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No. 1.

ON SO-CALLED DOUBLING OF "THE PUNCTA LACRIMALIA.

BY

FREDERICK T. TOOKE, B.A., M.D.,

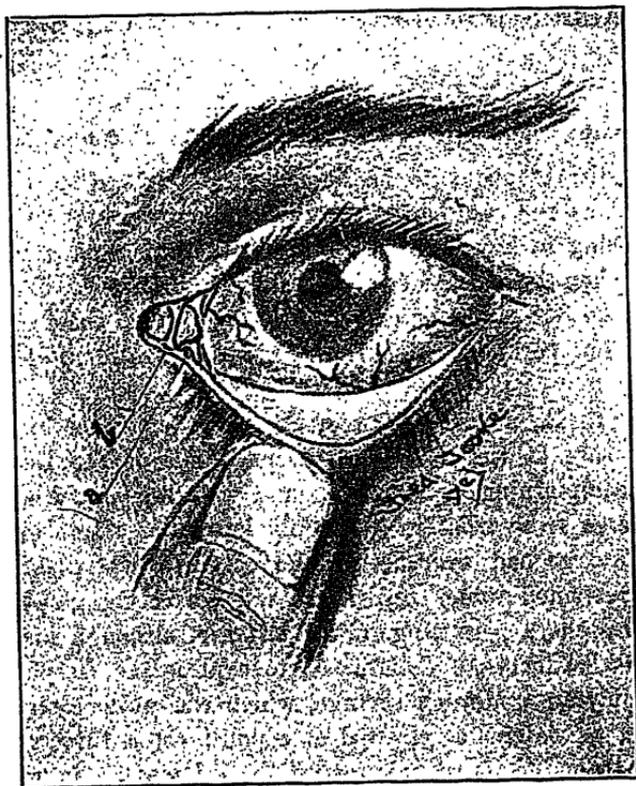
Assistant Ophthalmologist, Royal Victoria Hospital, Montreal.

The conditions about to be described in two rather unusual cases were found as the result of a routine ocular examination; their existence not being in any way anticipated, the element of a happy chance must be taken into consideration in their discovery. The points of similarity, as well as one or two of difference, make these cases interesting, and throw perhaps a little light on an obscure form of a congenital anomaly.

Case 1. R. R., a young man of 23 years, a painter by trade, came under my care at the Outpatient Department at the Royal Victoria Hospital, complaining of headaches and watering of the eye. He had never suffered from what is commonly known as "sore eyes," and no ocular discharge had ever been observed. He was diagnosed as asthenopic, refracted under mydriasis, and correcting glasses were prescribed. Epiphora persisting in the left eye, although his glasses had relieved his headaches, I determined to explore the lacrymal channels. While employing a Meyer's syringe, which was quite easily inserted, a tiny stream of water was emitted at a point about three mm. internal to the punctum. This orifice was on the lid margin in the same line as the punctum, the two connecting through the same canaliculus, the point of the syringe being passed from one through to the other. This second opening, however, differed, in that it appeared more like a tiny horizontal slit as though made with the tip of a cataract knife, the lips being in close apposition, and in no way everted or elevated, as one frequently finds to be the case with the punctum. A second point of interest was shown in this patient in the form of a musculo-fibrous band which extended from the point of this second orifice over the middle of the caruncle, to which it was adherent, to a corresponding point on the margin of the upper lid, constituting what we understand as a congenital symblepharon, a very unusual occurrence. By introducing the syringe and stilettes inward through the second opening, I found

that a blockage had occurred where the canaliculus merges into the fundus of the sac. There was no doubling in the upper canaliculus or in either canaliculi of the right eye.

I brought the patient to my consulting room, where I attempted this sketch (Fig. 1), which may possibly bring out some of my points. The condition was not interfered with.



- I.—(a) Original punctum, round and slightly everted; (b) slit-like accessory opening, a cleft or fissure in canaliculus at root of band constituting congenital symblepharon.

Case 2. B. F., aged 48, an agent, was seen by me in private. When removing a small piece of conjunctival mucus for microscopic examination my attention was attracted to two openings at the right lower lid margin near the canthus. The patient was of more than average intelligence and told me that he had noticed this anomaly before. The feature of particular interest in this case is that what we have been regarding as the secondary or accessory opening, appearing as a tiny slit, was this time outside what I had accepted as the punctum. This opening, practically the same size as that described in the former case,

passed into a common canaliculus, which, with the sac and nasal duct, was found to be patent, fluid passing readily into the nose. On being questioned, like the other patient, he told me that he had never suffered from any severe inflammation of the eyes or tear passages, nor had he even been inconvenienced from watering of the eyes.

For purposes of demonstration I passed a fine needle, threaded with a horse-hair suture, through the two openings. There was no doubling of the puncta in the upper lid or in the left eye.

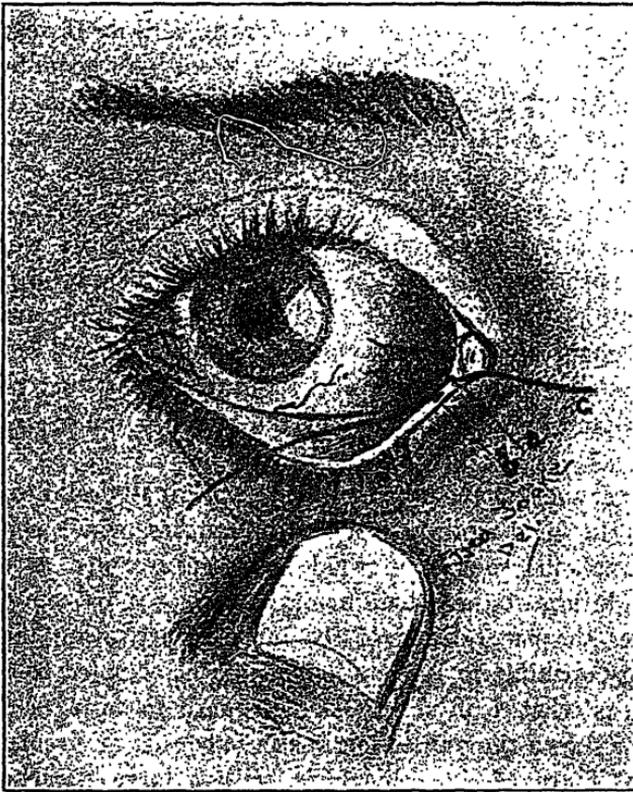


FIG. II.—(a) Has more the characters of the punctum in its being rounder and more everted than (b), which is flat and slit-like. Both unite into a common canaliculus shown by horsehair suture (c).

A search for information from such recognized authorities as Parsons¹ and Greeff² in their well-known works on the pathology of the eye, as well as from Fuchs³ and De Schweinitz⁴, in the latest editions of their textbooks, has proved very unsatisfactory. They all refer to doubling of the puncta as an anomaly but seldom met with, yet refrain from an explanation of any kind. Emmert⁵ reports a case which he diagnosed as congenital lacrimal fistula, referring to it as a rare anomaly of the

tear passage. Steffan⁶ also describes a patient who had a second punctum a line below and to the right of the normal one; it was uncertain whether it opened into the sac or to the other canaliculus.

Lang and Treacher Collins,⁷ as well as others, refer to another anomaly of the canaliculi in their absence being taken by a groove in the lid margin. In my opinion, this may materially assist in explanation of the two cases which I have presented before you. At about the sixth week of foetal life in the human, according to Ryder,⁸ the first evidence of the lacrimal channel is manifested in the form of what has been termed the lacrimo-nasal groove. This extends from the eye to the outer border of the nasal opening, following a line, if represented in the adult, from the inner canthus to a point on the outer posterior margin of the nostril, next to the upper lip, just within the ala nasi, where it joins the cheek. This line in the adult lies approximately parallel with the tear or nasal duct. The lacrimo-nasal groove is then an involution of the ectoderm, and a thickening of the underside of the epidermis along this groove subsequently constitutes what we later understand as the nasal duct. This thickening forms a solid ridge, which then separates, except at each end, as a solid cord and acquires a lumen or channel, so as to become a canal of epidermal or ectodermal origin. The condition of congenital stricture of the duct may thus be explained to the non-development of the primary lumen in this foetal structure.

At the inner canthus the upper end of the originally solid cord expands, preliminary to dividing into two small branches, which constitute the lacrymal canaliculi, ending in what has been accepted as the puncta. Should involution of the ectoderm or epiderm not be complete at any point besides the natural end of the lumen constituting the punctum, this accessory opening, in my opinion, should be accepted as a congenital fistula, or, as what I prefer in this instance to term, a foetal cleft. Halben⁹ has shown the puncta lacrimalia to consist of circular as well as longitudinal fibres of the orbicularis, with a large element of elastic tissue cells. Until histological evidence is produced showing the tissue about one of these accessory openings to be of like structure, it is reasonable to conclude that longitudinal fibres only with a lining of several layers of stratified epithelium as found throughout the canalicula, would constitute the histological structure at this particular point. Consequently, the openings which I have attempted to describe should be considered not as puncta, as we understand them morphologically, but as clefts due to a non-development of the foetal lacrimo-nasal groove.

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IMPRESSIONS OF THE SIXTEENTH INTERNATIONAL MEDICAL CONGRESS AND BUDAPEST.

BY

R. H. CRAIG, M.D.

The city of Budapest was thrown wide open from the 28th of August to the 4th of September to the members of the Sixteenth International Medical Convention.

Each member of the Congress received a bronze medal of considerable artistic merit, decorated on one side by a relief of Aesculapius, and on the other a scene of the city and its coat-of-arms. To these were attached white ribbons for all physicians and the members of their families who were registered, green ribbons for delegates of medical societies, etc. These badges served as passes to all municipal buildings and institutions, to art galleries, museums and several of the famous sulphur spring bathing establishments. The wearer also received the most courteous treatment and assistance at every turn. As the Hungarian language is entirely different from any other in origin and construction, the visitor was often grateful for a few words of explanation from a kindly passer-by who spoke German or English. This courtesy, so universally extended, made a very favourable impression upon all the congressionists.

To the committees who managed the convention great credit is due. Some four thousand strangers had gathered from all corners of the globe, with ideas as varied as their languages. They came from China, Japan, Malay and Australia, from Africa and South America.

The plans for their accommodation, division into sections, comprising the various branches of the work in which they were interested, the arrangements for their entertainment and comfort, were remarkable in scope and in the success which attended them.

The office of the Hungarian Railways, known as the Central Bureau, had charge of the lodging of all members. For the first three days of the Convention this office was open day and night. Here the traveller who had registered in advance must go upon arrival and secure a card entitling him to the room at hotel or pension that had been reserved.

Many were the trials and tribulations of this Bureau during those first days. The work was well done, and for a small fee the traveller found everything arranged for him and was saved the usual exorbitant charges.

The Bureau also took charge of all transportation problems and arranged for half-a-dozen very attractive excursions, of which the congressman, for a very moderate sum, might take his choice.

One trip penetrated the lower Carpathian mountains, visiting the summer resorts on the lakes in that region, and enabling the tourist to see Hungarian life in the interior. Another tour followed the Danube to its gates, those picturesque and massive cliffs which comparatively few tourists see. In that region Turkish influence is everywhere apparent and the towns visited are full of unique interest. Still another excursion was planned, with Constantinople as its destination, including Athens, Corfu, etc.

One longed for time and opportunity to take them all.

The Medical Convention had its headquarters in the old Polytechnic building, a vast structure, but none too large for its purpose. Each section had its own rooms, where papers were being constantly read and discussed, to the confusion of those of the members who, like myself, belonged to more than one section.

Some of the men evinced an extraordinary interest in the meetings. Gluck took the trouble to bring all the way from Berlin three cases of total extirpation of the larynx, with a nurse in charge. In one case the operation was so radical that the trachea and the œsophagus were sutured to the skin about one inch above the clavicle. The patients carried their œsophageal tubes with them and fed themselves. The artificial larynx was a complicated affair, and from my observation the patients seemed to speak as well without this apparatus.

Gluck, who had an elaborate paper in addition to these cases, was only allowed about fifteen minutes to demonstrate his pioneer work on this subject.

The conservative treatment of laryngeal and tracheal stenoses, as advocated by the American specialists in preference to the more radical methods adopted by Continental surgeons, seemed to me to be more rational. Dr. Chiari's first assistant, Dr. Kahler, has made a decided improvement upon the handle of Dr. Bruning's pan-electroscope for bronchoscopic work.

In the aural department the discussion as to whether labyrinthine deafness was primary or secondary to chronic catarrhal otitis media was most interesting. It was evident that the field of otology from the surgical point of view has materially enlarged during the past ten years; for just as the gynæcologist must be prepared to do an appendectomy

or an intestinal resection, so must the otologist be ready to treat all intra-cranial complications, such as cerebral and cerebellar abscess and sinus thrombosis.

Personally, the Congress was particularly interesting in that it gave me an opportunity to meet several of my old teachers who had not passed beyond the great divide, notably Professors Chiari and Politzer. The former is still well up in the firing line, both as a teacher and worker. Professor Politzer, though a much older man, is still keenly interested in all the latest advances in otological research, as the fifth edition of his book recently published testifies.

During the Convention there was a succession of demonstrations at the meetings and hospital clinics in all branches of medical science. In the huge structure placed at the disposal of the doctors one large room was reserved for the distribution of mail and complimentary tickets for the various affairs to which the members were invited. For instance, one hundred tickets had been presented for the horse races, two hundred for a gala performance at the opera, and a large number for visits to the Apenta Springs, where the bottling of the famous water was witnessed and a bountiful repast provided by the management. There were also invitations for visits to the champagne factories, municipal slaughter-houses, and various other places. A daily newspaper, published in four languages, contained the programme of each day and was given to the members.

Besides this and the administrative department, there were in the building a post-office, a branch of the great Central Bureau, and the ladies' room, which the ladies' committee had comfortably furnished with chairs, tables and writing materials for members and their families.

The personnel of the Convention was indeed remarkable. When they assembled, one understood the feeling of the inhabitants of the tower of Babel. Young and old from all countries and climates, they had but two things in common: a medical education and the desire for more knowledge.

Hungarians, Austrians and Germans naturally predominated. From Canada and the United States there were about 450 representatives, but England sent only 150. The Bohemian physicians refused to participate at all and issued to every member a manifesto presenting the reason for their action. The Anti-duelling Society also took occasion to distribute its literature, and among the many advertisements one enterprising Hungarian firm gave to each member two small bottles of wine.

Socially, Budapest did everything possible for the entertainment of her guests. A large opening reception was tendered at the Gallery of Fine Arts on Saturday evening, August 29th. The numbers of the

sections were placed conspicuously on the walls to give the members of each an opportunity of meeting and greeting.

The next morning, Sunday, the Archduke Joseph, in the name of the King, formally opened the Conference and received the members with impressive ceremonies amid a vast amount of gold lace and glistening orders. There were speeches by delegates from every country, and the Convention was officially open to begin work in earnest on Monday morning.

Monday evening another soirée was held. The great concourse gathered in the splendid Municipal Building and several courageous soloists endeavoured in vain to make themselves heard above the conversation of the multitude.

The next evening occurred the most interesting of the social events. On a small island in the beautiful City Park a perfect representation of an old Hungarian castle is used as an Agricultural Museum. The Ladies' Committee held here a reception, to which only members accompanied by ladies were bidden. The castle with its lines of dignity and beauty, the gay assembly thronging the court-yard and stately halls and apartments, the supper composed almost entirely of native Hungarian dishes, and the weird gypsy music dominating the scene, produced an effect that will long linger in the memory of all who were fortunate enough to be present. The Hungarian ladies were most kindly and assiduous in their attentions to the wives and daughters of the doctors. Every day they arranged for drives and trips to the museums, art galleries, and all places of interest in Budapest and vicinity, giving their entire time to their guests, but only upon this one occasion did they act as hostesses to the men.

