pennsylvania, one case of primary cancer of the tube has been seen in comparison with ninety-four cases of uterine cancer. In the same institution eight cases of secondary involvement of the tube have been observed, five spreading from the ovary and three from the uterus.

Several histological varieties of this disease have been found to affect the tube, Jones having collected 40 cases of papillary cancer, 4 of medullary, 2 spheroidal called and 1 each of adenoma and alveolar, but these could have probably been classified under two heads, viz.:—alveolar and papillary, the latter being the more common. Frequently, however, both varieties are found to occur in the same specimen. A rare form, in which carcinoma originated in an embryonal rest, has been reported by Friedlander.

Macroscopically, the tube, before being opened, resembles that which is the seat of chronic inflammation and a diagnosis of hydrosalpinx may be made, Andrews reporting a case in which the tube contained two quarts of fluid. On splitting open the tube, difficulty in diagnosing malignant from benign papilloma will be experienced, but this may be cleared up by microscopical examination, but all tubal papillomata should be treated as if malignant. As a general rule the tube is filled with a soft, friable, brain-like material which is very vascular and bleeds easily. At times the uterine end of the tube is patent and particles of this tissue are to be found in the leucorrhœal discharge, which always ought to be examined under the microscope when cancer of the tube is suspected.

The disease may be bi-lateral but it is more common to find it confined to one side, the ratio being about 17 to 51.

It may originate in either a healthy tube or in one which has been the seat of a previous inflammation or a benign papilloma of the tube may take on malignancy, the latter being the more common mode of origin according to Doran. Pathologists agree, however, that inflammation is a strong predisposing cause and this view is supported by clinical evidence.

The age at which it occurs varies from 27 to 70 years, a large proportion being first seen about the time of the menopause. In Doran's series of 62 cases, only four were under 40 years of age.

The marital history is unimportant, many of the patients having given birth to several children, but the disease is preceded by a period of sterility, this being accounted for probably by the previous attack of inflammation.

There is no case on record where diagnosis was made before operation. This is partly due to the rarity of the disease and partly to the preceding inflammation masking the symptoms. The latter are a watery, sanious leucorrhœa or bleeding. Pain is variable both in occurrence and intensity, often being absent until the disease is far advanced. When present it is of a sharp, cutting character. The duration of the symptoms varies from a few weeks to several years, but the disease is said to spread more rapidly than when the uterus or ovaries are affected primarily, and metastases are seen earlier.

The mortality is very great. In 42 cases where the after history was obtainable, only two patients were alive at the end of three years.

YOUNG, ERNEST B. "A review of 254 Cases of Cancer of the Uterus from the Gynæcological Service of the Boston City Hospital." *Boston Medical and Surgical Journal*, February 25th, 1909, p. 225.

Out of 254 women with cancer of the uterus, only 19 cases of cervical and 9 of fundal cancer presented the slightest opportunity for a radical operation, and, on opening the abdomen, some of these were found to be beyond hope of cure. During the last 15 years there has been no gain in the percentage of cases favourable for operation, irrespective of the social position of the patients. In the early stages the diagnosis is difficult and the physician is not always responsible for the failure of the women to seek relief, but often this is due to imperfect examination of the pelvic organs by the medical attendant. Winter states that in Berlin 76 per cent. of women had consulted their own physician first and in two other clinics 72 per cent. and 50 per cent. had done so, yet in from 10 to 15 per cent. the physician had not made any examination of the pelvic organs.

By the education of the laity and medical men, the percentage of operable cases has been raised in Germany to 74 per cent., while in the United States it remains about 8 per cent., showing the necessity of conducting a crusade against this disease.

In the series under consideration, i.e. 254 cases, the cervix was attacked in 237 and the fundus in 17.

*Cervical Cancer.*—In 124 cases, histological examination adenocarcinoma in 4 and squamous in 121.

The negroes was seen to be liable to the disease, out of 237 cases 8 being met with in coloured women. The age varies from 21 to 75, about 15 per cent. occurring between the ages of 35 and 50. The influence of childbirth upon the disease is marked. Kelly states that in only 3 per cent. of cases of cancer of the cervix is the woman a nullipara and his statement is borne out by other observers. As regards symptoms, hæmorrhage is the commonest to be met with in the early stages. Out of 224 cases, irregular bleeding was the first symptom in 129, an unusual vaginal discharge in 59, abdominal pain in 16 and simple increase in the menstrual flow in 14. One patient was induced to consult her doctor on account of increased frequency of micturition, while in another woman the first suspicion of anything being wrong was the discovery of a tumour in the vagina while attempting to take a douche. Cachexia is neither an early nor a constant symptom and is most commonly represented by anæmia and loss of strength.

*Fundal Cancer.*—Here the average age is 52 years, the limits being 25 to 72. In 16 cases, 9 or 56 per cent. had never been pregnant and one had merely had an early miscarriage.

The symptoms are similar to those in cervical cancer, but it is more chronic and the patient has a better chance for cure following operation.

BERKELEY, COMYNS. "Wertheim's Panhysterectomy for Cancer of the Cervix." *British Empire Journal*, March, 1909, p. 145.

The author defines the operation and then proceeds to discuss it from three standpoints, viz. :—(1) primary mortality, (2) percentage of operability and (3) percentage of ultimate cures.

The *primary mortality* is high but can be lowered by experience. In Wertheim's first 30 cases, this was 40 per cent., while in his last 30 it was but 7 per cent. Of 234 cases collected from British gynæcologists, the mortality was 18.1 per cent. The mortality following simple vaginal hysterectomy is considerably lower than this, being between 4 and 12.7 per cent. Every effort must be made to lower the operative mortality of Wertheim's operation, but, no matter how high the immediate mortality

is, if we have more patients alive at the end of five years by that method than by any other it is the one which we ought to select.

The percentage of operability in abdominal hysterectomy is higher than when the vaginal route is the one chosen because by the former method one can see better what is being done and can free the ureters better than by the lower route. Wertheim's percentage of operability is 49, Schindler's 46 and Bumm's 90, but the primary mortality of the latter is very high, viz: from 25 per cent. to 15 per cent.

The parametrium should be removed when practicable, Schauta finding it affected in 69 per cent. of his cases.