Any mention of the social life of Budapest would be incomplete without a word of praise for these ladies. They were most charming, and their linguistic ability and gracious manner impressed all who had the pleasure of meeting them.

A most interesting gala performance at the National Theatre of the "Tragedy of Man" took place on Wednesday evening, and on Thursday evening the Archduke received formally certain of the delegates at the Palace in Buda. These and the receptions of the doctors' clubs constituted the large social events held in connection with the Conference.

Beside the hospitality of the Hungarian, every member was assured of their independent and patriotic spirit.

Each member of the Convention received literature explaining the political position of Hungary, so that no one left Budapest thinking that Hungary belonged to Austria. Far from it. It is a brave and

independent kingdom, allied with the Austrian empire. It has its own parliament, not only managing its own affairs, but having a voice in all foreign matters in which the Austro-Hungarian government is concerned.

In 1867 Emperor Francis Joseph and Empress Elizabeth were crowned King and Queen of Hungary and the ancient constitution revived after a series of revolutions and troublous times, extending over the previous twenty years. It is only since 1872 that the cities of Buda and Pesth, one on each side of the river, with the smaller town of O'Buda united into one city, the capital of Hungary.

The last four decades have witnessed wonderful strides in the development of Budapest, so that it now compares favourably in administration, sanitation, education, art and philanthropy with the most progressive cities of Europe and America. This was a great surprise to many of the visitors who had considered Budapest itself, as it is geographically, on the edge of European civilization.

Each member of the Convention was given a book containing a resumé of the governmental and sanitary activities of the city, with facts regarding its climate, vital statistics, hygienic regulations and institutions, medical, educational and charitable.

The carefully compiled comparative statistics make interesting reading. In 1720, after the expulsion of the Turks, Buda and Pesth had only 12,000 inhabitants. In 1909 there is a population of 823,000, showing an annual increase of 125 per thousand in a hundred years. Munich, with 115 per thousand, is the only European city that approximates this growth. It would not be fair to make comparison with the towns of the new world.

The death rate has decreased from 42.2 per cent., in 1874, to 20.1, in 1907, now taking a middle place among the cities of Europe in the matter of health. An interesting fact is the preponderance of male children.

The water problem has been a serious one for the city since the old Roman times, when an aqueduct was constructed, the remains of which are among the interesting sights of Buda to-day. The entire country suffers terribly from drouth, but modern engineering has overcome all difficulties, and the city is not only well supplied, but the water-works are among the most profitable of the city's enterprises. The canal system of sewage, installed in 1890, has the great advantage of emptying all sewage into the river below the city and preventing a long-existing sanitary drawback.

The street-cleaning system is interesting in that one man is given a

certain area of street, and, except in cases of severe snow-fall, he alone is responsible for its condition.

The city has a communal bread factory and communal slaughter houses, which include a municipal horse-flesh works. The city sells horse-meat and sausages at sixteen communal horse-flesh shops.

The Minister of the Interior makes an annual report to Parliament on sanitary subjects and the Home Office has a sanitary section. The major part of the staff of this section consists of medical men. There is a National Sanitary Council, whose president is nominated by His Majesty. It is formed for scientific discussion and practical suggestive work.

There is also a Medical Senate, whose duties comprise the examinations of medical opinions given in courts of law, expert opinions in cases of medical mistakes and the adjustment of medical fees. Another body is the Medical Senate for State Workmen's Insurance, which takes charge of the hygiene and matters relating to the medical welfare of the workmen.

The departments in bacteriological and chemical work, disinfection, and the production of serum are under city control. The problem of police and sanitary regulations, necessarily closely associated, have been carefully and thoroughly worked out to secure the best possible results.

The number of hospitals, both public and private, water cures, societies and unions for the relief of the poor, as well as asylums and institutions, and the large number of patients accommodated, are indeed surprising.

Students in Budapest have excellent advantages, and no doubt the clinics would become as celebrated as their progressive spirit deserves, but for the fact that all the teaching is done in the Hungarian language—an almost insurmountable obstacle.

The plan of sending foundlings out to country homes, keeping them always under strict surveillance, is extensively followed. As twenty-five per cent. of the births are illegitimate, the city has a serious problem to confront.

The medical men have so many social, sanitary and scientific unions that one is impressed with their energy. The Budapest Royal Medical Society appoints special committees with the object of keeping in view all discussions and discoveries relating to their special subjects, such as tuberculosis, cancer, etc.

An interesting affair is the Hungarian Travelling Association of doctors and scientists, which holds meetings in various towns. Officers from among the notables of the town are usually appointed, to serve for a

few days only, and a gold medal is awarded in turn for a medical, natural history, and social lecture.

Budapest has been occupied by many races, and has undergone many and strange vicissitudes. The Celts held the city until the Romans came. Under their rule it acquired some importance until it was overcome by the hordes from the East,—Slavs, Huns and Goths. The only remaining trace of their occupation is the Slavish names—Buda and Pest. Next came the Hungarians or Magyars, who flourished and built up the city until the Tartar invasion laid the town in ruins in 1241. It soon recovered, however, and for a short time attained the dignity of the residence of the German Emperor.

Periods of prosperity and trouble succeeded each other until 1541, when the Turks conquered the city, and for 145 years the crescent waved over the fort on the hill of Buda. Charles of Lorraine, at the head of the allied armies, finally drove out the invaders, but it was a long time before the city recovered from its prolonged misrule. To add to its troubles, a terrible epidemic almost depopulated the town in 1710. In Pest only 300 inhabitants were left. Gradually but steadily the capital has overcome all difficulties and progressed, until now its fine streets, buildings, and advancement, are the admiration of all visitors. It is still, however, undeniably influenced by its Eastern neighbours.

Many of the buildings are Byzantine in character and there is frequently to be seen a bizarre decorative effect decidedly Oriental. Designs in coloured tilings, terra cotta work, and painting in bright colours ornament many exteriors.

One sees some very good examples of Renaissance style, and others again are pure Venetian. The true Hungarian architecture resembles that of Northern Europe in form, but the peculiar ornamental tiling, while not unlike that of Venice and the East, is distinctly original in effect. The Museum of Decorative Art is the only large building in Budapest in the pure Hungarian style. More characteristic than any other feature of ornamentation in Hungary, one sees the peacock feather, particularly the eye of the peacock feather and the onion pattern. In lace, china, embroidery, interior and exterior decorations, these designs are to be found.

The country people excel in a picturesque embroidery. Well-to-do rural families always have an elaborate funeral pall, like a curtain, of solid embroidery, which is kept in families for generations.

A number of fine statues enhance the beauty of the city, the newest of which was unveiled in the City Park during the Convention. It represented George Washington, and many Americans gathered to wit-

ness the ceremonies which included, according to the programme, "A Solemn Speech in French."

The City Park is a great acquisition to the city. It has magnificent drives through the woods, a beautiful garden and several fine public buildings, including the Agricultural Museum already mentioned, as well as coffee-houses, in one of which a very good military band plays every day. It is easily reached by carriage or an electric underground railway.

Another public pleasure ground comprises the whole of Margaret Island, situated between the two cities and reached by the Margaret bridge or by boat. The island was presented to the city for this purpose. At one end is a sulphur bath establishment, very complete in arrangement. A one-horse tram runs to the other end of the island. On this conveyance all Congressionists with badges were granted free transportation. Arrived at the end of the line, one found a large and fashionable restaurant with an excellent military band, and two athletic or sporting clubs.

The Hungarians have become very much interested in sports, and we watched a number of young men industriously practising the 100-yard dash.

In Pest one sees the splendid new Parliament Buildings and many other imposing modern structures, as well as most of the residences. The theatres and restaurants are there too, and the all-night cafés where gypsy orchestras play strange, eerie music until the wee small hours. These cafés, with their excellent coffee and native wines, are a feature of the place.

Connected with Pest by a number of bridges is picturesque Buda, surmounted by a cliff or mountain. Buda contains the Emperor's palace, the old fort, the market-place and some interesting churches. The tomb of an old Mohammedan saint, Baba, is among the sights of Buda. When peace was concluded with the Turks in the 17th century the Christians promised that this tomb should be preserved forever.

Besides all that was old and historic as well as new and profitable, the Congressionists found time for many small social functions, which were among the most enjoyable events of the Conference. Old acquaintances were in many instances renewed and new friendships were formed. In the opportunity for the exchange of ideas, both medical and otherwise, there was much to be gained in the many and varied points of view.

And it is safe to say that every man who was able to attend the International Medical Congress returned home with added inspiration for his work and renewed zeal to overcome its difficulties and discouragements.

A CASE OF DESTRUCTIVE LESION OF THE CONUS TERMINALIS SPINALIS.

BY

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(From the Out-Patient Department for Diseases of the Nervous System.)

Localised lesions of the conus terminalis of the spinal cord are so rare that the following case may be of some interest as showing the functions of this part of the cord.

H. H., male, aged 51, married, has been attending the out-door Neurological clinic at the Royal Victoria Hospital for the last four years. He came complaining of being unable to pass his water; numbness in the seat and in the left leg and foot, and to a less extent in the right foot, with some slight difficulty in walking, and of pains in the body and down the legs.

Previous to the 12th of July, 1898, the patient was in good health. On this date he fell about fifteen feet, striking his head and landing on his left buttock. He did not lose consciousness. Although his forehead was cut open and he had an injury over the spine, he was able to pull himself up the ladder and walk a rod or two to a waggon, and was driven home. The motion of the waggon caused excruciating pain in the back, but by means of supporting the weight of his body by his arms with his hands on the seat of the vehicle, he managed to reach his home, and was immediately put to bed. There was retention of urine from the time of the accident, necessitating catheterisation, and he had no control of the bowels. He remained in bed about four weeks, and then for some months could only get about with crutches, on account of the weakness of the legs.

He states that he had loss of sensibility below the waist, and sharp pain down the left leg in the region of the sciatic nerve. The passage of the catheter caused no pain. From that time to the present he has suffered from chronic constipation, and after a cathartic has no control of the bowels; he still has complete retention of urine and must use a catheter at least twice a day. He has lost all sexual power. In addition to the symptoms just related, he had recently begun to suffer from sharp shooting pains in the legs, coming on in attacks, lightning like. They are described as being quite superficial, leaving the skin very tender to the touch, although not at all tender if the part is grasped firmly; they last only two or three seconds each. There is a history of a venereal sore, probably of luetic nature, some 10 years previous.

On examination: The patient is a pale-looking man, of average intelligence; his cerebration is quite normal.

Cranial Nerves.—Vision is slightly hypermetropic; the visual fields are normal, the fundi appear normal. When the patient first came to the clinic, in 1905, both pupils were equal and reacted well to accommodation, but only sluggishly to light; under observation, the reaction to light has gradually been lost first in the right, later in the left eye, until at present they are of the typical Argyl-Robertson variety.

Muscular System.—There is no atrophy, nor muscular weakness, but there is a slight inco-ordination in the lower extremities in the knee-heel test with the eyes closed; this appeared only since he has been under observation.

Sensory System.—The patient has objectively a definite area of complete anæsthesia and analgesia over the buttocks, in the perineum and over the scrotum and penis as is well shown in the accompanying photographs. There is also loss of sensibility in the urethra, and in the lower part of the rectum.



Showing area of loss of sensibility following fracture of spine, corresponding to the area of distribution of the 3rd, 4th and 5th sacral segments.

Reflexes.—Those of the upper extremities are normal. At the first examination both the knee jerks and the ankle jerks were not obtained, and are still not obtainable; the abdominal and epigastric reflexes are active, and the plantars give the normal flexion on both sides. The anal reflex is absent, there being complete paralysis of both the sphincter and the levator ani. As mentioned before, there is retention of urine and loss of control of the bowels.

When standing with the eyes closed, the patient sways slightly (Romberg's sign). Examination of the back shows prominence of the twelfth

dorsal and first and second lumbar spines with a slight curvature to the right.

The skiagraph shows considerable compression of the second lumbar vertebra, a slight injury to the first, with a crushing of the disc between these two so that it is about half the thickness of the discs either above or below it.

We know that the cord terminates in the adult opposite the upper edge of the second lumbar vertebra, so that it seems more than probable that in this case there has been a complete and permanent destruction of the extreme end of the cord, in fact the photograph shows an area of loss of sensibility corresponding to the third, fourth and fifth sacral segments, besides this there is loss of sensibility in the urethra and in the lower end of the rectum. The motor symptoms associated with this, and which, therefore, may be supposed to obtain their innervation from the same segments of the cord, are paralysis of the bladder and rectum, paralysis of the levator and the sphincter ani and loss of the power of erection. The patient, of course, shows slight but definite symptoms of *Tabes Dorsalis*, but these have practically all developed under observation so that it has been quite possible to differentiate the two conditions.

RABIES IN CANADA.

BY

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In dealing with this subject, it is not my purpose to enter into an extended history of the occurrence of rabies in Canada, but to deal with certain features of more or less general interest.

Rabies has occasionally been observed in Canada, but never has an outbreak assumed the serious proportions reported as occurring in certain parts of the United States. Until very recently cases of this disease were very exceptionally reported, and an element of doubt still exists, in many instances, concerning their identity.

Niagara Falls, Ontario, and vicinity prior to 1899 recorded outbreaks of the disease and a number of animals were dealt with, either dying from the malady, or being destroyed on suspicion, in the interests of public safety.

Since 1899 I have been charged with the responsibility of diagnosing this affection from material forwarded to the laboratory under my direction, and until the year 1905 no case had been dealt with from which unmistakable proof as to the presence of the disease had been obtained. Previous to this date the circumstantial evidence gave decided indications

as to the existence of the disease, and one such case was met with in 1899. No doubt veterinarians and medical men in Canada had met with unmistakable cases prior to that time, directly or indirectly traceable to imported dogs.

In 1904 a case of rabies was reported as occurring in a man at Victoria, B.C., previously employed in building boats at White Horse, Yukon Territory. He was bitten one night by a supposedly tame wolf, the fingers of one hand being torn off and the palm of the other very seriously lacerated. The wounds were immediately cauterized and healed quite readily. He subsequently removed to Victoria, his home, but was much worried about himself, fearing that he would develop hydrophobia, and provided himself with all the literature he could obtain on the subject. Symptoms clinically indistinguishable from rabies developed three days before admission to the hospital, gradually becoming more severe, death ensuing on the evening of December 31st, 1904. An autopsy was not allowed. The wolf was shot the day after inflicting the wounds, and there is, therefore, no corroborative evidence from this source as to the diagnosis. To Dr. Edward Hassell I am indebted for a complete report on this case.

I cannot believe that this man suffered from rabies, although the possibility of wolves being affected is not at all improbable, but it is hardly likely that the disease is enzootic among these animals or other similar cases would have occurred in the interim.

From the brief history above outlined, it is apparent that rabies was not prevalent to any extent in Canada prior to 1905, although a careful scrutiny of the literature previous to that time does present data indicative of the occurrence of isolated cases of the disease in various parts of the country, both in the human being and the lower animals.

Since 1905 isolated cases have occurred, the most frequent outbreaks appearing in the Niagara Peninsula. These outbreaks in the majority of instances have been traced to dogs from across the river. Similar evidence is available relative to the responsibility for the appearance of the disease in other parts of Canada.

Owing to the very rigid measures instituted by the Inspection Division of the Health of Animals Branch of the Department of Agriculture, rabies has never become epizootic in any portion of the country, each outbreak having been handled with great care and with such thoroughness as to reduce to the minimum the possibility of recurrence. During the outbreaks the usual farm animals have been bitten, and when allowed to live a certain percentage have presented typical symptoms and died after the usual period. An unusually long incubation period is reported for a horse in Manitoba, and the laboratory animals inocu-

lated with this material were under observation for ninety-three days before any evidence of the disease was manifest, indicating that the virus was of a greatly attenuated variety. The usual period of incubation for inoculated animals is from fourteen to twenty-five days, although the American Public Health Association hold that a negative report should not be made in less than three months from the date of inoculation.