Wertheim has 138 women or 62 per cent. free from disease at the end of five years from the date of operation, this being a much better result than that following any other method of operating.

*Complications.*—The ureter is seldom involved in the disease as it has its own lymph supply, but it may be divided or ligatured or have its blood supply so interfered with as to cause necrosis with a resulting ureteral fistula. Such a fistula occurred in 24 out of Wertheim's 458 cases.

The bladder may be opened during the operation or necrosis of the wall be caused by interference with its blood supply due to ligation of the vaginal arteries or separation of the bladder from the vagina. Bumm had this complication occur five times in 108 cases.

The rectum is occasionally injured, Wertheim having one instance of this complication, a recto-vaginal fistula resulting.

Cystitis very commonly follows this operation on account of the proximity of the bladder wall to the large granulating cavity, and is one cause of the prolonged convalescence.

Another common complication is trouble with the abdominal wound. This either fails to heal by primary union or there is stitch abscess. Sloughing of the abdominal wound is most common where the discharge from the cancer is very malodorous and is due to infection.

The most common causes of death are shock and heart failure from the severity of the operation.

### UTERINE FIBROIDS.

SCHARLEIB, MARY. "Analysis of a second 100 Cases of Operation for Fibromyomata Uteri, with special reference to their degenerations and local complications." *Proc. of Royal Soc. of Med.*, 1908, Vol. II, No. 2.

Some form of degeneration was seen in nearly one quarter of the cases and, of these, eighteen directly threatened life without reference to

pressure or hæmorrhage. In some cases more than one variety of change is seen in the one specimen.

The degenerations were as follows:—

Œdematous or Myxomatous .....	4 cases
Sarcomatous .....	1 "
Cystic or Fibrocystic .....	3 "
Calcareous .....	4 "
Necrotic Necrobiotic .....	6 "
"    Infective .....	1 "
Sloughing .....	3 "
Adenomatous .....	1 "
	—
	23 "

The complications were:—

Cysts or Cystomata of one or both Ovaries .....	20 cases
Broad Ligament Cyst .....	1 "
Thrombi of veins or œdema of lower extremity before operation .....	2 "
Varicose veins of pelvis .....	2 "
Hydrosalpinx .....	1 "
Hæmatosalpinx .....	1 "
Pyosalpinx and Tubo-ovarian Abscess .....	3 "
Papillomata .....	4 "
Adhesions to viscera .....	12 "
Pregnancy .....	3 "
Inflammation of Appendix .....	4 "
Broad Ligament Fibroid .....	1 "
Ulcer of Rectum .....	1 "
Carcinomatous Invasion .....	2 "
	—
	57 "

#### LIGAMENTOPEXY.

BARNESBY, H. "Remote Results of Abdominal Ligamentopexy in Mobile Retroversion of the Uterus in Young Women." *Revue de Chir.*, xxxviii, 1908, p. 631.

The author reported twenty cases of ligamentopexy, of whom six were virgins, nine nulliparæ and five multiparæ. Of these, fifteen were completely cured and the others so greatly benefited that they did not require further treatment. Of the nine multiparæ, five subsequently became pregnant and had normal pregnancies and deliveries.



## VAGINITIS.

BOSHOWER. "Infection Staphylococcique des Organes Génitaux."  
*Rev. de Gyn. et Chir. Abdominale*, September and October, 1908,  
 p. 773.

While soiled clothes and unclean habits have long been known to cause vaginitis, it has only recently been proven that it can be caused by water containing micro-organisms. Van de Velde made cultures from nine cases of acute cervical metritis, associated with colpitis and vulvitis and found the same species of blastomycetes which he afterwards found in the water which had been used for douching.

Boshower relates a similar case in which a young lady had a discharge strongly resembling that seen in gonorrhoea. Bacteriological examination revealed the presence of Staph. Pyogenes Albus and water taken from the well used by this patient yielded the same micro-organism.

F. L.

## OPHTHALMOLOGY.

UNDER THE CHARGE OF DRs. STIRLING, BYERS, MATHEWSON, MCKEE, TOOME.

"The Dependence of Ophthalmology upon other Branches of Medicine."  
 GREEN. *Ophthalmology*, April, 1909.

Students of the literature of the past decade can hardly have failed to discern the development of a new tendency in ophthalmic thought—tendency which has sought to correlate the truths of ophthalmology with those of its sister branches of medicine.

Instead of fitting snugly into the great mosaic of the medical branches contiguous to neurology, internal medicine, rhinology, etc., it has shown an unfortunate exclusiveness, occupying a little space apart.

Many came to regard an eye as dentists regard a tooth—as being in the body, but not an integral part thereof.

Can we have a comprehensive understanding of the clinical and pathological aspects of ocular tuberculosis if we ignore the clinical and pathological aspects of tuberculosis in general?

The importance of exploring every avenue in the search for the exact diagnosis is now generally recognized.

Too long have we been content with such vague and unsatisfactory labels as rheumatic, gouty, anemic, idiopathic, etc., which we blithely affixed to every disease, the etiology of which was not perfectly obvious.

Accuracy in diagnosis is being attained not only by examination of the

organism as a whole, but frequently by the knowledge gained from the application of the newer diagnostic tests. The tuberculin reaction of Calmette and the cutaneous tuberculin vaccination of Von Pirquet, devised originally to facilitate the diagnosis of general tuberculosis, are finding an appropriate field in establishing as tubercular ocular conditions, obscure from the clinical stand point.

Ocular disorders in which neurologic consultation will often be advantageous and frequently indispensable include palsies of the ocular muscles, inequalities and abnormal reactions of the pupils, optic neuritis, and choked disk, certain types of retrobulbar neuritis, defects of the visual field suggestive of chiasmal or cortical lesion, and visual anomalies of an hysterical type.

The enlargement of the ophthalmic field of vision is nowhere more strikingly illustrated than in the present universal appreciation of the fact that various functional and organic diseases of the eye and its adnexa are due to diseases of the nasal cavity and its accessory sinuses.

The literature of the past ten years contains many allusions to the more or less intimate association of skin diseases with certain disorders of the anterior ocular segment. In searching for a possible cause for ocular diseases the oculist should ever bear in mind the possibility that pelvic disorders may furnish the clue to the problem in hand. As is well known normal menstruation may be accompanied by conjunctival congestion and purulent secretion. The connection between a gonorrhoeal ophthalmia and a specific urethritis is too obvious to require comment. Writers have sought to establish a relationship between a gonorrhoea and iritis, but the relation of cause and effect is by no means entirely proved. Metastatic gonorrhoeal inflammation of the conjunctiva and occasionally also of the lacrimal glands have been recorded.

The ocular complications of otitic disease are mainly those of muscular paralysis and optic neuritis.

The ophthalmic surgeon should not neglect to interrogate the condition of the mouth and teeth as it appears unquestioned that there exist definite causative relations between affections of the mouth and those of the eye.

“Snow Ophthalmia (Ophthalmia Nivalis).” GOUIN, *Annales d'Oculistique*, September, 1908. Review in *Ophthalmology*, April, 1909.

Gouin finds so-called snow blindness as observed by ophthalmologists, less frequent than is usually supposed. Guides and tourists have learned to provide themselves with protecting glasses and their eyes are not generally affected unless the difficulties of the route compel them to lay aside

the glasses, or they suppose they are not necessary in a misty atmosphere.

The supposed blindness that has been described is due chiefly to spasm of the lids, and when they are once opened, vision is found to be little or not at all diminished.

The visual field was affected in only two of the subjects examined.

The symptoms do not occur suddenly, most frequently in the night or awakening in the morning and consist of painful photophobia, redness and congestion of eyelids and conjunctiva, congestion of retina and contraction of the pupils.

The symptoms generally yield promptly to iced compresses, or hot stupes, protection from the light and applications of sulphate of zinc.

It is better to speak of snow ophthalmia as we do of electric ophthalmia. They are analogous not only in their symptoms, but in their causes, which in all probability is the action of violet and ultra-violet rays.

Urdmark showed that it is not the direct influence of the snow that produces snow ophthalmia, but rather light reflected by the snow, which is richer in ultra-violet rays than is direct sunlight.

This fact is confirmed by experience as a large proportion of reported cases of snow ophthalmia have occurred in cloudy weather or even at the time of a dense mist. The irritation of the external integument of the eye is not due, as was formerly thought, to reflex action from retinal excitation, but results from direct action of the injurious rays upon the eye lids, the conjunctiva, the cornea and iris.

M. K.

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## PATHOLOGY.

UNDER THE CHARGE OF DRs. ADAMI, KLOTZ, AND NICHOLLS.

### THE YEAR'S PROGRESS IN BACTERIOLOGY—THE BACTERIOLOGY OF THE INFECTIVE DISEASES.

No attempt is made to indicate the advances in technique, because this is of interest more to the bacteriologist than to the physician. Some facts of general interest are here set forth:

#### FEVERS.

*Typhoid*.—Mandelbaum (Münch. Med. Woch., LIV, Sept. 3, 1907), described a new organism from typhoid, which is designated a metatyphoid rather than a paratyphoid; it has the power of producing typi-

cal crystals underlying the colony in glycerine-gelatine, and appears to have no effect on hæmoglobin.

The ophthalmic test with a typhoid vaccine in the hands of F. L. Barker (*J. Med. Res.*, XX, 1909), gave positive results in 70 cases tried. The reaction appeared in 6.8 hours and lasted 24. The stage of the disease at which the reaction was tried is not stated in the reference to which I have access. Braza confirms this.

Kraus, Lusenberg and Russ (*Wien. Klin. Woch.*, Nov. 7, 1907), while finding the eye reaction positive, found that it was also positive in cases of pneumonia and multiple sclerosis. They went further, and using other emulsions found that paratyphoid emulsion gave positive reaction in 7 of 13 typhoids, that bacillus coli emulsion gave positive results in 11 of 11 typhoids, and that bacillus tuberculosis gave positive results in 11 out of 12 typhoids, which suggests that the ophthalmo-reaction is a little too anxious to please, and seems to lack specificity. A cutaneous reaction, similar to that of tuberculosis is reported by Link (*Münc. Med. Woch.*, 1908), and others. Nakao Ate, being of a curious turn of mind, found typhoid bacilli in the lice on typhoid patients (*Münc. Med. Woch.*, 1907).

One of the most interesting advances noted has been the discovery that patients may for years after the attack be carriers of the infection, either in the bowel or in other organs such as the gall-bladder. It seems to me probable that the idea is in danger of being exaggerated from a practical standpoint. Davies and Walker (*Proc. Roy. Soc. of Med.*, April, 1908), say that 4 per cent. of cases become carriers for varying periods of time. A woman cook who had typhoid in 1901, in 1906 gave rise to 50 cases of the disease in three different institutions.

The effects of inoculation by typhoid vaccines may be here included. Leishmann (*Jour. R. A. M. C.*, VIII, 1907), shows how he prepared his vaccine. Non-virulent cultures were grown in broth, killed by heat at 62°, and lysol was added; it was then standardized. In his subsequent communication, he indicates a useful modification, viz., that he killed the cultures at 53°. His second paper deals with results in garrisons of 12,083 men, of whom 5,473 were inoculated, 6,610 not so. In all 3.8 per cent. of inoculated and 28.3 per cent. of non-inoculated men got typhoid. Of the regiments where typhoid was occurring, 6.6 per cent. of inoculated men got the disease while 39.5 per cent. of non-inoculated men contracted it; with his later modification, *i.e.*, his new vaccine, 3.7 per cent. of inoculated men got typhoid as opposed to 32.8 per cent. of non-inoculated men. These figures cover a period of roughly a couple of years, and each man got two inoculations, first 500 million

bacteria, and later 1,000 million. This is the most striking series of figures I have seen in favor of the procedure.

*Scarlet Fever.*—No notable advance has been made. M. H. Gordon (Pract., Jan., 1909) found streptococci in all his cases, and divides them into two types. One found early on the tonsils of mild cases was identical with or closely allied to Klein's streptococcus scarlatinae; this is known as streptococcus conglomeratus because it grows in clumps; he found it pleomorphic on solid media and at times bacillary in shape, even resembling in its irregularity the bacillus of diphtheria.