From the laboratory standpoint, while we have received material from a number of cases of rabies, we have dealt with comparatively few cases, as compared with laboratory workers in the United States. I had hoped to be able to present some detailed statistical evidence concerning some of the material received from time to time, but unfortunately this is not available, as I have had insufficient opportunity to complete the details of this work.

I have not yet assumed the responsibility of diagnosing the disease on the presence of the bodies described by Negri, nor on the alterations in the plexiform ganglia, as our experience has been confined to such a very limited number of cases. I have, however, found Negri bodies and have frequently observed the lesions reported by various investigators as characteristic of the disease in the plexiform ganglia, yet I do not consider myself sufficiently expert to depend on either.

Were I confronted only with giving advice to persons bitten as to the necessity for taking the Pasteur treatment, then some shorter method than that involved in the inoculation of a series of animals would be adopted.

While a few outbreaks of rabies have been officially dealt with in Canada, the disease has not assumed the serious menace reported in some sections of the United States, and it is to be hoped that the strict measures enforced in each instance where a suspicious case occurs will prove effectual in its eradication.

The fact that many of our outbreaks have been traced to imported dogs indicates that a careful regulation of their introduction into Canada would relieve us of the most important source of infection.

I may suggest that where a dog is exhibiting symptoms of rabies it is a most unwise procedure to kill the dog if anyone has been bitten. The safest course to pursue is to securely confine the dog forty-eight hours, owing to the fact that an animal never recovers from rabies after the onset of the characteristic symptoms. The symptoms during this period of observation gradually increase in severity and death ensues. If the symptoms subside and the dog recovers from the supposed rabiform manifestations, then it is quite safe to conclude that the animal suffered from some disorder other than rabies. The holding of the dog for the

period mentioned determines the course of action and the nature of the advice to be offered by the attending physician much more rapidly and surely than any laboratory technique at our disposal.

Although I have been charged with making the examinations in suspected cases of rabies in animals for some years, I have held and still continue to hold that the advice of a physician fully conversant with the local conditions should be followed implicitly, and, if necessary, the Pasteur treatment should be commenced without delay.

The cauterization of wounds, where an individual has been so unfortunate as to have been bitten by a supposedly rabid animal, should be with fuming nitric acid. In the event of this acid being unavailable, silver nitrate should be used. Other methods of cauterization have been found to be less effective.

In conclusion, it may be interesting to learn of the principles underlying what is known as the Pasteur treatment. The treatment of rabies, as devised by Pasteur, depends primarily on the *fixed virus*. This *fixed virus* is a virus that proves fatal to a rabbit with almost mathematical precision after subdural inoculation, hence the term *fixed*. To obtain this fixed character, serial transference of the virus through about one hundred and sixty rabbits is required. The brains and cords of rabbits dying of rabies after inoculation with the fixed virus are removed and dried over caustic potash. This drying attenuates the infective agent, and experience has taught that for certain injections the drying in this manner for a definite number of days is necessary.

The first injection received by a patient is from an emulsion of such a degree of attenuation that no untoward symptoms are likely to follow, save a slight hyperæmia of the skin. From day to day the patient is given injections from emulsions of gradually increasing virulence until he is able to withstand the injection of virus slightly below that of the fixed virus without serious reaction. This process usually requires from twenty-one to twenty-five days, at the end of which the patient is considered out of danger from the injury occasioned by the suspected animal. This whole course of treatment is given in the anticipation of forestalling the natural development of the disease, consequently delays in its administration, where such a course is considered necessary, are to be avoided.

The so-called Pasteur Institutes on this continent have no connection with the original institute founded by Pasteur in France, which is so well and favourably known throughout the civilized world, with the exception that the methods followed are along the classical lines originated by him.

The Pasteur treatment is furnished to physicians in the United States by the Public Health and Marine Hospital Service, and several of the States and some cities have established laboratories and are prepared to administer the treatment. Laboratories other than these are maintained as private enterprises, and I believe that all within the United States are licensed after inspection by the federal government.

THE ACTION OF SOME REMEDIES ON THE HEART IN DISEASE.

BY

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It is with some hesitation that one approaches the subject of disease of the heart from the standpoint of the therapist. The first cause of hesitation is the lack of much new matter and the difficulty of presenting the old in a new light. The second is that as yet the pharmacologists have not been allowed to carry out treatment under scientific conditions in a sufficient number of cases to have acquired any real knowledge of the underlying pathological physiology of the heart in disease. Our knowledge of the action of drug-stuffs upon the normal heart muscle is every day becoming more exact, and from what we know of the diseased conditions we can in many cases fairly infer what will occur when certain remedial means are adopted, and in many instances these inferences simply serve to confirm the empirical knowledge of the clinician.

It will perhaps enable the whole subject to be approached in a fresh manner if we follow the new physiological descriptions of the heart's action and consider the pathological conditions which affect rhythm, contractility, irritability, conductivity, and tone.

The pathological variations of rhythm, or more simply, rate with a normal heart beat, are of two types, a super-normal or a too fast rhythm and a sub-normal or too slow rhythm.

Supernormal rhythm.—A heart warmed artificially beats more rapidly but relaxation is equally good, its contractility also remains as before or increases; in other words its rhythmicity has altered positively. The heart in moderate fever beats rapidly, not owing, of course, to the increase in temperature alone but also to the action of the toxins, but its beat in many cases is efficient, contractility and tone being normal. If we judge from the action of drugs, it is still under the control of the vagus centre since its rate may be decreased by digitalis, for example. In severe toxæmia there is some experimental as well as pharmacological evidence that the

vagus centre has lost control of the heart: digitalis and strophanthus are no longer effective. The rapid heart beat of severe pneumonia or septicæmia cannot be influenced by digitalis. The action of these drug stuffs is largely through the vagus centre, though in part they affect rhythm by acting on the vagus endings in the heart. Kothe and John⁷ have presented some evidence that adrenalin, which acts upon vagus endings in the heart, has not entirely lost its power to slow the beat in cases of toxæmia. For this purpose adrenalin must be administered intravenously in doses of 0.2—1 c.c. In some severe cases, this drug also fails to produce any effect. We have, however, a drug stuff which acts very powerfully upon the heart muscle itself to decrease its rhythm. This drug stuff is barium chloride and the work of Scaffidi⁷ would lead me to try it as an emergency agent in extreme cases. The administration would, of course, be made intravenously as its action is very slow and uncertain if administered per os. 1/10—1/5 grain is the dose I would choose.

A second class of superoptimal rhythms includes these cases in which vagus control of the heart has been lost. This occurs for example in shock. In this case the myocardium is intact and can be acted upon by such drugs as digitalis, but strychnine on account of its action on the medulla seems more directly indicated as it will tend to restore the function of the depressed vagus centre and will also increase the blood pressure. Increase in the blood-pressure, which may be obtained by adrenalin intravenously in small doses (2-10 min.) repeated every 10 minutes, or by ergotoxine (1/100 gr.) intravenously followed by adrenalin, will reflexly decrease the heart rate. Ergot and adrenalin seem also to increase the blood flow through the coronary arteries and hence improve its nutrition. The careful work of Y. Henderson,⁸ who has shown that shock can often be relieved by increasing the carbon dioxide in the blood, would suggest intermittent smothering of the patient and thus increasing the carbon dioxide percentage in his blood. This treatment in animals suffering from artificial shock undoubtedly aids in restoring the efficiency of the centres. The tachycardia of exophthalmic goitre seems to be another case of decreased central control. In some cases digitalis seems to be able to stir up the centre and decrease the rate, in other cases it seems ineffective. The central action of small doses of atropine similarly is effective in some cases. Morphine acting as a general depressant to the reflex centres is often a successful agent. The point pathologically affected is the medullary centres and not the heart muscle, and hence treatment is not to be directed to the heart in the first instance.

A third class of super-normal rhythms are those which are secondary to broken compensation, and in which the heart muscle is still moderately healthy and the beat of the heart, while fast, is regular. In this class of case digitalis is efficient in reducing the rhythm to normal. The main treatment, however, would be rest until compensation is restored and then carefully graduated heart exercise to aid in muscular hypertrophy. This heart exercise may be obtained by carefully graduated baths with their reflex effects upon the work of the heart (as conducted by Schott in Mannheim), or by mild walking exercises (Oertel), or by Swedish movements. In the later stage of these cases the beat frequently becomes irregular and the muscle fibre has suffered more severe pathological changes and digitalis is no longer of value. The case might then be counted as one of the fifth class. When one administers digitalis to cases in which the rhythm is fast but regular, any irregularity occurring during its administration should lead to cessation of its administration.

A fourth class of cases are those in which the cells about the mouths of the great veins have become relatively less irritable and those in the bundle of His relatively more irritable. The heart-beat arises in the bundle of His or its source in the specialized fibres of the atrio-ventricular node. The beat spreads from its point of origin in the node to both auricle and ventricle simultaneously: both chambers beat in unison. In many of these cases, which MacKenzie¹ terms cases of nodal rhythm, the action of digitalis is almost "miraculous." I may point out that in these cases of nodal rhythm the action of the heart is often irregular, nor does digitalis serve to restore it to a normal rhythm, but owing to its beneficial action in slowing the heart and in improving tone and contractility may enable the heart to regain its compensation. The pathological changes in this class of cases consist in degeneration of muscle fibres due to overwork and to localized scleroses, but the main mass of the muscle fibres are still healthy.

In the fifth class of cases the muscle cells are very generally diseased. The pathological changes usually found consist in marked arteriosclerotic changes in the coronary arteries and fibrous and fatty changes in the muscle cells. (The Sclerotic Heart cases of MacKenzie.) Clinical symptoms consist in irregularity and lack of response to sudden exertion. In these cases, as a rule, slowing of the heart cannot be achieved with digitalis, though it seems that there is little danger in its administration with caution if heart-block has not already occurred. The treatment needed seems to be largely rest and the doing away with nervous strain, the banish-

ment of worry. A healthy life with gentle exercise and abundant sleep, for which purposes chloral or bromides may have to be used, is the treatment to be adopted.

Sub-normal Rhythms:—The sub-normal rhythms may be divided into several classes. The first may be described as true bradycardia; in these cases the rhythm is normal in character but slow. This may be due to inherent conditions in the heart muscle, in which case caffeine and camphor¹ given subcutaneously are the drug stuffs which seem to be indicated. Both of them increase the rate of the heart's action. The second cause of a true bradycardia may be vagus irritation, due, for instance, to meningitis, cerebral tumours, or occur owing to reflex irritation from the abdominal cavity. These cases are of course best met by doing away with the original cause, or by some drug stuff such as chloral or bromides which decrease the activity of the vagus centre.

The second class of subnormal rhythms are combined with irregularity. Bradycardia is often diagnosed when the condition is one of missed beats (that is, those cases in which every alternate ventricular contraction is not of sufficient force to cause a pulse wave at the wrist), or when the condition is one of heart-block (that is, when each auricular beat is not followed by a beat of the ventricle but when possibly only every second or third auricular beat is so followed). In these two last types of sub-normal rhythm (missed beat, heart-block) caffeine, which increases the conductivity and also the rate, seems to be the most promising drug stuff to use in treatment if any is needed.

Changes in contractility might also be of two types: hypercontractility, of which we know nothing, and sub-normal contractility, which occurs so commonly in acute toxæmia. In this case digitalis has also no, or little, action. Caffeine also seems to be uncertain, for adrenalin the evidence is slight but promising, and barium chloride remains still to be tried. In moderate fever digitalis does improve the contractility as does adrenalin. When the sub-normal contractility is due to exhaustion owing to over-work of the heart, as occurs in broken compensation, and is combined with dilatation, digitalis is to be relied upon to restore to contractility and tone. Caffeine is also of service. Rest and gentle exercise are the important factors in making the heart capable of performing its function, with some small reserve for use in emergencies.

Conductivity may be decreased in certain types of heart disease. In these cases we find that either the conduction from the point of origin of the normal heart wave about the mouths of the great veins or from auricle to ventricle through the bundle of

His are decreased, and in consequence we have either nodal rhythm or heart-block. If heart block has occurred digitalis must not be used as it decreases the conductivity and in consequence will make the block more complete. It seems remarkable that it should be of service in nodal rhythm, but this fact has been established by the careful work of MacKenzie. Caffeine has this advantage over digitalis in both these classes of cases that it increases conductivity instead of decreasing it.

The Tone of the heart muscle becomes deficient in acute toxæmia, and here also digitalis is of no value. Caffeine may be of use as it markedly increases muscle tone throughout the body. It, too, seems to fail in the majority of cases, and as the condition is accompanied with a rapid beat it is considered contra-indicated by many physicians. Barium chloride is the only drug stuff which seems to promise to be of value in these cases. When the tone is decreased owing to exhaustion and the muscle fibres are still relatively healthy, as for example in most cases of broken compensation, digitalis is of great value.

The blood supply to the heart is very important from the standpoint of treatment. We can now lay it down as a rough rule that drug stuffs which constrict peripheral vessels dilate the coronary arteries and vice versa.⁶ Digitalis has little action in therapeutic doses upon peripheral vessels,⁷ but it slightly increases the amount of blood passing through the cardiac circulation. In the case of angina pectoris the blood-pressure frequently is high. The strain on the cardiac muscle is great. The administration of amyl nitrite frequently gives relief, but, as MacKenzie has shown, the blood-pressure is frequently as high again in five to ten minutes. The pain, however, does not recur. The temporary relief of the strain upon the heart has been sufficient to do away with the pain. In other cases amyl nitrite is not effective in decreasing the pain, and as in a case described by MacKenzie the cause here probably lies in a coronary vessel spasm. Amyl nitrite will not decrease this spasm, while possibly some drug stuff which increases peripheral pressure would dilate the coronary vessels, adrenalin for example. Such heroic treatment is, however, not likely to be adopted, and we must hope to find our cure for such a case in the administration of some sedative to the central nervous system. In the case of MacKenzie's to which I refer morphine was successful. Arteriosclerosis of the coronary vessels we cannot overcome, and in consequence our treatment should be directed towards encouraging a gentle, careful life with plenty of fresh air, good sleep, and little worry. The

only drug stuff which at present we suppose relieves in the slightest the sclerosis is potassium iodide, and its action is completely unknown.

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A RETROSPECT OF SOME OPHTHALMIC BACTERIOLOGY.

BY

S. HANFORD MCKEE, B.A., M.D.

The reports of the last year or two place the bacillus influenzae in a much more important position in ophthalmic bacteriology than formerly. While no positive results are to hand from the inoculation of the human conjunctiva, Axenfeld wrote in 1907, that he believed it extremely probable that the bacillus influenzae could occasionally produce a conjunctivitis. Recent statistics show that influenzal conjunctivitis does occur. In Rosenhauch's report one finds a number of such. His six cases consist of an acute conjunctivitis in an infant of fourteen days, which resembled clinically gonorrhœal blennorrhœa; a mild case of acute conjunctivitis with muco-purulent discharge, in a child of three weeks; a subacute conjunctivitis of both eyes in a child of three months; a subconjunctival abscess; a dendritic keratitis; and an abscess of the orbital cavity. In all these cases the bacillus influenzae was isolated, either with the bacillus xerosis or staphylococcus albus. They show how varied influenza infections of the eye may be.

In the case resembling gonorrhœal ophthalmia, the mother suffered from a leucorrhœa. A bacteriological examination of the mother's discharge would have added interest to the report, and would, probably, have demonstrated the presence of the influenza bacillus.

Gurd described bacilli resembling the influenza bacillus in cases of vaginitis, and the writer recently obtained from a vaginitis case a bacillus in pure culture, which was identical with the bacillus influenzae in morphology, but in culture resembled an organism described in conjunctivitis cases.

The orbital abscess occurred in an adult male of twenty-two years. Twelve days previously he had contracted a bad cold with stoppage of the right nostril. For eight days he had temperature and profuse discharge. The upper lid of the right eye now began to swell.

From the history and the examination of the nose it was seen that the abscess originated secondarily to the inflammation in the frontal sinus. In spite of the serious symptoms and the rapid progress of the disease, free incision and good drainage brought about a quick recovery. While conjunctival cases are rarely complicated, cases such as the abscess of the orbital cavity indicate the necessity for treating influenza infections actively. Serious complications do occur. Eversbuch described a purulent choroiditis in influenza, caused by the staphylococcus citreus and an odd coccus, Despagnet a purulent irido-choroiditis through staphylococcus and streptococcus.

Unna discusses the origin of these cases, and while he does not deny the possibility of metastatic infection from the influenza bacillus, nevertheless he believes that we must adhere to the principle that only such metastasis should be recognised as caused by the bacillus influenzae, where the exciter has been proven present in the eye.

Mennier, Jehle, Pacchioni, and others, have demonstrated the presence of Pfeiffer's bacillus in the blood, so it is no longer doubtful that it can invade the eye as well as other organs by this route.

Unna reported a case of intra-ocular suppuration from the bacillus influenzae in an adult of sixty years, who had had a swollen and painful eye for two days. The lids were swollen, the conjunctiva chemotic, and the cornea covered with a purulent secretion. Five days later the globe was evacuated.

From the conjunctival discharge, staphylococcus, streptococcus, bacillus xerosis, and bacillus influenzae were obtained, while from the pus within the eye, the bacillus influenzae only. Unna emphasizes two points: (1) Here was a case of ophthalmia due to bacillus influenzae, where a bacteriological and pathological examination was made, and (2) There could be no doubt as to the route of the infection. It was exogenous as there was no general influenza, as the globe was particularly adaptable to infection from without, and because the presence of the bacillus influenzae was proven from the beginning.

Fischer after noting the frequent presence of the bacillus influenzae in the human conjunctiva as a saprophyte, mentions a positive inoculation by McKee, with an "uncommonly persistent strain of bacillus influenzae". The organism with which McKee was working was not, however, bacillus influenzae, but an organism similar to it only in morphology.

Having met with a case of panophthalmitis in Axenfeld's clinic, from which he obtained the bacillus influenzae, Fischer experimented with animals to see (1) if he could produce a panophthalmitis with

this organism, (2) whether multiplication of the bacilli would take place in the eye, and (3), whether the bacillus was pathogenic for animals. After studying the effect on rabbits, guinea pigs and white mice, Fischer came to the following conclusions:—(1) The inoculation of bacillus influenzae into the interior of the eye, especially into the vitreous, can produce a severe inflammation. (2) The inflammation is not due to the death of the organism and the consequent necrosis of the bacteriological bodies and liberated toxins, but to the multiplication of the bacilli themselves. In other words a non-pathogenic organism was pathogenic in the vitreous, so that, under these circumstances, we must attribute the ability to produce disastrous inflammation within the globe to the bacillus influenzae. Fischer attempted to cultivate the influenza bacillus on serum and peptone agar, but failed. Rosenhauch, while not denying the growth of bacillus influenzae on hæmoglobin-free agar, believes that the best medium is blood agar and that the presence of the staphylococcus albus expedites the growth. As pigeon's blood is rich in hæmoglobin, it makes the best medium. This seems to be the consensus on these several points. Some writers report a difficulty in cultivating bacillus influenzae on hæmoglobin media after cultivation on hæmoglobin-free media, but I have never experienced this characteristic of the bacillus influenzae.

Alt has recently reported an epidemic of pneumococcus conjunctivitis, which occurred during the spring and summer. The infection was always bilateral, and varied greatly in the clinical appearance, so that there were few cases which could be called typical. The cases varied a good deal in severity. Some simulated angular conjunctivitis. In the majority, no complications followed, and the duration varied from five days to several weeks. Alt, during a period of two months, contracted a pneumococcus conjunctivitis twice, showing that there was but a short period of immunity.

He advises staining the films with a drop of 1-10,000 solution of azure 2 of the Giemsa stain, and says that this gives a beautiful picture, and a much clearer one than any stain he knows of. Nevertheless, it is of the utmost importance to know whether an organism is Gram-positive or negative, and while other stains give clearer pictures, the use of Gram's stain as a routine will be found most satisfactory.

It is now well understood that Morax-Axenfeld conjunctivitis occurs at times in a very acute form. No form of conjunctivitis varies as much in its clinical picture as the Morax-Axenfeld. Ocampo recently reported cases of very acute inflammation of the

conjunctiva due to this diplobacillus. In certain districts the diplobacillus is very frequently found as the cause of ulceration of the cornea. Zade described twenty-seven cases where the diplobacillus was found in smear and culture. Curiously enough, in these cases there was an absence of conjunctivitis. McKee reported twenty-eight cases of ulceration of the cornea due to the diplobacillus. Some of these were undoubtedly secondary infections from the conjunctiva, in cases where foreign bodies had been removed from the cornea.

During Zur Nedden's bacteriological work at Bonn, he met with some cases of *ulcus serpens*, in which no pneumococci could be found. Cultures were made with different media, to exclude error as far as possible. In the first case Gram-negative cocci and the bacillus xerosis were found in the smear, while the culture revealed the bacillus xerosis and the streptococcus. In the second and third cases the bacillus subtilis was found with colonies of *sarcina* and xerosis. The bacillus subtilis was pathogenic for the cornea and vitreous of rabbits.

The reports of Foster and Pusey are of interest. Foster found the typho-bacillus in pus from a case of acute dacryocystitis, in a boy, three weeks after an attack of typhoid fever.

Pusey isolated the bacillus pyocyaneus from a case of subacute follicular conjunctivitis, and from a healthy conjunctiva.

Continued examination in ophthalmia neonatorum shows the frequent presence of other organisms than the gonococcus. Harman reports:—Gonococcus in 80 per cent.; Koch-Weeks, colon bacillus pneumococcus, 20 per cent.

Mayou in forty cases found:—Gonococcus, 57.5; staphylococcus .20; Morax-Axenfeld diplo-bacillus, .5; Colon bacillus, .5; pneumococcus, 2.5.

From the reports of the Montreal General Hospital we find:—Gonococcus; 52 per cent.; streptococcus, 12 per cent.; pneumococcus, 8 per cent.; micrococcus catarrhalis, 8 per cent.; diplo-bacillus Morax-Axenfeld, 4 per cent.

Harmon's statement that film examination is a sufficiently accurate means of detecting the causal micro-organism needs to be qualified. Inoculation of suitable media is necessary, at least in all cases where the film examination has been negative.

Rosenhauch, after examining the conjunctival sacs of two hundred new-born babies, came to the following conclusions:—

1. The conjunctival cul-de-sac is absolutely clear immediately after birth.

2. The first micro-organisms appear twenty-four hours after birth.

3. After twenty-four hours the bacterial flora is constant.

4. It is not to be differentiated from the adult.

5. The staphylococcus non pyogenes non liquefaciens, and the bacillus xerosis are constant inhabitants.

6. Other micro-organisms are only sporadic.

7. Pathological micro-organisms are seldom found, and then only a few.

8. Twenty-four hours after birth, the conjunctival sac was never free from micro-organisms.

9. Gonorrhœal infection is hardly possible during birth, but usually occurs during the first couple of days of life.

In spite of all that has been written about the bacillus xerosis as a benign, constant inhabitant of the conjunctival sac, one finds Dernabe describing cases of conjunctivitis due to this micro-organism.

Grüter last year described a yellow Gram-negative bacillus which he isolated from a case of chronic trachoma. In smear he found staphylococci and xerosis-like rods. On serum large lemon-yellow colonies were found. They did not contain staphylococcus citreus, but a long Gram-negative bacillus. Repeated inoculations of media gave this same bacillus. The micro-organism is a long, xerosis-like rod with rounded ends. They lie mostly parallel or at right angles. They are easily stained, are Gram-negative, non capsulated, and non motile. On serum the colonies sink into the media after a few days, and with repeated inoculation there is some liquefaction along the line of inoculation. Upon agar there is a good growth of pale yellowish colour. No pathogenic qualities were found from animal inoculation. Grüter differentiates it from the other conjunctival micro-organisms.

Pascheff has described three examples of a peculiar disease of the edge of the eyelids. He believes that the malady has not been described and calls it "folliculitis ciliaris necrotisans infectiosa." The cause is obscure. In the three cases, streptococcus was found in the first, staphylococcus aureus in the second, and a peculiar bacillus in the third. The bacillus in question was isolated from the infected cilia, was found in sections of the diseased parts and was of an extremely virulent nature. It was a short Gram-negative bacillus with rounded ends. The micro-organism was examined by Axenfeld, Morax, and Calmette. Axenfeld thought that it was a bacillus not yet found in the eye, but Calmette regarded it as the pneumobacillus of Friedlander.

Posey recently reported a case of keratitis probably due to metastatic gonorrhœa. The inflammation occurred in a male of 28 years, and had the characteristics of an unusual form of vesicular keratitis engrafted upon an old macula. The patient had not suffered from arthritis, but a bacteriological examination demonstrated "gonococci" on the cornea and in the urethral discharge.

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A CASE OF TUMOR OF THE VERMIS INFERIOR CEREBELLI.

BY

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Lesions of the lateral lobes of the cerebellum are relatively common and their symptoms comparatively well known; lesions of the vermis, however, are so uncommon that any contribution to our knowledge on the subject should be of interest. The following case seems to be especially typical.

J. R., aged 35, male, was admitted to the Royal Victoria Hospital, under the late Dr. James Stewart, on the 15th of February, 1906, complaining of pain in the back of the head. He had always been a farmer in the summer, working in lumber during the winter, and had always enjoyed good health. He did not use tobacco nor alcohol and denied any venereal disease. He had been married six years but had no children; his wife had had no miscarriages.

His present illness began some three and a half years previously. When he was ploughing in the field one day he was seized with sudden vertigo, the ground seemed to rise up in front of him and he fell forward, but did not lose consciousness. He was able to continue working, but about a month later he began to suffer from severe headache, associated with vomiting, which, with the attacks of vertigo, was so severe as to render him incapable of working. One day, about a year after the onset, while he was sitting in a chair, he suddenly cried out and



Photo 1.

became rigid all over; the arms and legs stiffened out, the eyes were turned up; and the mouth was drawn to one side (the wife thinks it was to the left). For about a year then he suffered from similar attacks almost every week, and during this time also he noticed that he saw double, the images being side by side,—as there was no ptosis it is probable that this was due to an external rectus palsy, consequent on a paralysis of the sixth nerve so commonly seen in tumors of the brain without having any localizing value. He also noticed that on rising after staying in bed for any length of time, the floor would seem to rise up to meet him, just as in his first attack.

He has staggered in walking, especially in the last year, mostly to the right, according to his wife.

On examination, cerebation was normal, and nothing abnormal was discovered in any of the viscera.

He had four dioptric swellings of the optic nerve in each eye, with some slight peripheral impairment of the fields of vision. On admission there was no definite involvement of the oculo-motor nerves, but four days later he developed a definite paralysis of the left fourth nerve, with impairment of downward movement and diplopia, the images being seen one above the other and a little to one side. About the same time he developed also a paralysis of both the motor and sensory branches of the fifth nerve on the left side with the typical distribution of anæsthesia

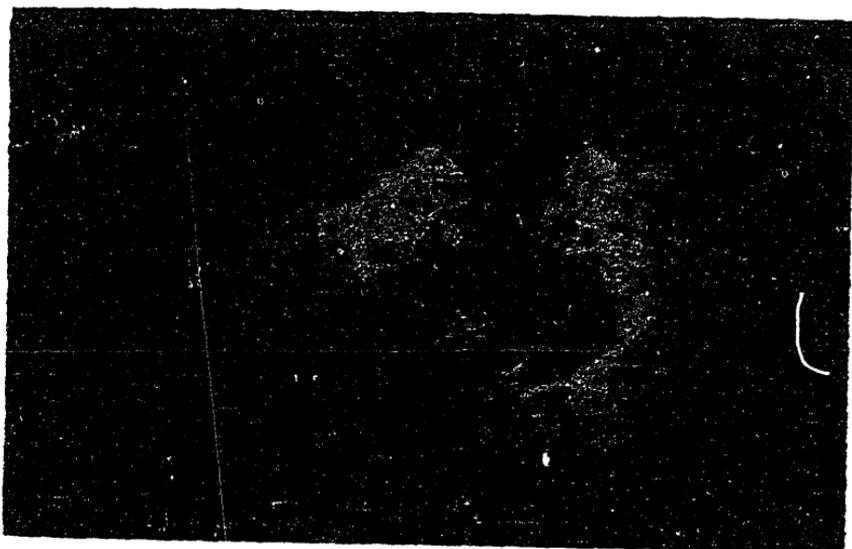


Photo 2.

on the face, and weakness of the temporal muscle, the masseter and the pterygoid. On opening the mouth the jaw deviated to the paralysed side. He complained also of a dull, numb feeling over this side of the face. The left pupil became larger than the right, and there developed a nystagmus when he attempted to look to the left, which was not present when he looked to the right. On upward movement of the eyes there was also an associated lateral nystagmoid jerking with a quick movement to the left and a slow return to the right.

No weakness nor loss of tone could be demonstrated in any of the extremities, but with the onset of the fourth nerve paralysis there appeared a slight inco-ordination of the muscles of the left arm on voluntary movement.

In walking, the left shoulder was held higher than the right, the head was inclined to the right and slightly rotated, so that the occiput approached the right shoulder; the left foot was held slightly abducted and rotated out. There was a tendency to stagger, but not more to one side than to the other. When standing with the eyes closed there was a decided tendency to fall backwards. Diagnosis of tumor of the vermis cerebelli was made, and the growth was thought to have extended into the left cerebellar hemisphere. He was transferred to the surgical ward and the first stage of the operation performed on February 26th. This consisted in trephining the skull in the left occipital region. The second stage was performed a week later. Unfortunately, however, the tumor was not found and the patient died on March 16th.



Photo 3

On post mortem the convolutions on the left superior surface of the cerebellum appeared broader and flatter than on the opposite side. There was a large broken-down area on the postero-inferior surface at the site of the exploration (see photo) which can be seen in photo 2 to have been directed exactly towards the tumor growth.

The pons and medulla were then separated from the cerebellum by section through the peduncles. On making a series of horizontal sections through the cerebellum at levels shown in the first photograph, a tumor about the size of a marble was found invading the vermis—the nodule and uvula chiefly (see T i. Fig. 2) with, in addition, a cyst cavity extending into the right cerebellar hemisphere laterally and posteriorly. The tumor is partially encapsulated and somewhat firm in consistency.

In the left cerebellar hemisphere at the level of section A-A in Fig. 1 and about opposite the level of the fourth nerve nucleus, there is a smaller lesion, dark red in colour, measuring .5 by .75 cm. on transverse section (see T. *pl.* Fig. 3). At this level there is also softening of the lobus centralis in its anterior part, immediately superior to the primary new growth.

Microscopically it appeared to be of the nature of a glio-sarcoma, with a minute secondary growth of the same nature at the higher level in the left hemisphere. The case is of interest in that the progress of the disease can be followed so closely in the clinical history. The lesion was primarily in the inferior vermis and caused no doubt the typical vertigo with the tendency to fall forward and the sensation of the vertical rotation of surrounding objects, and as it increased in size the general signs of intracranial pressure, headache and vomiting. The fits in which he is said to have straightened out are probably the extensor fits of mesencephalic irritation.