He did not find this form in the normal mouth, although the second type, streptococcus pyogenes is frequently found. The latter is more virulent for animals than the first described.

A. G. Banks examined the opsonic power, and found it greatly lowered in fatal cases; complications, he finds, constantly alter the power, and he was able to find no differences in opsonic power for typical and atypical forms.

In scarlet cases, a series observed by some one whose name I have omitted to note, showed no good results from heterologous polyvalent serum, where the organisms were killed by galactose.

Dealing with the serums of streptococci, Weaver and Tunnicliff (Jour. Inf. Dis., Dec. 18, 1908) killed the bacteria by suspending in 25 per cent. galactose; this gave protection when injected against the subsequent injection of homologous living organisms, which is not so when the germs in the vaccine have been killed by heat. Homologous streptococci are desirable for the production of this vaccine.

*Diphtheria.*—The main points of interest in this disease are that the bacteria have been found playing rôles which we consider usually as out of their province. Klimenko (Centr. f. Bakt., XLVI, 1908) isolated the bacillus from blood cultures taken in a mild case of the disease. Ucke (*Ibid.*, Mar. 10, 1908) did the same. Up to this time, so far as I know, the bacteria were supposed to remain entirely local.

Hammerschmidt (Zeit. f. Hyg., LIII, 1906) isolated it from pus in an abscess of the finger, where, however, it was associated with other organisms.

Günther (Centr. f. Bakt., XLIII, 1907) found isolated diphtheritic necroses of the intestine from which he isolated the bacillus and he reports a case of phlegmonous gastritis with the same finding.

In tests to distinguish *B. diphtheriæ* from the pseudo-diphtheria organisms, Zinsser of New York confirms Knapp's work, that in serum waters with the various carbohydrates, bac. Hofmann produces no

acid, bac. diphtheriæ ferments dextrine, not saccharose, while bac. xerosis ferments saccharose, not dextrine.

*Glanders.*—The ophthalmic and cutaneous reaction with mallein are being used for diagnostic purposes, but Putzeys and Stienons (Ann. Med. Veter. Belgique, Nov., 1907), as a result of their work, think the reaction is not sufficiently exact for diagnostic purposes; Wladimiroff (Berl. tierärzt, Woch. Jan., 1908) came to the same general conclusion, but found that in cured cases, the positive reaction remained with these tests after it had been lost by the subcutaneous method. He thinks it is useful as a quick method to roughly separate sick from well horses in an outbreak of the disease.

*Meningitis.*—Conradi (Deuts. Med. Woch., July 9, 1908) details a method of finding the organisms. Centrifugate, heat at 60° 1—2 hours, place on gelatine at 40°, one part of the liquid to 3 of gelatine, pour in Petri plates, remove sediment from centrifuge tube and transfer by glass pipette to the plates; the organism grows as well as upon ascitic-fluid media.

Dopter and Raymond Koch (Comptes Rendus de Soc. Biol., LXV, 25th July, 1908), as a result of using the "anti-serum" of each to agglutinate the other found that the meningococcus fixes the agglutinines while the gonococcus does not; their conclusion from this is that the meningococcus and gonococcus are two specifically distinct organisms.

*Pyocyanus.*—H. H. Waite sums up the case against this organism. It can cause fatal primary infection; its skin manifestations are probably but the local evidence of general infection; it is most commonly found in the middle ear and the intestine, and some cases of supposed typhoid without agglutination may be due to it. He reports two cases, one where it was the infection of a liver abscess, and one in which it caused purulent arthritis.

*Whooping-Cough.*—Bordet and Gengou (Annal. Inst. Past., XX, Sept., 1906) have grown the organism discovered by them in 1900 on glycerine media with potato and blood serum and finally on ascitic serum. Klimenko (Centr. f. Bakt., XVI, Feb. 18, 1908) supports Bordet and Gengou against many other claimants, and has produced a raucous cough in apes by inoculating this organism in the respiratory tract. There has been a good deal of quarrelling over the priority of the discovery of this organism.

Friedländer's bacillus has been found in the urinary tract by Abel, Clairmont, Sachs and Wolf, independently.

Ferrarini has found bacillus subtilis in a chronic gland infection in which he considered it causative.

*Rhinitis and Pharyngitis.*—Allen (Lancet, Nov., 1908) classifies the "cold-producing" organisms as follows: (1) bac. influenzae; (2) bac. septus; (3) B. Friedländer; (4) micrococcus catarrhalis; (5) microc. tetragenus, all of which may be present in a normal throat.

A chronic nasal catarrh, he says, is always the work of B. Friedländer; Eustachian tube catarrh often by mic. catarrhalis and chronic catarrhal tracheitis by mic. catarrhalis often combined with strepto- and other cocci.

*Internal Structure of Bacteria.*—Guilliermond (Arch. f. Protistenk., XII, 1908) has concluded after much work on the structure of endospore-forming bacilli that the bacillus has a diffuse chromatin system without nucleus, that the nucleus that has been observed is probably a granule of volutine, or else the transverse wall which he has observed to form prior to division. The wall is made by the junction of two lateral masses of granulation, and splits at the time of fission.

J. McC.

## THE YEAR'S ADVANCES IN IMMUNITY AND INFECTION.

In reviewing the study of bacteriology one is astounded at the development of this subject in the short time it has occupied a place in scientific medicine. The search for the causative agent of the nature of bacteria in disease has been incessant, and has not gone unrewarded. It would be quite out of place here to recount to you discovery after discovery of the infecting agent of many diseases,—and the process to-day still goes on although at a slower pace.

The empirical use of certain facts for the prevention of infectious disease led investigators into a new field, wholly unknown to bacteriologists. Experimental studies with bacteria, illustrating their action on animals, soon stimulated the enquiring minds to probe questions of individual, racial and species resistance. The finding of immune substances, so-called, in the blood serum and in various tissues threw a new light upon the whole subject of animal resistance, and also lured the way into the darkest marshes of sciences from which only the most imaginative and creative minds have emerged.

He who hopes to gain even an insight into the maze of immunity problems must be prepared to enter upon a long term of grind, and bury himself amidst untold stacks of literature. It is almost impossible to gain a proper conception of the later day discoveries in immunity without first having some knowledge of the historical development of the subject.