The diplopia in the early stage of the disease was, as has been suggested, probably due to the paralysis of the sixth nerve, so common in any case of intracranial tumor.

As the cystic degeneration developed and extended in the neighborhood of the tumor into the right lobe of the cerebellum, we get the history of staggering to the right in walking. The gradual development while in the hospital of the paralysis of the fourth and fifth nerves on the left side, with the inco-ordination on voluntary movement of the left arm, and the peculiar attitude, evidently points to the formation of the secondary lesion in the left hemisphere at the level of the fourth nucleus.

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No. 1

THE HOUSING OF INCURABLE TUBERCULOSIS.

It was announced lately that Montreal was on the point of purchasing a building to the north-east of the city, which had formerly been used as a hotel, to be converted into a hospital for the incurable cases of tuberculosis. The price spoken of was a high one: the building had been unsuccessfully offered at a much lower rate some time previously to another buyer, and there was grave ground for suspicion that the affair was being manipulated in the way so familiarly known through the findings of the lately-held Royal Commission. The building was unsuitable, and for all these reasons the project must not be entertained. Nor is the scheme for a hospital that could be used at one time for tuberculosis and at another for small-pox worthy of a moment's consideration. It is doubtful if any project coming from the Council of 1909 would meet with the confidence of the citizens of Montreal.

It is fortunate, we think, that at this juncture there should be brought forward details of a solution of the difficulty which have been long in the minds of those who seriously and practically considered the situation. This view has lately been given publicity in letters from Senator L. J. Forget and Archbishop Bruchesi, and more recently in an interview with Professor J. G. Adami published by THE GAZETTE. Stated briefly, the money available should be voted, so much per week per person, to the sisters of Providence at Notre Dame de Grace, or to the Grace Dart Home, or to any

properly responsible person or society that will undertake the care of these cases. The above-mentioned institutions are at present caring for such cases; some of these are being paid for, and the sum paid is a very small one. Why should the city not avail itself of the services of these "running concerns," if they are willing to do the work? The Sisters of Providence have offered their services, and we believe the Protestant institution, although small, is equally willing; the procedure, if adopted, would then be as follows: every case of incurable tuberculosis, certified both incurable and too poor to care for himself, would be placed in one of these institutions: the city would pay \$2.50 per week (the amount asked by the Sisters of Providence) for each person, and these payments would be made by the Civic Board of Control. In all this we see an extremely good bargain for the city, and a home provided for those unfortunates whom of late we have occasionally sent to jail. Speaking for ourselves, we heartily approve the arrangement.

To those who for one reason or another may object to this scheme, one or two observations may be made. If the city attempt to build and equip a hospital for these cases the cost will be so great that, able or not, the city will *not* give the money required, and the thing, if done at all, will be only partly done; and the citizens are properly ashamed that this neglect should go on longer. Words have been bandied long enough over it: here is an opportunity to get something *done*: are we going to do it, or start the ceaseless talk all over again? The greater part of the money will go to a Roman Catholic Institution, and will be paid for Catholics, but a share of it will be paid for Protestants. That there is no idea of "profit" concerned, is guaranteed by two facts—first, the reputation of the order of the Sisters of Providence, and second, that the price asked is far below the cost of the patient who is housed. The Protestant hospitals of this city care for thousands of Catholics yearly: why should not the Catholic institutions be free to do as much? Should Protestants be cared for by the Sisters of Providence, it will be no new thing, and should anyone feel that there is, in this new proposal, any ground for the lack of sectarian tolerance, we would suggest that before anyone voices sentiments on this matter, he should speak about it with some one of the Protestant lady patronesses of the Home for Incurables at Notre Dame de Grace.

In this twentieth century we are so used to looking for motives in everything, and to sell an article for its price, and not less, that there is sure to be some one who will say, "Why are the Sisters of Providence willing to make a bargain on which they will lose money?"

There must be some motive behind it?" This is a perfectly proper question to ask: there is a motive behind it. It is the motive which animates the Ladies' Benevolent, the Foundling Hospital, the Brewery Mission, the Salvation Army, and some others: it is the motive that led the questioner, perhaps, last month to be Santa Claus to some poor child.

THE CAMPAIGN AGAINST MALARIA.

A report has recently been issued giving the results of the anti-malarial campaign which has been instituted in Algeria, under the direction of the Sergent brothers, by the French Government. The report gives in detail the results accomplished by the medical men in charge of the campaign in each district. In each locality, particular attention has been given to the anti-malarial measures most suited to it. The canalisation of marshes and the clearing of the beds of streams have been found exceedingly useful in preventing the breeding of mosquitoes; the use of petrolcum for oiling breeding places has, of course, been very general; small fish, which feed upon larvæ, have proved useful in freeing from mosquitoes collections of water to which other measures could not be applied. Adult mosquitoes have been destroyed in houses by fumigation.

It is worthy of notice that one medical officer maintains that he has obtained better results in destroying mosquitoes, than can be obtained by burning pyrethrum powder, by insufflating it with blowers such as are used in covering vines with sulphur. In only one or two instances has any effort been made to ensure the health of European colonists through removing their dwelling places from the neighbourhood of native villages, in which, as usual, malaria is always endemic.

The greatest effort of the campaign seems to have been an attempt to "cinchonise" the population by the distribution of free quinine through distributors appointed by the government. The quinine was supplied in sugar-coated bon-bons; in this form, natives and Europeans—both adults and children—were easily persuaded to take it regularly so long as the dose was not too large. The easiest way of giving the quinine was by the daily administration of one bon-bon containing 0.20 grammes (3 grains). Although the persons appointed to administer the quinine, in some instances, made their rounds daily from house to house and although the children in the schools were given the quinine by the teachers, the drug, unfortunately, was not given as regularly as it should have been: in addition, in some localities the supply of

quinine ran out, and therefore it is impossible to draw as definite conclusions from the year's work as might be desired. It is certain, however, that the campaign has been a successful one, and it can be definitely concluded, from the results given, that the daily use of three grains of quinine given preventatively to people who are not suffering from acute attacks of malaria will do much to reduce their susceptibility to the disease.

The continued results of the anti-malarial campaign in Algeria will be followed with the greatest interest because, in Algeria, the French Government are making what is practically the first attempt to effect the colonisation of a tropical country through the employment of the hygienic measures which have resulted from the increase in our knowledge of the causes and means of prevention of tropical diseases. The success with which anti-malarial measures have met at Ismailia and in the Panama Canal Zone leave little doubt that the French Government will meet with complete success in their work in Northern Africa.

THE ORIGIN OF VERTEBRATES.

It is verily about as difficult now-a-days for a student of science who has made a reputation in one of the 'ologies' to take up another and receive just appreciation for his work from the votaries of that other science, as it is for a camel to pass through the eye of a needle. Such is humanity that "the cobbler must stick to his last," or suffer in consequence. Years ago when Drummond's work upon Science and Religion created wide attention we remember hearing an eminent Anglican divine, ignorant of the author's standing in the Presbyterian communion, give as his opinion that the scientific portions of the work were most valuable and replete with suggestion, but as for the theological acumen displayed, well, the less said about it the better: and a few days later heard a zoologist of high rank, noted for the directness of his remarks, declare that it was a pleasure to come across such sane, broad-minded theology from a parson's pen, but, of course, the science was all adjectival rot. Those who read the "University Magazine" will recall that lately a like measure of mild contempt was heaped by a clerical writer upon the qualifications of our quondam Professor of Zoology to write on religious subjects, notwithstanding that he is a Scotchman, hailing from the north of Ireland, and the long years during which Dr. McBride has delved into biblical literature are known to all of us in Montreal.

Thus it has happened that one of the most remarkable pieces of sustained morphological and embryological investigation and of closely reasoned deduction,—the outcome of twenty years of unremitting labour on the part of a leading British man of science, one whom our University has honoured itself in recognizing—has been received coldly and with scant notice by the zoological world—because the man in question is celebrated as a physiologist and is thought to presume when he ventures to attack from a new aspect the good old academic problem of the origin of the vertebrates.

And yet Gaskell came by his problem honestly enough—by a process of natural development from earlier investigations. As he indicates in his modestly written introduction, those studies of his upon the action of the heart, (studies which, by-the-way, introduced, if they did not establish the myogenic theory of heart action and were the first step on the way to a comprehension of the now fashionable 'Heart-block') led him to investigate the characters of the vagus and accelerator nerves of the heart: this led to study of the sympathetic system: led to his establishment of the essential relationships between the sympathetic and the cerebro-spinal system: thence to a study of the structure of the central nervous system in the endeavour to associate the topographical arrangement of cell groups in that system with the outflow of the different kinds of nerve fibres; so to a recognition of the segmental character of the brain, and thence to a comparison between the segmental arrangement of vertebrates and appendiculate invertebrates—crustaceans, insecta, and the like. "There in the infundibulum was the old œsophagus, there in the cranial segmental nerves the infracœsophageal ganglion of the invertebrates, there in the cerebral hemispheres and optic and olfactory nerves the supra-œsophageal ganglia, there in the spinal cord the ventral chain of ganglia. But if the infundibulum was the old œsophagus, what then? The old œsophagus was continuous with and led into the cephalic stomach. What about the infundibulum? It was continuous with and led into the ventricles of the brain, and the whole theory became clear. The ventricles of the brain were the old cephalic stomach, and the canal of the spinal cord the long straight intestine which led originally to the anus, *and still in the vertebrate embryo opens out into anus.*" Here in the opinion of the orthodox zoologist is Gaskell's heresy. The comparison of the infundibulum with the original œsophagus of the appendiculata had long ago been suggested but how could any intermediate form of life possessing one gut proceed to develop a second? "Not having been educated in a morphological laboratory and taught that the

one organ which is homologous throughout the cervical kingdom is the gut, and that, therefore, the gut of the invertebrate ancestor must continue on as the gut of the vertebrate, the conception that the central nervous system has grown round and enclosed the original ancestral gut, and that the vertebrate has found a new gut did not seem so impossible as to prevent my taking it in a working hypothesis and seeing to what it would lead."

And so for twenty years Gaskell has worked accumulating evidence, morphological, embryological, histological, and geological, studying the various stages of development of lower forms of life, and publishing papers one after the other, which have been ignored rather than criticized by the morphologists. Now at last he has brought together all in evidence into a single book of over five hundred pages. We remember some twelve years ago, after Gaskell's Liverpool address before the British Association, hearing a zoologist remark that "of course it is quite impossible: the worst is he exhibits such hellish ingenuity in turning everything to the advantage of his theory," and adding lamely, "One cannot easily criticise him: the subject is so very complicated." That at the time, coming from a well equipped and learned investigator, appeared to us as a confession of weakness.

Reading this collected work, and reading it uncommitted to the traditions of any school, it is not possible to feel other than that Gaskell has fully established his case. There are certain minor matters in which we cannot follow him,—as for example, the homology between, and like origin of, the lymph nodules and the ductless glands; but in its broader aspects, in the remarkable way in which the evidence harmonizes, whether from the point of view of the nervous system and its development in the succession of forms studied, of the skeleton, respiratory apparatus, organ of the lateral line alimentary canal (with the discovery that in ammocetes, at the period of transformation to the adult lamprey, the development of a new gut can be followed step by step), everything "marches." The line of descent is not through the tunicates, or amphioxus or balanoglossus, as one or other school of academic morphologists would hold. A study based more particularly on the nervous system indicates that man has been evolved from the mammal, the mammal from the reptile, the reptile from the amphibian, the amphibian from the fish, the fish through forms allied to the lamprey and the ostracodermi of the Devonian and Silurian seas to forms like that still existing but most ancient type, the *Limulus* or King crab, and so the arachnid Arthropods, that is to typical invertebrates.

There is, we know full well, a danger ever present to the worker to whom a new hypothesis reveals itself—the danger of obsession: the danger that his views so seize upon him that to him they are infallible and he becomes incapable of weighing deliberately the *pros* and *cons*; nay more than that he becomes impatient of the criticism of others, attributing that to personal animosity. Of such an attitude there is singularly little evidence in the work before us. The danger is fully recognized: opposing views are treated courteously: difficulties are met frankly, and there is evidence that years have been spent in the elucidation of relationships which on their face appeared to negative the theory, each such apparent contradiction being eventually found only the more triumphantly to yield valuable confirmatory evidence. This perhaps is the most striking and most significant outcome of Gaskell's labour.

Reviews and Notices of Books.

TUBERCULOSIS, A PREVENTABLE AND CURABLE DISEASE. Modern Methods for the Solution of the Tuberculosis Problem. By S. ADOLPHUS KNOPF, M.D., Professor of Phthisio-therapy at the New York Post Graduate Medical School and Hospital, etc. New York: Moffat, Yard & Company. 1909.

There are few, if any, writers upon Tuberculosis better known than Dr. Knopf, and few men have so consistently devoted themselves to one object as he has. We believe that this is almost the twentieth book of importance that Dr. Knopf has contributed to the literature of this disease, and his best known, Tuberculosis as a Disease of the Masses, has appeared in many different languages. Dr. Knopf may be remembered as having delivered a splendid address in Montreal during the Tuberculosis Exhibition of last year.

The book under review at present is intended for the patient as well as the physician and the anti-tuberculosis worker, and all will find much that is useful in it. It covers a good deal of ground, and while describing the duty of the patient, his friends and his physician, it deals somewhat extensively with the appliances for treatment both at the patient's home and at sanitariums and in shacks. Sanitation and housing and the duties of the municipal and federal authorities towards the tuberculous are dealt with. We can heartily commend Dr. Knopf's book to everyone.

TRANSACTIONS OF THE AMERICAN UROLOGICAL ASSOCIATION, Vol. I, 1907; Vol. II, 1908.

These two very interesting volumes which have just come before

us have occupied not a few of our spare moments and are well deserving of a more extended review than is here possible.

At the present moment there are two similar associations in the United States—the older body, the American Association of Genito-urinary Surgeons, and the younger American Urological Association, which came into existence in 1902. The papers presented at the meetings of this latter society during the last two years have been collected and printed in these two volumes I and II.

Volume I opens with a short address by the president of the Association for 1906-7, Bransford Lewis of St. Louis, well known as a pioneer in American cystoscopy and the father of not a few instruments. In the two volumes he contributes several papers and his remarks in the various discussions are interesting throughout. Dr. Hugh Young, of Baltimore, presided over the Association during 1907-8, a fact which undoubtedly accounts for the very successful meeting during that year.

Throughout, the papers are as interesting as instructive, and serve to give a clearer insight into the present position of Genito-urinary Surgery in America than is possible from the occasional papers in the surgical journals and the published text-books.

Not the least interesting in this respect is the fact that, throughout the transactions, the very full discussions are published *in extenso*. The value of the papers is thus enormously increased and a true conservative estimate of each is rendered possible.

Among the articles in Volume I we note, the "Advance of Urology," in a paper by Bransford Lewis; "Hæmaturia of Unknown Origin," treated by Hagner; "The Prostate as a seat of Chronic Gonorrhœa," by Wolbarst; "Chyluria from Filariasis," O'Neil. In Volume II Townsend and Valentine treat stricture at length, putting forth a plea for dilatation rather than urethrotomy; Krotoszyner contributes a paper on "Pyelolithotomy vs. Nephrolithotomy; Swinburne discusses the various silver salts. Chute analyses forty cases of renal suppuration, and Barringer in a very complete paper emphasises the importance of urea determination in the separated urines as a means of estimating the functional activity of the kidneys. In short twenty-five papers in all cover most of the genito-urinary field. Most of these deserve more than mere mention.

"Confessions of a Yeoman Prostatectomist," by Rilas Eastman, of Indianapolis, is a most interesting article. The writer does not withhold any of his accidents, yet concludes that the operation has now reached that stage where prostatectomy should be performed as soon as an hypertrophied prostate gives rise to symptoms. The

discussion on this is a very brisk one. Young and Young's operation comes in for thorough discussion, e.g. "When Dr. Young operates on 100 prostates, unselected, without a death we cannot believe him." Nevertheless, in spite of this and more in the same strain, Young is fully vindicated by those who had followed his work and who were glad to be able to do so. Still, another fact of importance brought out here is the recognition of the high incidence of carcinoma in enlarged and troublesome prostates, 6, 10, even 20 per cent as in Young's series. The fact is only now coming home to us.

Lithotomy and litholapaxy come into discussion as is ever the case, with the natural solution that each has its own sphere and that we must select our cases.

A feature which cannot escape one is the fact that the use of the cystoscope and ureteral catheter has advanced enormously: the dissentient voices are no longer heard, and some of the articles serve well to accentuate the advantages obtained and the promises of the future.

On the whole, perhaps, the work does not show the thoroughness in pathological, bacteriological and chemical methods which characterizes European transactions of a similar nature, though, from the standpoint of the practical genito-urinary surgeon, the nature of the papers is eminently useful and important.

In short it is with considerable pleasure that we have read these two volumes of reports and that we look forward to the next series, which promises great things.

R. P. C.

AMERICAN PRACTICE OF SURGERY. By BRYANT & BUCK. Vol. VI.
William Wood & Co., New York, 1909.

The present volume of this well-known system of surgery is made notable to us in Montreal by the fact that three of the longer chapters in it are written by Montreal men. Dr. Armstrong has the chapter on diseases and wounds of the mouth, tongue, and salivary glands, Dr. Elder that on the neck, and Dr. Shepherd that on the thyroid and thymus. One can say very justly that the work has gained much by their contributions.

The first chapter of the volume is entitled Prosthesis in its Relation to the Surgery of the Face, Mouth, Jaws, and Nasal and Laryngeal cavities. So far as we know this is the first time in which in a text-book this matter has been adequately discussed and it is indeed a welcome section. Dr. Charles R. Turner of Philadelphia is the writer and he has done it very well. The subject is divided into three sections, the first of which describes the appliances used in

what one might call surgical dentistry, including that of the jaws; the second, those used for the repair of defects of the nose, lips and parts of the face; the third, those for defects of the tongue, and finally the repair of laryngeal defects. That portion which deals with mandibular resections is especially good. The matter which he has brought together here is in most part found only in monographs, and the subject is one of the greatest importance for the general surgeon.

Dr. Harris P. Mosher, of Boston, is responsible for the section on Surgical Diseases and Wounds of the Nasal Cavities and Accessory Sinuses. This section has been dealt with in a very thorough and satisfactory manner. The author discusses first such matters as epistaxis, abscess of the septum and fractures of the nose, and then deals with deformities, under which head the matter of correction of septal deviations is dealt with in detail. The submucous resection is the only method of treatment advised, we think rightly, and is fully described. The section devoted to the diseases of the accessory sinuses has been compiled with care and is richly illustrated with practical drawings and plates, many of them original, others selected from such classical works as those of Killian and Hajek. The section reflects great credit on the author and should form a valuable reference for those interested in the subject.

The following chapter is by Dr. G. E. Armstrong upon Diseases and Injuries of the Mouth, Tongue, and Salivary Glands. It contains 90 pages, of which 70 are devoted to the tongue. One need only say that it is exceedingly well written in an incisive and concise style and bears abundant evidence of the wide experience of the author. Perhaps one of the most important parts of it concerns the excision of the tongue for cancer. Dr. Armstrong's preference is for the Trendelenburg position, for chloroform with the Junker apparatus as the anæsthetic and for preliminary tracheotomy whenever the whole tongue is to be removed. He is in favour of partial removals for unilateral disease and makes a strong appeal for the cultivation of the ability to diagnose the condition in its earliest stages. "Many of us," he says, "were brought up to believe that cancer of the tongue was properly and efficiently treated only when the whole of the tongue had been removed. The new doctrine would seem to be that we must strive to recognise cancer of the tongue when it is small and limited in extent and while it may be sufficiently removed by partial excision of the organ." The illustrations are fairly numerous and very many of them are original. We confess to a general prejudice against coloured plates, having very rarely seen any that were true enough to nature to justify

their expense. The five coloured plates introduced in the present article have not changed our opinion.

The Diseases and Wounds of the Neck are discussed by Dr. Elder and are well and satisfactorily handled. The section on cervical ribs is especially good and contains original illustrations drawn from Dr. Shepherd's collection in the Anatomical Museum. The section also on cut throat is good. One would like perhaps a somewhat fuller statement of the embryological basis of branchiogenetic cysts, one at least which would make the subject a little clearer to the student. But perhaps this is hypercritical. The illustrations are numerous and most of them are original. The skiagram of Dr. C. K. Russel's case of cervical rib is reproduced and shows better than most text-book skiagrams.

The following chapter on the Thyroid and the Thymus Gland by Dr. F. J. Shepherd is, as one would expect, an epitome of the wide experience of one who has long been known in Montreal for his knowledge of goitre.

In the present slightly uncertain state of our knowledge of the pathology of certain forms of goitre Dr. Shepherd is no doubt wise in adopting the classification on clinical considerations. The "vascular" goitres form one group by themselves. Whether such cases deserve a separate classification may possibly be questioned inasmuch as they represent rather a sub-variety of a larger class. With regard to the much mooted subject of Graves' disease Dr. Shepherd remarks in a foot note very justly that "the diagnosis of true Graves' disease differs according to the opinion of the observer. Severe cases can be mistaken by no one. What many surgeons class as cases of Graves' disease—those in which there are tachycardia, slight exophthalmos, perhaps some tremor, etc.,—those cases are regarded by the writer as doubtful, and although he has operated on many such they are not included in the twenty-five (personal) cases above mentioned." There can be but small doubt that the rather remarkably large series of cases reported by certain of the American surgeons are to be set down as being due to a laxity of definition as is above suggested by Dr. Shepherd. Dr. Shepherd remarks upon the bad effects of local anæsthesia. He has for some years used a mixture of two parts of ether and one of chloroform and has found it in every respect satisfactory. He reports a very remarkable case of carcinoma of the thyroid in which he ultimately obtained a cure after operating three times. At the last operation "most of the structures at the right side of the neck were removed, namely, the sternomastoid muscle, the jugular vein, the vagus nerve, and the patient has now remained well for six and a half years."

The cure, however, was at the price of myxœdema necessitating the constant use of thyroid extract. With regard to the surgical treatment of the ordinary adenomatous goitre he advocates excision and reserves enucleation for a very limited number of cases, viz., those presenting small adenomatous tumours and single cysts or such as have already one half of the thyroid removed. Secondary hæmorrhage, he says, is the great danger in enucleation. He also very justly emphasizes the great importance of pre-operative laryngoscopic examination.

The thymus gland is given only three pages. One would have liked a somewhat more extensive treatment of Status Lymphaticus for instance, but in a text-book of this sort and in the present state of our knowledge of the thymus gland in its surgical aspects one cannot expect much space to be devoted to it.

The limits of this review will hardly allow any extended description of the subsequent chapters. Suffice it to say that that on the thorax and spinal column by Normal Carson of St. Louis is an excellent and scholarly article with full bibliography attached—a welcome addition which most of the other chapters lack. The chapter on the surgery of the female breast is by Harvey S. Mudd, of St. Louis; that on the external genitals and vagina is by Graves of Boston; that on the male genital organs by Balch of Boston (a very thorough chapter); that on chancroid by Hugh Cabot of Boston, as also that on gonorrhœal urethritis. The last mentioned article is very good, occupying 100 pages and being provided with many excellent illustrations. One of the best chapters in the book is that on the surgical diseases of the jaws by Bloodgood of Baltimore. As one expects of anything coming from Johns Hopkins, it is full and the pathological aspect is given a thorough consideration. It occupies 80 pages and is illustrated by a great number of excellent pictures, perhaps really too many if that be possible. That on page 872 depicting a certain stage in the operation for a temporary resection of both upper jaws seems to the reviewer to show practically nothing.

Taking the book as a whole one may say that it is a very worthy product of American and Canadian Surgery.

E. W. A.

THE PRINCIPLE OF HYGIENE AS APPLIED TO TROPICAL AND SUB-TROPICAL CLIMATES. By W. J. R. SIMPSON, M.D., F.R.C.P., D.P.H. Published by John Bale, Sons & Danielsson, London, 1908.

This book is a volume of 296 pages; it contains many illustrations, plans and charts.

In the first chapter a few notes on climate are given in a concise form. The physical conditions existing in the tropical zone are considered, and the measures which it is wise for people living there to take to counteract the effect of these conditions are briefly indicated. The second, third, fourth and fifth chapters are devoted to a consideration of The Water Supply. The author necessarily covers the whole question of water supply in temperate climates, and, in addition, he considers those difficulties in providing for an efficient water supply which are peculiar to the tropics. The vital importance to private individuals of never drinking any water but that which has been boiled or otherwise sterilized is adequately insisted upon. A short review is given of the diseases which are particularly liable to be transmitted by an impure water supply. Chapter V consists of a short review of the methods of examining water.

The next chapters—Chapters VI, VII, VIII, IX and X—are devoted to a consideration of The Food Supply in the tropics. Again the author treats many of the questions ordinarily considered in a work devoted to the hygiene of temperate climates. He gives a mass of exceedingly interesting information concerning the values of the various seed foods used in different parts of the tropics, and the diseases which may be contracted through an unsafe food supply are mentioned. The author rightly insists upon the danger in a warm climate, where ice cannot be obtained, of drinking milk and of eating food which has been cooked for some time and allowed to cool slowly.

Chapter VIII is devoted to a short consideration of the methods of examining milk.

Chapters IX and X give an exhaustive and extremely useful account of the methods of disposing of sewage and refuse. The particulars given for the construction of cheap latrines in small centres of population are especially useful.

Chapter XI on soil and drainage and Chapter XV on the prevention of Malaria might well be considered together. In them may be found a short account of the methods of protecting tropical populations against Malaria.

Chapter XII considers the planning of towns and the building of houses in the tropics. The author rightly insists upon the necessity of straight, broad streets and for the providing for adequate air space around each house.

A chapter on the sanitation of jails, and one on communicable diseases, complete the work. In the latter chapter is given a short account of the means of preventing the transmission of communicable diseases and, consequently, it includes a few notes on quarantine and disinfection.

At the end of the volume are added several charts which will prove useful to students; in them are synopsized the measures employed in preventing some of the communicable diseases most common in the tropics.

The book is an extremely useful one and should certainly be possessed by every medical man who intends to go to the tropics. It is a practical book since it teaches many of those details which are so essential to the successful application of sanitary measures.

The measures which are recommended to the individual who wishes to preserve his health in the tropics are wisely worded. Proper importance is given to the necessity of always drinking boiled water and to the avoidance of warmed-up food and of dishes which have been allowed to become cold. Moderation in eating, in drinking; in work and in exercise are shown to be even more important to persons living in the tropics than to those inhabiting temperate climates.

Many parts of the book—particularly those relating to the disposal of sewage, garbage and refuse and to the laying out of native villages—will be especially valuable to physicians in charge of railroad construction work or mining camps in North America.

J. L. T.

THE PRINCIPLES OF PATHOLOGY. By J. GEORGE ADAMI, M.A., M.D., LL.D., F.R.S., Professor of Pathology in McGill University, and Pathologist to the Royal Victoria Hospital, Montreal; late Fellow of Jesus College, Cambridge, England, and ALBERT G. NICHOLLS, M.A., M.D., D.Sc., F.R.S. (Canada), Assistant Professor of Pathology and Lecturer in Clinical Medicine in McGill University; Outdoor Patient Physician to the Montreal General Hospital; Assistant Physician and Pathologist to the Western Hospital. Volume II. SYSTEMIC PATHOLOGY, with 310 engravings and 15 plates. Lea and Febiger, Philadelphia and New York, 1909.

The first volume of this work was welcomed as an innovation, and this is hardly less so, since it carries out the plan initiated, that is, the laying down of a series of general principles upon which special knowledge may be superposed. This volume, judged merely upon its systemic pathology, apart from the context of the first volume, might be judged to be brief; but the authors explain their point of view, with which we thoroughly agree, viz.: that the purpose of a book upon special pathology is to catalogue some few thousand of the many thousand items which exist, and these the most important; while the principles and the general knowledge are all-important, for upon such general knowledge one can build up the special pathology of any organ for himself. If a knowledge of pathology is to depend

upon the acquisition of a certain number of special pictures of disease, it follows that, other things being equal, the catalogue that is the fullest will be the best, but one such catalogue, fairly made, should suffice. It is common knowledge that there are already too many such. Feeling this, the authors of the present volume, while yielding to the desire that the work should be complete, have made the part dealing with special pathology relatively brief. The present volume, although it contains a thousand pages, includes the pathology of the blood and the circulation, as well as a number of dissertations upon the pathology of function, with the result that, viewed broadly, the entire work is what it claims to be, that is, a book upon the principles of Pathology, and the catalogue part of it is cut down to the practical minimum.

As we pointed out when reviewing the first volume in these columns, the basis of pathological change is rightly sought in the changes undergone by the unit, the cell; and the changes that are directly dependent upon those universally distributed special systems, the blood and the lymph, are as special as are changes in the alveoli of the lung or in the tubule of the kidney. The universal distribution of the blood and the lymph have led to their changes being previously considered under general pathology. The alteration is a good one.

The illustrations are numerous and good: they possess an added interest in that they are nearly all original, being taken from the collection of the McGill University Medical Museum, or of the authors, with occasional ones from those of their colleagues. The least satisfactory, as a whole, are the photo-micrographs, some of which are not sufficiently clear or distinct. It is a very open question whether the photo-micrograph is a good form of illustration, and future editions might be bettered by the substitution of drawings for at least some of these photo-micrographs.

The part devoted to systemic pathology proper is the work of Professor Nicholls, and we congratulate him upon the scholarly additions he has made to the work of the senior author. The references are good, and not bulky. The short general introductions, such as that upon vascular function and upon arterio-sclerosis, are excellent helps to the consideration of the sections: where these are not added, it will be found that the general rules have been laid down in the former volume, with which the present must be constantly associated. There is here completed a work which, in the light of its stimulating presentation of the facts of pathology, has been rightly greeted as unique and of the highest importance to the science.

DISEASES OF INFANTS AND CHILDREN. By HENRY DWIGHT CHAPIN, A.M., M.D., and GODFREY ROGER PISEK, M.D. With 179 illustrations and 11 coloured plates. Published by William Wood & Co., New York. Price \$4.50.

The authors' aims have been to produce a thoroughly practical book on the diagnosis and treatment of diseases of infants and children. The theory and pathology, they state, have only been considered in so far as may be necessary to an understanding of the diagnosis, course, and treatment of disease.

The contents of the work are divided into 17 sections. Starting with the Newly-born, in which the authors discuss the care of premature infants as well as injuries during birth and diseases of the newly-born, they proceed, after the Hygiene of Infancy, the Examination of the Sick Child and Infant Feeding, to take up diseases of the special systems in order, including chapters on the Congenital Malformations and Deformities and the commoner surgical diseases.

The section on Infant Feeding is particularly well done, and as one would expect. The so-called biological standard is that followed, the chemical side of the subject being subordinated. As Dr. Chapin states, "a food may be chemically right but practically wrong." "The food elements required by all infants are the same, but the form in which they are presented must be determined for each infant by experiment."

Discussing tuberculosis the authors claim good results from tuberculin treatment, in cases in which there is an absence of temperature and an increase in weight. It seems an open question as to whether it is the tuberculin treatment in such cases which should get the credit of the possible cure.

The chapter on the Disorders of the Urine and Kidneys is also one of the best in the book and well repays study.