There is generally a false conception abroad that the researches in

bacteriology and the studies in immunity have been concerned only within the field of medicine. One must appreciate that the investigators in these subjects have striven in an entirely new and dark field of research and were ever at a loss to know where their investigations would lead them. It has thus come that there has been a vast accumulation of records of most diverse kind, and of many of them we ask the question, "To what purpose?" Save for the single instance of antitoxin in diphtheria but little use has been made of the studies of immunity in a therapeutic way. True we must admit that the results obtained by applying the knowledge acquired in respect to tetanus, epidemic cerebrospinal meningitis and typhoid are fairly satisfactory. There has also been a host of studies on serum reactions in infectious diseases which have in some measure served a good purpose in diagnoses. Yet, with all the facts that have been accumulated concerning hæmolysins, bacteriolysins, amboceptors, complements, antiamboceptors, opsonins, aggressins and anti-ferments, what practical purpose do they serve? In many cases it would seem that it has been but the counting of the grains of sand by the sea, accumulating facts which but serve as a monument of misspent energy.

I do not wish to appear as a severe critic, or to discourage the efforts which may yet lead to new discoveries. One cannot foretell what good results may evolve from scientific research when honestly performed, but it does seem too bad that our medical science must become embarrassed by the weight of the accumulating literature from the laboratories. Nevertheless, it seems that this must be, and the records of the successes and failures of the investigators must be preserved for the guidance of others.

Of all the results obtained in the study of immunity, it is painful to record that concerning the earliest discovery of the protection of man against disease, we have not advanced one step beyond that set forth by the discoverer of vaccination, as it was given by Jenner in 1796, nor have we any further information on the subject of the protection against rabies, as the original investigator, Pasteur, gave it to us. Of diseases like typhoid, dysentery and cholera, when they have already manifested themselves, we are at a loss to know whether the methods of attack should be along anfitoxic, bacteriolytic or some other means yet undiscovered.

There seems little wonder, therefore, that with our ignorance of the nature of certain infections, while, on the other hand, with the accumulation of so many facts of minor importance, confusion reigns in the studies of immunity.

However, of late, some light has been thrown on the subject of bac-



teriology by those (Bail, Weil, Wolf and others) probing into the fundamental principles of infection. This study becomes essentially a biological one, and a clear grasp must be obtained of the mode in which bacteria gain access to the body and the reasons for their continuous propagation within the host. The results which follow upon the bacterial invasion either from the side of the bacteria or from the side of the host is a subject which is entirely secondary to it. The studies in immunity must for the moment cease and useless theories of their action must be withheld only to fall in line after the biological problems of symbiosis and infection are cleared up.

We are not infrequently confronted with the fact that a certain organism has become an invader of animal fluids and tissues, and has lived in perfect harmony with the host, without in the least giving annoyance to the carrier. In proof of this we recall the presence of bacteria in the intra-abdominal tissues (Adami, Nicholls and Ford). It is evident that a biological relationship may exist between bacteria and the tissues of the higher animals,—in other words that symbiosis may exist. In the bacterial or protozoal world symbiosis is more common or even essential in their life. Amœba of dysentery you will remember can be well cultivated outside of the body if it is associated with the vibrio of cholera, or the *B. coli*; on the other hand, pure cultures of the amœba are difficult to obtain, although this parasite may live in pure culture in the animal tissues.

What then are to be considered as infections? The dividing line, separating infections from symbiosis, is a narrow one. This becomes more particularly true of those organisms which during their usual life had a saprophytic existence,—that is outside of the living body, but which may at any time take on parasitic qualities and invade the tissues of animals. There are some organisms which under no conditions become parasites and hence are harmless. Others again, like the *B. subtilis*, are under ordinary circumstances saprophytes, but when forced or placed under the proper conditions can take on parasitic qualities and infect living animals.

The common organisms which we meet with in medical and surgical infections are spoken of as half parasites, that is, that the organisms can lead equally well a parasitic or saprophytic existence. Examples of these organisms are the *B. typhi*, *B. coli*, *B. dysentery*, *V. cholera*, the streptococci, staphylococci and many others. This class forms by far the largest of those bacteria which concern us.

There is a small class of strict parasites. Such organisms can live and propagate only in association with the living cells of the animal

body. This class of strict parasites is being constantly reduced as the technique in bacteriology is becoming improved, and the time will yet come when almost all, if not all, the bacterial organisms will be transferred and propagated on artificial media. The various spirochætes and the fusiform organisms refuse to grow on artificial media.

In the consideration of an infection we must consider the two factors which come into play. Firstly, on the part of the animal to be infected, what powers of resistance does it possess, and how can it combat the entrance of bacteria into its tissues? It may be briefly stated that these resisting powers are given to the serum in the nature of alexins and bacteriolysins; to the leucocytes and tissue cells in the shape of phagocytosis, and to the combined action of the serum, containing its opsonins, with the leucocytes. With such portentous resisting powers it is remarkable that bacteria can gain a foothold. On the other hand the bacteria possess a power to break down the resisting forces of the host. This forms the true aggressive nature of the organism, and upon the aggressive power depends the virulence of the bacterium. Hence whether bacteria gain a foothold in the body or no, depends directly upon the relative amounts of aggressions produced by the bacterium to the amount of protective substances present in the animal body.

Bail has shown that the aggressins, which inhibit phagocytosis and bacteriolysis can be isolated in a free state. These aggressins are secreted by the bacteria, and are in themselves harmless. When aggressins are obtained and inoculated into an animal, no toxic action is evident; but when a proper dose of aggressin is inoculated with a sublethal number of bacteria, death results. Here inhibition of the protective forces of the body has allowed the invasion and growth of the bacteria to go on unhindered.

It seems apparent also from Bail's experiments that the bacteria can increase their powers of producing aggressins very much. It is the common observation that old laboratory stock cultures, which have been propagated on artificial culture media, are poor invaders of the animal tissues as compared with the bacteria obtained directly from another infected animal. This invasive power appears to be dependent upon the production of the aggressins.

These aggressins are substances quite apart from the actual poisonous substances produced by the different bacteria, and with it an immunized animal may be rendered so sensitive to the invasion of the particular infection to allow an otherwise harmless inoculation to be fatal. In considering the outcome of this infection alone, we would probably assume that there had been an alteration of the virulence.

It is difficult to obtain a true grasp of the word "virulence" when applied to bacteria, for when applied to the tetanus bacillus it has quite a different meaning to that implied when associated with the anthrax organism.

It will become necessary to study each micro-organism for its power to produce aggressins, and also for its toxin producing capabilities. It too will probably become necessary to direct our attention towards producing an immunity not only against the poisonous products of the bacteria, but also against their aggressive powers which allows them to invade the body.

Some years ago we spoke in a general way of the natural resistances which the animal body possesses against bacterial invasion. As the studies concerning this process progressed, it was soon shown that the resistance varied with each species of animal, and that bacteria, which in the smallest doses produced death in a certain species, was harmless for another. This variation in the resistance becomes more evident the farther apart these species stand in the animal world. Examples of absolute immunity to known pathogenic organisms are not frequent, save in cold blooded animals towards infection of the warm blooded species. Nevertheless, we find that the dog and rat possess a great resistance against anthrax, while it is only with difficulty that the guinea-pig is infected with chicken cholera.

Observations were soon forthcoming that the animal resistance was due to germicidal substances in the blood. Landau, Grohmann and others observed that shed blood had a detrimental action on bacteria, but Nuttall was the first to bring forward accurate evidence of these bactericidal substances in the defibrinated blood fluid. He found that when bacteria were exposed to the action of blood serum, they were quickly destroyed, and he also noted that when this serum was heated to 55°C. it lost its bactericidal powers.

The further work on this natural immune substance present in the serum was carried on by Buchner and his pupils. This natural immune substance he called alexin. These alexins destroy the bacteria without the intervention of the leucocytes. Although alexins are destroyed at 55°C., freezing has no effect upon them.

Buchner was of the opinion that alexins were identical with the proteolytic enzymes derived from leucocytes. This view has been in part supported by Metchnikoff, but up to the present the question remains undecided. That the alexins are of proteid nature is evident from the nature of their action and their physical properties. Others (Baumgarten, Jetter, Fischer and others), believe that there were other organic

and inorganic substances in the serum, which in themselves were bactericidal.

That there is, however, a relationship between the bactericidal action of cell-free serum and the leucocytes seems apparent. Though this was inferred by Buchner, the first experimental proof was brought forward by Hankin and Kanthack. They regarded the granules of the amphophile leucocytes as the mother substance of alexin. By experimental means they were able to increase the numbers of these leucocytes in the blood and found that the bactericidal substance was also increased. Observations are also forthcoming to show that the leucocytes during life secrete these substances into the serum, and others have shown that bactericidal products are liberated with the death of these leucocytes. Van der Velde was able to extract alexins from leucocytes in distilled water.

Schattenfroh was, however, of the opinion that alexins differed from the bactericidal substances, which were extracted from the leucocytes. These differences were noted mainly in that the former were destroyed at  $55^{\circ}\text{C}$ ., while the latter were not affected until a temperature of  $80^{\circ}\text{C}$ . was reached. Much work has followed these observations to prove the identity or the individuality of alexins and the bactericidal substances of leucocytes.

It has been found that the alexin content of the serum varies considerably in each individual. The influence of heat and cold, diet and starvation and of shock, leads to an alteration of the alexin content. Likewise certain nervous conditions are found to reduce the normal resisting powers of an individual.

Not alone do we possess substances which will resist bacterial invasion in the blood and in the tissue juices, but the cells of the body take an active part in opposing foreign invaders. We are familiar with the fundamental principles underlying Metchnikoff's process of phagocytosis. He laid much stress upon the germicidal powers of the wandering blood cells and attributed to them the greatest power in overcoming infections. He was of the opinion that such antibacterial substances which were found in the blood fluid were derived from the leucocytes either by secretion or in their process of decay.

To-day we can extend the theory of phagocytosis to a much wider range of cells other than leucocytes, for it is found that the same process of digesting bacteria can take place within endothelial, connective tissue and liver cells, and it has even been asserted that the nerve cells have a phagocytic property.

It is difficult to state what actually takes place within the cell during the digestion of the bacteria. That the bacteria are destroyed by a fer-

ment action is more than probable, for it has been possible to obtain such a ferment from the leucocytes. In some instances this ferment acts best in an acid medium.

It is impossible to go into Metchnikoff's ideas regarding phagocytosis; suffice it to say that he believes that the humoral and cellular immunity are very closely associated, in short, that the humoral immunity is the process of cell resistance in another form.

The very important role, however, which phagocytosis plays in infectious diseases has been demonstrated by Wright and also Neufeld. Both of these authors have demonstrated that the leucocytes are very active factors in overcoming infection. Wright has devised a technique by which he could estimate the fighting powers of the leucocytes and determine the actual part these cells played in overcoming a given infection. There has been much controversy regarding Wright's work, much of which has resulted from the failure in mastering his difficult technique. Quite recently Meakins has pointed out some fallacies arising from Wright's method of determining the opsonic index. These fallacies, according to Meakins, are very important, and throw some doubt upon the conclusions which Wright and others have drawn from their own figures. Wright in his work has made the dilutions of the serum to be tested in only one liter, 1 in 3. Meakins has shown that whereas with normal serum this dilution gives the highest count of bacteria per cell, and that on further diluting this normal serum, the phagocytic index decreases, the index of a patient's blood need not follow this course. He has observed in typhoid fever that when a dilution of 1 in 3 was used, the opsonic index was below normal, whereas when a dilution of 1 in 30, or 1 in 200 was made, that the opsonic index was much above normal. This important discovery requires serious consideration before conclusions can be drawn as to the phagocytic value of a patient's leucocytes and serum.

In general, we might say that of the protective forces which we naturally possess, they have little influence upon the toxic substances secreted or contained within the bacteria, and almost all of our natural powers of resistance are directed against the life of the micro-organism. Induced immunity is, however, quite another thing, for with it we are able to develop anti-substances to the bacterial toxins, and thus gain true antitoxins. This process of developing antitoxins and inducing bacteriolytic sera is so familiar to all that we shall not take up your time with a repetition of it.