The illustrations are few, and in most cases original and extremely satisfactory. The general arrangement, spacing and so forth leaves little to be desired.

The work can be confidently recommended to the busy practitioner as a useful practical manual on the diseases of children.

A TREATISE ON ZOOLOGY, edited by SIR RAY LANKESTER. First Fascicle of Part I.—INTRODUCTION AND PROTOZOA. 296 pages. London: Adam & Charles Black, 1909.

This volume is of especial interest to medical men in so far as it deals with the pathogenic protozoa. In the Introduction, Sir Ray Lankester mentions in a general way the properties of protozoa and refers to the part that some of them play in the production of disease.

The amœbæ are described by Professor Hickson; the mastigophora are described by the same author, in co-operation with Arthur Willey. The hæmoflagellatæ are, from our point of view, the most important of the pathogenic protozoa described in this fascicle; the other hæmatozoa are described in the second fascicle of this work.

The book is not one which will be useful to the medical man who is interested in the pathogenic protozoa. Although it is dated 1909, it is evident that much of the manuscript of the book was prepared at a considerable earlier period; this is particularly the case with the section (pages 193-273) dealing with the hæmoflagellates. Although there are one or two striking omissions, most of the earlier papers dealing with the parasites have been carefully read and, consequently, this section gives a fair review of what was known of the hæmoflagellates at the time when it was written; unfortunately, later publications make much of it out of date at present. In several places this book shows an unfortunate tendency to mention theories, which are still hypotheses, as though they were proven facts; the offence is aggravated by the proposing, for well-known protozoa, of new classifications based on characteristics dependent upon these unproven theories. Such practices cannot be too deeply deplored because of the inevitable confusion they produce and because of their tendency to mislead those who are not familiar with their subject.

J. L. T.

ATLAS OF THE EXTERNAL DISEASES OF THE EYE FOR PHYSICIANS AND STUDENTS. By DR. RICHARD GREEFF, Professor of Ophthalmology in the University of Berlin and Chief of the Royal Ophthalmic Clinic in the Charité Hospital. Only authorized English Translation by P. W. SHEDD, M.D., New York. With 84 illustrations in colour from wax models printed on 54 plates with explanatory text. The illustrations are from models in the Pathoplastic Institute in Berlin. Art Director, F. Kolbow. New York, Rebman Company, 1123 Broadway.

In an atlas the plates are naturally of paramount importance, and after examining the eighty-four life-size pictures that Dr. Greeff has chosen as illustrations of the external disease of the eye, we have no hesitation in pronouncing them the best; both in faithfulness to anatomical detail and in artistic finish, that have heretofore been published. The author tells us that for some years he, in conjunction with F. Kolbow, has been making life-masks, and from these wax models, of the more important cases that have come under his care, and when one considers the delicate structure and extreme sensitiveness of the visual organs one can well believe that "the

difficulties to overcome were naturally very great, and only after much experiment were we able to discover the correct method." The plates in the atlas were made by reproducing these models in four colours by a photo-engraving process. In addition to the plates the book contains one hundred and thirty-five pages of explanatory text, in which etiology, diagnosis, prognosis, and treatment are thoroughly discussed.

The translator has done his work well and the press work too is excellent. On the whole it would be hard to commend the book too highly, and we extend our hearty congratulations to Dr. Greeff on the happy outcome of his labours in blending the plastic and the pictorial arts.

G. H. M.

PRACTICAL MEDICINE SERIES, Vol. VIII., THERAPEUTICS, PREVENTIVE MEDICINE AND CLIMATOLOGY. By GEO. F. BUTLER, Ph.G., M.D., HENRY B. FARILL, A.B., M.D., and NORMAL BRIDGE, A.M., M.D.

This is a most up-to-date little volume. The chapter on the therapeutics of drugs and other therapeutic agents, sera, vaccine, and x-ray therapy is concise, and contains all the recent advances. That on preventive medicine, the prevention of contagious and infectious diseases, is followed by a complete discussion of subjects considered from a public health and sanitary standpoint. The chapter on climatology takes up the climatic conditions for the various diseases, life conditions under the various temperatures, acclimatization, climate-influencing homicide, and suicide.

A MANUAL OF OTOLOGY. By GORHAM BACON, A.M., M.D., Professor of Otology in the College of Physicians and Surgeons, Columbia University, New York. With an Introductory Chapter by CLARENCE J. BLAKE, M.D., Professor of Otology in the Harvard Medical School, Boston. New (5th) edition, thoroughly revised. 12mo, 500 pages, 147 engravings and 12 plates. Cloth, \$2.25, net. Lea and Febiger, Philadelphia and New York, 1909.

This little volume presents much valuable information in a compact and attractive form. It gives one a good general review of the subject and many important principles are illustrated by the use of individual cases from the author's experience.

We were perhaps best pleased by the chapters on the suppurative conditions of the middle ear and its complications.

The description of the operative procedures on and about the

mastoid are clear and comprehensive and much sound advice is given as to when such operations are indicated.

We think more might have been said of the physiology of the vestibular apparatus with advantage.

The subject is now fairly well understood and defined and is of the greatest importance and interest.

There are numerous illustrations which are of the greatest service and are splendidly reproduced.

E. H. W.

MOSQUITO OR MAN? THE CONQUEST OF THE TROPICAL WORLD.

By SIR RUBERT BOYCE. Published by John Murray, London.

This volume contains 267 pages and many illustrations. The author has had an exceedingly interesting theme for his book; by the way in which it is presented, he has made it an entrancing one.

The author tells the story of the recent advances in our knowledge concerning tropical medicine; he tells it in a manner particularly attractive to those who have not a special knowledge of tropical diseases. The history of the steps which led up to the establishment of Schools of Tropical Medicine and to a wide-spread appreciation of the importance of the diseases of the Tropics is well told.

Each of the more important diseases, Filariasis, Malaria, Sleeping Sickness, Yellow Fever, Tick Fever, Plague, Malta Fever and Ankylostomiasis, are considered in a special chapter. The history of the research work which led to the discoveries through which it became possible to successfully combat each of these diseases is told, and the practical application of the measures through which these diseases are now prevented, or cured, is definitely described.

To those who are interested in the administration of public hygiene in the tropics the book will be especially useful, since it thoroughly describes the personal part which the author took in preventing Yellow Fever in New Orleans and in British Honduras.

In an appendix are contained a series of laws which have been found necessary in tropical countries and which have been enforced recently as a result of the advances in our knowledge of the causation and means of transmission of tropical diseases; those laws which relate to the destruction of mosquitoes are particularly complete.

One of the most interesting chapters of the book describes the work of Dr. Beaupérthuy, who, with Colonel Blair, maintained, unheard, long years ago—in 1852—that Yellow Fever was transmitted by mosquitoes. "Mosquito or Man?" tells how completely time has vindicated this opinion.

J. L. T.

Retrospect of Current Literature.

SURGERY.

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

P. L. FRIEDRICH, M.D.: "Thoracic Surgery." HENRY H. JANEWAY, M.D., and NATHAN W. GREEN, M.D.: "Experimental Intra-thoracic Esophageal Surgery." WILLY MEYER, M.D.: "Pneumectomy with the Aid of Differential Air Pressure: An Experimental Study." *Journal American Medical Association*, Dec. 11, 1909.

Friedrich classifies surgical procedures in pulmonary diseases under four headings. 1. Intrapulmonary interference with diseased foci. 2. Influencing pulmonary affections by way of the pleura by compression of the lung. 3. Operations upon the chest wall for the mechanical influencing of the pulmonary function and thereby reacting on the diseased lung. 4. Operative treatment of the diseases of the thoracic wall itself in as far as this leads to exposure of the lung.

He regards simple intercostal incision as the best method for exploration of and penetration into the lung. By means of the differential pressure apparatus (Sauerbruch) pneumothorax is under complete control, and its development and removal may be used to give one a clearer picture of the diseased area by changing the circulation in the part. Pneumothorax must be regarded as the most important factor in predisposing to infection. In lung injuries he uses the inverted or penetrating sutures, the material being silk. Abscess and gangrene require suturing the live pleural surfaces together to guard against infecting the pleural space, the diseased area being operated upon at once or at a second sitting. Large segments of a lobe or even an entire lobe may be removed. It is remarkable how easily hæmorrhage is controlled either by direct ligature or by acupuncture. In these operations the closing of the bronchus or bronchi form the main difficulty. When the bronchus is devoid of cartilage this may be done by freeing the mucosa and closing by direct ligature and acupuncture. When cartilaginous segments are present, the technique is still unreliable. Here we

may employ Lenhartz's method of elastic ligature of the lobe followed ten days later by ablation of the part; or we may bring the bronchus toward the outside by fixing the lung to the chest wall. Compression of the lung by way of the pleura through introduction of air or nitrogen has been employed with some success in tuberculous disease. The presence of pleuritic adhesions necessarily limits the usefulness of this method. He does not consider it advisable to break up these adhesions by manipulation through an intercostal incision on account of possible serious dangers, as well as the little hope held out for such cases even by direct interference with knife or cautery. Recent empyemas are best treated by puncture with a thick trochar, or small thoracocentesis incision, with immediate drainage according to Thiersch. It is claimed that many empyemas, all metapneumonic cases are cured this way without any further surgical procedure. Resection of a rib or ribs is employed only when the pus focus has been walled off.

Success has followed his procedure of deossification of the chest wall in cavernous and slowly infiltrating non-cavernous phthisis, the majority of cases being essentially improved as regards their general condition, increase in body weight, subsidence of cough, sputum, and fever. These cases must be strictly selected, and only those having unilateral cavernous lesions with passive foci on the other side, and who are free from any recent tuberculous process in any other organ, especially the bowel, should be operated upon. He has obtained brilliant results in primary alveolar emphysema by the removal of pieces of ribs from the second to sixth inclusive. From 4.5 to 6 c.m. at the cartilage-bone margin must be removed, followed by careful ablation of the retrocostal periosteum. The repair of wounds of the heart has been greatly facilitated by the differential pressure method. Nearly all such injuries are associated with a left sided pneumothorax. It has been shown that the hæmorrhage from a cardiac wound is diminished in proportion as the lungs are allowed to collapse, hence during the cardiorrhaphy the pneumothorax is allowed to remain, being definitely removed before the pleura and pericardium are sutured. Exposure of the heart may be secured by an intercostal incision or by removing 10 c.m. of the fifth cartilage. For exposing the anterior mediastinum he advocates a transverse sterno-thoracotomy between the second and third ribs. After bilateral ligature of the mammary artery, the sternum is sawn through with a Gigli saw, and the incision carried transversely outwards into the intercostal muscles. This gives much better access than the longitudinal division of the sternum, and heals more rapidly. Doctors Janeway and Green present their method for circuiting

the cardia by the establishment of an anastomosis between the stomach and œsophagus, and also for resection of a portion of both stomach and œsophagus. Two methods of artificial respiration were used, inflation of lungs through an intubation tube, and a positive pressure cabinet. Each method has definite advantages; with the former an artificial apnoea is developed which abolishes all muscular effort at respiration during operation, while the range of ether administration is greater and the danger of death from too deep narcosis is less. With the cabinet it was found that a smaller amount of ether was required. They have constructed a positive pressure cabinet which practically embraces the advantages of these two methods and which is figured and explained in the text. In performing gastro-œsophageal anastomosis without resection, the eighth rib is resected subperiosteally, the thoracic cavity opened by incision through the periosteal floor, the abdomen entered through the diaphragm and the stomach secured. This organ is now opened and the female half of the anastomosing button secured by purse string. The male portion is passed down the œsophagus and engages the female half, the line of anastomosis being reinforced by a running suture. When resection is performed, the seventh and eighth ribs removed and the thoracic cavity opened through the floor of the seventh. The peritoneal cavity is opened before and behind the stomach, the gastrosplenic and gastrohepatic ligaments ligated and divided, thus allowing a large amount of stomach to be drawn into thoracic cavity. The cardia is divided by cautery between clamps, the œsophageal stump covered with gauze, and the opening into the stomach closed by interrupted Lembert sutures placed over the clamp. This clamp is left in position until all the sutures are in and ready to be tied, when it is released, and the female half of the button dropped into the stomach and the sutures tied. Subsequent procedure for completion of the anastomosis is as for the circuiting operation.

The success of the operation for total extirpation of the lung depends upon the operator's ability to close the divided bronchus airtight. Various methods have been employed for this purpose, among which may be mentioned the one mass silk ligature around the bronchus and its vessels; amputation, cauterization of the mucosa by pure phenol or Paquelin cautery. Elastic mass ligature around the hilus; removal of lobe at second sitting (Lenhartz). Ligature and division of main bronchus remnant of lung tissue stitched over stump (Garre). Isolation and temporary clamping of bronchus, curetting of the mucosa, tight silk ligature with a second loose catgut ligature more centrally around the bronchus (Friedrich). Dr.

Willy Meyer has brought out a new method which is essentially the same as the method now usually followed in performing appendicectomy. Briefly stated, it consists of isolating the bronchus, dividing the accompanying vessels between double ligatures, crushing the division of bronchus proximal to section, ligating and inverting of crushed stump, and burying stump by a top row of sutures. This procedure has given most satisfactory results in his experiments upon lower animals. He reports the construction and employment of a universal differential pressure apparatus, for a full description of which the reader is referred to the text. It consists of two chambers, an inner positive pressure section for the anæsthetist, with an outer negative pressure chamber for the operator and his assistants. By this particular combination of rooms, an operation can be performed under all of the following conditions: under positive differential pressure, under negative differential pressure, under part positive and part negative differential pressure, under a gradual change from positive to negative and vice versa, under a repeated change from positive to negative, and vice versa, under negative differential pressure at an altitude above sea level higher than that of the place where the operation is performed, and at gradually or repeated changes of altitudes.

W. L. B.

DR. HERMAN KÜTTNER: "Pressure Difference Operations." *Beiträge zur kl. Chir.*, Band LX, Heft I and II.

In view of the wide discussion of the relative values of negative and positive pressure as aids in carrying out operative measures involving invasion of the thoracic cavity, the observations of Küttner with reports of twenty-one cases are especially instructive. The Breslau Clinic, through the initiative of v. Mikulicz and Sauerbruch, has steadily broadened the field of thoracic surgery. The paper under review narrates without prejudice the experiences of the author in the use of both the Sauerbruch negative pressure chamber and the Brauer positive pressure apparatus. Eleven cases were operated upon with the aid of the former and ten with that of the latter,—the series comprising five tumours of the thoracic wall; three cases of disease of the pleura; six of lung affections, including bronchiectasis, fistula and carcinoma; one retrograde bronchotomy; and six cases of carcinoma of the œsophagus.

While it is true that one-sided pneumothorax may be induced in some individuals without serious symptoms, as the results of Rehn and others prove, the procedure is always dangerous and not infrequently fatal, whereas under pressure difference, whether positive or negative, operative measures upon the thoracic wall and

viscera may be carried out quietly and with a hitherto unsuspected certainty of preserving life.

In intrathoracic surgery, apart from the prevention of lung collapse, success depends upon the maintenance of rigid asepsis. The field of operation is isolated by means of tampons as in abdominal work.

The size of the opening has no bearing upon the subsequent course of the case provided that one secures primary and absolute closure. Suture of the divided parietal pleura is generally not possible, and reliance is placed chiefly upon the approximation of the muscular coverings. In his most recent experimental work upon animals Sauerbruch has adopted a pericostal stitch where intrathoracic manipulations are carried out through rib separation instead of resection—this method of closure being especially suitable in young subjects. Where muscular elements are removed with a rib tumour, a cutaneous flap alone may be rendered air-tight by reinforcing the line of interrupted sutures with a continuous stitch of fine silk running close to the edges of the wound. Where the skin has also to be widely removed with the underlying muscles, tumour and ribs, the visceral pleura may be stitched to the margins of the thoracic defect.