Let us turn for a moment from the consideration of the nature of infections to the more recent studies upon hypersensitiveness and hypersusceptibility. Some time ago we discussed the report of Pirquet and

Schick on serumsickness, and of Rosenau and Anderson on anaphylaxis.

The earlier explanation which was offered for serum anaphylaxis, that it was the result of autogenic immune bodies liberating bacterial or albuminous toxins (Wolf-Eisner, Nicholle), did not receive many supporters. Nor did the explanation, that the introduced antigens removed from the body too much of the complement, offer a solution of the problem (Bail). Greater support was given to the view that the overproduction of antibodies caused too great a loss of tissue substance (Friedemann).

Wolf believes that the antibodies developed in the body, act by liberating or decomposing the introduced proteid body, and in this way set free a toxin. In this his views coincide with those of Vaughan and Adami.

We are familiar with the fact that we can cause an animal to become hypersensitive to certain proteids and albuminous fluids, and that this hypersensitiveness is evinced by certain manifestations of symptoms. We are also familiar with the hypersusceptibility which can be developed towards tuberculin, and that the manifestations of this are quite different from those of serumsickness. This difference becomes still more evident since it has been shown that the hypersusceptibility to proteids can be passively transferred to other animals. Gay believes that such a transference is only the result of carrying over poisonous antigens. Along these lines we have commonly explained the increased susceptibility of individuals to the tuberculin reaction, observing that there was a transmission of a lowered vitality or a decreased resisting power. The tuberculin reaction could also be explained by a supposed almost equal balance of the immune bodies and the antigens in the tuberculous subject, while then the inoculation of tuberculin would lead to a general toxic reaction to it.

Koch explained the localized reaction of tuberculin in a tuberculous patient to the summation of the poisonous action of the introduced tuberculin along with that gained from the tuberculous tissues. Wassermann on the other hand believes that the reaction is due to the localized accumulation of immune receptors acting as noxophiles. In other words, Wasserman considers the immune bodies as the agent causing the reaction. According to this latter view the process is not a harmful one but a reaction partly physiological, linked with the local production of antibodies which make the local area one for greater reaction with the noxa; that is an increased susceptibility.

By introducing tuberculin into a tuberculous subject, this tuberculin is attracted to the areas where the anti-tuberculin receptors are being

produced, that is in the areas about the tuberculous foci. It is here that the reactions take place, and where the manifestation of symptoms occur. On the other hand, in respect to anaphylaxis, some differences from the tuberculin reaction assert themselves. It is found that by sensitizing with albuminous or bacterial bodies, toxins and other substances, it is possible to transfer this anaphylactic condition like other types of immunity from one animal to another by the serum.

This gives some clue or rather an explanation for the reaction of anaphylaxis. It is probable that the small sensitizing dose, which is first administered, or which has naturally found its way into the body, has stimulated the production of certain specific receptors, which, however, have not left the cell. In this, the reaction differs from that of immunization, in that the receptors are not forced into the fluids or serum. The increased number of receptors makes the cell more susceptible and a locus minoris resistentiæ for a further dose of the same noxa.

Rosenau and Anderson have recently contributed some further information on anaphylaxis. They have found that guinea-pigs can be sensitized in seven days when the first injection of serum is made into the brain, while by the subcutaneous method the animals are not sensitized before nine days.

It was also found that when the serum used for sensitizing was heated to 100°C. for an hour, it lost nearly all its power of producing the hyper-susceptibility of the animal. The brain or serum of a sensitized animal has, however, no power of absorbing the sensitizing product from the test serum. The longest time which has elapsed between the sensitizing dose and the one producing symptoms in guinea-pigs was two years and two days. It seems, therefore, than when guinea-pigs are once sensitized, they remain so for life.

It was held by Besredka that the toxicity of the serum injected was inversely proportional to the age of the serum. Rosenau and Anderson could find no such relationship, nor were they able to inhibit the anaphylactic state by treating the animals with chemicals. Besredka believed that different sera varied in their toxicity, and thought that the sera to be used for therapeutic purposes should be tested on guinea-pigs previous to the administration in man. Rosenau and Anderson cannot agree with these statements, and believe that the sera do not vary so much in their toxicity, as does the susceptibility of different individuals.

There is ample proof that the anaphylactin or sensitizing substance is specific for each form of proteid, and it is possible to sensitize an animal against several proteids at the same time. Such animals which are sensitized against different proteids will react for each substance

separately. It is pointed out that human milk and cows' milk develop a special anaphylactin for each, and like the anaphylactin of proteids these substances will sensitize a second animal when the serum containing them is inoculated into it.

In 1907, Gay and Southard described what they considered to be characteristic lesions in animals dying from serum sickness. They found localized hæmorrhages in various organs, and, more particularly, the stomach. Rosenau and Anderson have failed to confirm these observations, and do not hold the lesions described as being typical for the disease. The most constant finding was a dilatation of the small veins and capillaries. The focal fatty changes and the fatty degeneration of the endothelium were not found, as described by Gay and Southard.

An interesting suggestion is made to explain the toxæmias of pregnancy on the lines of anaphylaxis. Rosenau and Anderson showed that the blood of the foetus does not sensitize the mother, nor can the severe symptoms of toxæmia be due to the passage of foetal blood into the mother. They have found, however, that the mother can be sensitized by injecting a small amount of placental extract and later giving a second injection of the same. Animals so treated show severe symptoms of anaphylaxis. Although only few experiments have been carried out, the authors suggest that there may be a relation between cases of puerperal eclampsia and the phenomenon seen in the guinea-pigs.

O. K.



## Society Proceedings.

### MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The twelfth regular meeting of the Society was held Friday evening, March 19th, 1909, Dr. J. A. Hutchison, President, in the chair.

#### METATARSALGIA.

A. MACKENZIE FORBES, M.D., showed a living case presenting this condition.

#### LANTERN SLIDE SHOWING BONY UNION AFTER ARTHRODESIS.

G. P. GIRDWOOD, M.D. This case of arthrodesis was one belonging to Dr. MacKenzie Forbes, I merely prepared the skiagrams taken before and after the operation.

A. MACKENZIE FORBES, M.D. This case is presented here tonight merely to show that bony union can take place in these cases though so much is held to the contrary. I think the skiagram shows this very well. The case was of a child 5 or 6 years of age.

#### THE EFFECTS OF METATARSALGIA.

A. MACKENZIE FORBES, M.D. The report of this case appears in the April number of the JOURNAL.

#### THE THYROID.

F. J. SHEPHERD, M.D., gave the paper of the evening which was illustrated by many lantern slides. Dr. Shepherd took up every phase of this subject.

H. S. BIRKETT, M.D. I think we must express our appreciation, not only of the work which Dr. Shepherd has presented to us this evening, but also of the excellent results which he has obtained. The subject of the thyroid gland has interested me for a good many years, largely from the pressure symptoms as frequently exemplified in the larynx and trachea. I am very glad to hear that Dr. Shepherd has emphasized a very important matter in connection with examination of the larynx before operation as to the mobility of the vocal cord. One case in particular he mentioned in which this had not been done, with the result that the injury to the recurrent nerve on the opposite side led to such urgent spasm as to necessitate tracheotomy, a subsequent careful examination showed a long-standing paralysis of the vocal cord on the opposite side. Further, the recent work of Killian and Jackson serves to show the importance of examination by means of the bronchoscope

to determine the exact site of pressure upon the trachea, which, in many cases, are not made out by means of the laryngoscope when pressure is exerted on more than one place.

J. G. ADAMI, M.D. With Dr. Birkett I feel that this occasion should not pass without expressing our gratitude for this evening's paper. Through Dr. Shepherd's work and through the frequency of goitre on the Island, Montreal has become one of the great centres for operation on the thyroid. We in Montreal feel that the work that is done here on this condition is second to none. I was extremely interested to hear from Dr. Shepherd that he has now given up very largely this process of enucleation of thyroid cysts and that because, while as Dr. Shepherd says, there is here the formation of a cyst wall and it is possible to enucleate, yet from the nature of the development of these thyroid cysts the cyst wall is a false one, that is to say, thyroid tissue may be recognized lying within the cyst; the wall, as shown in Dr. Bradley's studies, is merely condensed thyroid stroma; in fact there is really no sharp line of demarcation, even in those cases that are calcareous. It has always seemed to me that there was this danger, that these cannot be enucleated with the same sureness as a hydatid cyst or an ovarian dermoid can be enucleated. Another point is Dr. Shepherd's very positive statement that he has on several occasions removed the whole thyroid without any absolute harm. This is rather a moot point, and I would like to ask Dr. Shepherd if he believes that in these cases he has got the whole gland out, or are there any accessory glands away from the site which may have been left in. With regard to the malignant thyroid, there is a good deal of interest now being shown in regard to the sites of the secondary development; I would ask Dr. Shepherd what his experience is as regards recurrence in bone, such as has been described by not a few authors.

F. J. SHEPHERD, M.D. I wish to thank you very much for the attention you have given me this evening. It is a subject in which I have been very much interested. With regard to the complete extirpation of the gland I think that I took everything away, and if the parathyroids were in their ordinary position they certainly went with the mass. In at least ten cases I removed the whole thyroid and no bad results occurred. I have never seen a case of tetany, and I have operated on 200 cases, and only one case of myxœdema developed and that was in a malignant case. As to cancer of bone in malignant cases, I have never seen it; it seems to have been all in the lung, as evidenced by the spitting up of blood, etc.

#### CASE OF DIABETES MELLITUS.

W. F. HAMILTON, M.D. The report of this case will be found in a later issue of the JOURNAL.

JOHN McCRAE, M.D. With regard to the alkaline treatment, once in the Johns Hopkins Hospital, I had in the wards a boy of 14 who had been a diabetic for some considerable period. At this time he developed acetone in the urine, became rapidly drowsy and passed into coma. With 36 hours of the alkaline treatment, he came back to what was his normal state in the hospital. The amount of alkaline was a drachm of soda bicarb. by the mouth as frequently as he could take it without vomiting. We also gave him enemata of 400-500 cc. water in each of which was 1-1½ oz. soda bicarb. and in addition to that we gave him strong subcutaneous injections under the pectoral muscles.

#### PLEURISY. SOME AUTOPSY STATISTICS.

A. R. LANDRY, M.D. This paper appears in the April number of the JOURNAL.

J. G. ADAMI, M.D. No one would imagine that this paper represents a year's hard work, and that late into the night. And yet there is here a larger mass of material upon pleural adhesions than has ever been brought up before, the next largest I think is some 300 cases. I do not hesitate to say that these results regarding the relationship between grave and recognisable tuberculosis, and the obsolete, or even of the acute type in the body and of these pleural adhesions are of very great value. There is a certain order of statistics here that one is not able to find in books. Of course there is the one weak point in post mortem work, namely, that tuberculosis may have been present and may have been absorbed. One cannot make the statement, for instance, when he finds old adhesions without tuberculosis in the body that there never has been tuberculosis. Nevertheless, I find on looking over our statistics at the Royal Victoria Hospital that, roughly, 50 per cent. of cases coming to autopsy present definite recognisable tuberculosis. And yet we here in Canada are not so badly off, we do not have that huge proportion of cases that are recognised in Germany and in industrial districts in the old world. One point I think one may lay stress upon in this paper, namely, that our autopsies are thorough and the routine examination represents very thorough search for evidence of tuberculosis, and that so the figures may be trusted. I hope that these results will be of some value to the clinician as emphasizing the great frequency of pleural adhesions, and secondly the infrequency with which they are recognised. It may be news to many here that 7 out of 10 of the people of Montreal have suffered from old active pleurisy.

W. F. HAMILTON, M.D. Our case reports are not all written for statistics, perhaps it would be well if they were so written. Questioned

upon the matter of thoracic pain and this symptom and that symptom, of which, perhaps, the patient has no experience during the past 30 or 40 years, granted that these patients were exceptionally intelligent, I think it would be difficult to find clinical evidence for underlying lesions. As to the clinical features at the time I think the clinician may be excused for having overlooked such things. Doubtless they were for the most part absent. I think we should encourage our young men in such work as Dr. Landry has brought forward tonight.

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