In considering the technique of long suture, Küttner has found that the actual suture of all small wounds of the lung with fine silk is to be preferred to the method of Tiegel, who relies upon the application of styptics (chloride of iron) or the mixture of fibrin ferment solution with one per cent calcium chloride recommended by Wright. Fine silk is to be preferred to catgut. The needle should be inserted near the margin of the lung wound and, where possible, carried around the closed angle before emerging upon the opposite side. Lung tissue in the human subject is much more resistant than is generally supposed, and it is quite possible to catch and tie the vessels in a large incision surface without difficulty. A special pleural stitch is not recommended by the author as it tears more easily than one which includes the underlying lung parenchyma. Only in superficial tears does the single pleural suture come into consideration. While air beads invariably escape from the suture tract, the closure is always sufficiently tight to prevent the development of pneumothorax owing to the rapid formation of adhesions. Küttner considers that all complicated lung-suture methods, as for example the scaffold stitch (*Gerüstnaht*) of Tiegel, are superfluous.

In considering the value of pressure difference methods in general, the writer is convinced that their introduction has marked a great advance in pulmonary surgery. Küttner feels that he is able to open the thorax with as much confidence as if he were performing

a laparotomy. Never has he observed any change in the condition of the patient even on the sudden opening of the pleural cavity to the extent of twenty centimetres and more, as is necessary in oesophageal operations. The objection urged especially against the use of positive pressure, that it favours aspiration, is not supported by the author. Küttner, however, employs the assistance of skilled anæsthetists only, and in cases of bronchiectasis and lung abscess takes the preliminary precaution of emptying the cavities, as far as possible, by posture. An interesting observation of the author is that in perforating bullet wounds and in the separation of adhesions where there is escape of air, collapse of the lung does not take place. Even the opening of the larger bronchi does not result in collapse.

In the selection of an apparatus Küttner finds that positive and negative pressure are equally valuable. Personally, however, Küttner prefers the positive pressure apparatus of Brauer for the reasons that the surgeon operates under normal conditions, that contact with the anæsthetist is more direct, and that asepsis may be more easily maintained: in the words of the author—"it is most striking that with both methods at our disposal we give the preference spontaneously to positive pressure." With the apparatus of Brauer, too, must be noted the possibility of rapidly changing the pressure, which is a decided advantage, not only on account of the prompt and desirable effect which sudden increase of pressure has upon the pulse, but also in the localization of foreign bodies or diseased areas, as collapse may be permitted without danger if one has certain means of restoring promptly the intrapulmonic pressure. With regard to the Sauerbruch chamber Küttner states that although he has never been handicapped by the negative pressure and the heat, the separation from the anæsthetist is a great disadvantage. In narcotic complications the presence of a third person is necessary at the telephone to keep the surgeon and the anæsthetist in touch. Moreover the anæsthetist is frequently unable to observe the respirations of the patient owing to the dimming of the windows.

Küttner has almost constantly used ether. In the two cases of aspiration pneumonia mentioned in his paper chloroform was the anæsthetic employed. Another point in favor of the Brauer apparatus is that under positive pressure oxygen may at any moment be given.

MEDICINE.

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

GEORGE FETTEROLF, M.D.: "The Anatomic Explanation of the greater amount of vocal fremitus and vocal resonance normally found at the apex of the right Lung." *American Archives of Medicine*, 1909.

The first part of this article is concerned with the historical consideration of the above conditions, and quotations of authorities. In the second division one's attention is directed to the anatomic considerations already referred to in the quotations made. Here the author considers the course of the trachea and its relations and bifurcation, the caliber of the bronchi, the angle of origin of the bronchi and the length of the bronchi, as well as their direction. He confirms the observations of others, that there is a difference in the caliber, the right being wider than the left; that the angle of the right bronchus is about 25 degrees and that of left bronchus about 45 degrees with the body axis, and that there is a slight difference in the length of the two bronchi. The third division of his paper contains a discussion of the accepted explanations of this difference between the two apices of the lung, which may be briefly reviewed. There are three of these, one being the more direct continuation of the right bronchus in the line of the trachea; another the shorter distance from the bifurcation of the trachea to the right apex, and the third the greater caliber of the right bronchus.

With the first the author does not agree; he contends that what is lost at the bifurcation of the trachea is gained further on at the subsequent branchings of the bronchial system, for he says that reduced to the last analysis, vocal sound waves transmitted by the air current to the apex must pass through an angle of 180 degrees; they must pass down, they must pass laterally, they must pass up. This truth applies with equal force to both sides. With the left system of tubes 45 of the 180 degrees are subtracted at once, while on the right side 25 degrees from the 180 are subtracted at once, leaving in the former instance 135 degrees as opposed to 150 degrees in the latter to be travelled in order to reach the apex.

Regarding the theory based upon distance from the bifurcation of the trachea to the apex, the writer admits that there is a shorter distance on the right than on the left, but he is not inclined to consider this difference to be so great as the accepted figures would incline us to think. Two mm. only, was found as the difference between the two sides as measured by Fetterolf. He contends that the two and half inches difference between the origin of the upper lobe bronchi seems to be

excessive, but granting that it is correct the writer points out that the lower position of the left summit would subtract considerably from the two and a half inches. Making all necessary deductions due to the length of the bronchi and the different levels of the apices it would appear that about 25 to 30 mm. was the measure of the difference through which sound waves would have to travel in the two lungs. The writer claims that it does not seem possible for two to three cm. of distance to make so great a difference as is normally found, as in our stethoscopes a shortening or lengthening of the rubber tube even to many inches seems to have no effect on the clearness or intensity of the sound transmitted.

The explanation based upon the difference in caliber in the two bronchi is no more acceptable to Fetterolf. He argues that while this may be responsible to some slight degree, it cannot markedly influence the condition. Since the right bronchus is wider than the left bronchus, and supplies a lung more voluminous than the left lung, the question is asked "would not the greater facility with which the sound waves are transmitted to the right bronchus be later lost at the apex on account of the greater area of peripheral area of pulmonary tissue to which these waves have to be distributed?"

The last paragraph deals with the author's explanation of the difference found in fremitus and resonance at the pulmonary apices. He points out that it has been assumed that the vibrations responsible for fremitus and vocal resonance are transmitted from the larynx solely by the bronchial and pulmonary air. The explanation here presented is that direct transmission of vocal vibrations from the trachea through the tissues of the superior mediastinum to the lung apices accounts for the difference, and the author supports this view by first pointing out that if the other theories are true the vibrations are transmitted against the air current in almost every instance. Again, the trachea in its thoracic course lies in contact with the lung on the right side, while on the left side there are three cm. or more of large blood vessels and œsophagus plus areolar and lymphatic tissue interposed between it and the apex.

FETTEROLF AND LANDIS: "Compression of the Pulmonary Veins the pressure factor in the etiology of Cardiac Hydrothorax." *Am. Jour. of Med. Sciences*, 1909.

The pressure factor in the etiology of cardiac hydrothorax has been hitherto considered as influencing the azygos major vein, either by direct compression of a dilated right heart, chiefly the auricle (Steele and Stengel), or by dragging the vena cava downward, and with it the azygos vein, drawing it tightly around the root of the lung and

thus compressing it. Hydrothorax thus explained implies that the pleura is drained altogether by the azygos veins and their tributaries and that the radicles of these veins have but few anastomoses. This paper contains several objections to this view and they may be briefly recalled:

(1) Only about two-thirds of the parietal membrane is drained by the azygos veins; (2) the collateral anastomoses of the azygos veins are so free and so numerous that, in the event of pressure, competent by-paths would soon be established and carry away any excess of fluid in the azygos radicles; (3) the vena azygos minor, emptying into the major, is subject to the same influences as the latter, and therefore the effusion should always be bilateral; (4) it is anatomically impossible for the heart, either directly or indirectly, to exert pressure upon the azygos major vein; (5) it does not explain purely left sided effusions.

Of these five it would appear that possibly the fourth is the most important in view of theories already quoted. By frozen sections and examination of organs *in situ*, these investigators demonstrate the truth of the fourth objection, and at the same time point out the untrustworthiness of the observations made where it was contended that the azygos vein was dilated through compression. The authors' explanation is an effort to show that the fluid comes from the visceral pleura and not from the parietal pleura, and the outpouring is caused, so far as the pressure factor is concerned, by dilated portions of the heart pressing on and partly occluding the pulmonary veins. They hold that the points in favor of their theory are that it explains equally well right-sided and left-sided and bilateral collections of fluid, and it also accounts for some intrapulmonary conditions found clinically and post-mortem in association with hydrothorax. An abstract of this paper can do but little more than state the facts set forth by the authors, but a careful study of their thoracic sections well repays the effort and the time and carries considerable conviction with it,

Greater frequency on the right side is due to the fact that dilatation of the right auricle is more common and more easy than a similar condition of the left side, and such dilatation is the only factor needed to cause damming back in the right pulmonary vein. On the left side in order to include both upper and lower veins there is needed dilatation of the left appendix and of the left ventricle, with possibly a retro-displacement of the ventricle septum or vena-appendicular septum—three factors as against one on the right side.

W. F. H.

KING AND STEWART: "Effect of the injection of Bile on the Circulation." *Jour. of Exp. Med.*, Vol. 11, Sept., 1909.

These experimenters worked with pigs' bile injecting intravenously into circulation of dogs. The bile was a mixed sample taken from at least 20 pigs, in order to avoid the possibility of individual variations. The conclusions which are reached in this study are as follows:

(1) We have confirmed previous work which shows that the injection of bile increases the tone of the vagus nerve, and that this action can be abolished after the administration of atropine.

(2) We have found that the amount of bile salts in a lethal dose in pigs' bile for dogs will, if injected alone, produce neither a fall in blood pressure nor a slowing in rate.

(3) We have found that the amount of pigment in a lethal dose of the bile will, if injected alone, cause death with slowing of the heart and lowering of blood pressure.

(4) We have found that the bile pigment in combination with calcium or sodium is less toxic than uncombined pigment.

(5) We have found that in experimentally produced jaundice the calcium content of the blood is increased, while that of the liver muscle and brain are decreased.

(6) We are of the opinion that increase in calcium in the blood is a protective mechanism against the circulating pigments of obstructive jaundice.

W. F. H.

Medical News.

THE OTTAWA MEDICO-CHIRURGICAL SOCIETY.

A regular meeting of the Ottawa Medico-Chirurgical Society was held on Friday evening in the Carnegie Library.

1. Paper—Forms of Nasal Obstruction.—Dr. J. D. Courtenay.
(Discussed by Drs. Minns, Hackney and Emery.)
 2. Notes on Dr. Sydenham's Practice of Medicine. Dr. H. B. Small.
 3. A Method of Administering the Pasteur Treatment for Rabies.—Dr. C. H. Higgins.
 4. Report of a Case of Fracture of the Os Calcis, recognized only by X-ray.—Dr. Campbell Laidlaw.
 5. A Report of a Case Having Temporary Paralysis.—Dr. McK. Bell.
 6. Specimens of (a) Endothelioma showing Giant Cells.—(b) Blood from a Case of Myelogenous Leukæmia, the Leukocytes being 300,000. (c) Typical Carcinoma of Breast.—Dr. F. W. C. Mohr.
- Dr. T. K. M. Siso, secretary Imp. Chinese Consulate General, was elected an honorary member.
- Dr. Nelson and Dr. Kearns were proposed as Associate Members.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The third regular meeting of the Society was held Friday evening, November 5th, 1909, Dr. W. Grant Stewart, President, in the Chair.

LIVING CASES: EXCISION OF THE ASTRAGALUS.

J. M. ELDER, M.D. This case, of which I wish to give you just a brief note, is a man aged 23 years, who fell on the 4th of September last from a height of 12 feet from the cornice of a roof, his weight coming down mostly on one foot. He was brought to hospital and a compound dislocation of the ankle discovered. The external malleolus was sticking out through the wound in the skin, and the foot was inverted. Upon enlarging this wound, with a view to cleaning it out and seeing the condition of the joint there, I found the astragalus in two pieces as the accompanying specimen shows. This is the more common fracture of the astragalus, that is, fracture of the neck from the body. The neck was completely turned round and out of place.

Profiting by the experience of my colleague and teacher, Dr. Shepherd, who had, I remembered very well, one case in which he had excised both astragali in a woman with excellent results, and knowing also that after replacement of the fragments in other cases they have generally resulted in ankylosis of the joint, I here removed the pieces through the wound and irrigated thoroughly, packed it with gauze and left it for a few days. The wound healed without incident and the patient left the hospital in about two weeks, and began to walk in six weeks, and for the past two weeks has been working at his trade as a joiner. As you see, he still is a little lame, but that will improve, and he really has a very useful ankle and foot.

Fracture of the astragalus, as far as the literature goes, has only comparatively recently been seriously considered, e.g. up to 1894 there were only 35 cases reported. But, as the writers say, since the introduction of X-rays, undoubtedly there are many more cases recognised. Many cases of so-called "bad sprain" must have been undoubtedly fractures of the astragalus. My practice in all such cases at the present would be to excise the astragalus. I do not think it is good practice to leave the fragments, no matter how exactly they may be replaced, for it has generally ended by necessitating excision to prevent a permanently stiff joint. With removal, the results are so good that I would practise it in every case. Tom Bergman cites a very interesting case where he got the fractured frag-

ments into perfect position, but six weeks later had to remove the astragalus in order to give the man a movable ankle joint.

CASE OF MICROPHTHALMUS.

GORDON M. BYERS, M.D., read the report of this case.

J. W. STIRLING, M.D. These cases are very interesting and are generally associated with defects elsewhere, it may be polydactylism, and it would be interesting to know if there are any other defects about this case. I have a case just now which I intend to bring before the Society, of Microphthalmus and congenital cyst.

G. M. BYERS, M.D. There were no other defects.

PATHOLOGICAL SPECIMENS: CARCINOMA OF THE ASCENDING COLON.

G. E. ARMSTRONG, M.D. I removed this mass of malignant disease from a woman aged 61 years. She was considerably emaciated and gave a history of suffering more or less from distress in the region of the tumour for a period of two years. In January last the first symptoms of intestinal obstruction developed and she describes very clearly the filling of the ascending colon and its gradual disappearance with gurgling. In July last, the tumour became palpable, the attacks of painful peristalsis became more frequent and the toxæmia from obstruction became apparent about this time. The tumour was unusually large and more fixed than usual, and before operation my idea was that probably I would be able to short-circuit the growth and relieve her of the obstruction. Her general condition did not justify one in attempting a large operation. Her red cells were less than three million and the hæmoglobin on two occasions was not over 50 per cent. On exposing the tumour it was found fairly movable in front and there were very few enlarged, palpable or visible glands, but on getting about it more, it was found that the right kidney was involved in the mass. It became a question of short-circuiting or removing the whole thing by a rather extensive operation. The left kidney was present and felt large, probably from hypertrophy from doing the extra work. The tumour seemed movable and did not present very great difficulty, and by tying the vessels before I divided them I was enabled to remove the lower part of the ilium, the cæcum and the ascending colon, the tumour and part of the transverse colon and the right kidney all in one mass. I then closed both ends of the open bowel and put the ilium onto the remaining part of the transverse colon by lateral anastomosis. That was two weeks ago and she has made a very smooth recovery and now seems to be all right.

The interest in this case is the unusual involvement of the kidney. I may say that these colon tumours are very favourable for operation.

They, of course, are not uncommon and are very slow growing as a rule, and the results obtained after the removal of these tumours are often very satisfactory. Personally, I have cases living eight and ten years after resection and in perfect health without recurrence.

CLIMACTERIC HÆMORRHAGES.

J. R. GOODALL, M.D., read the paper of the evening.

A. LAPHORN SMITH, M.D. I have very little criticism to make on the paper. The facts are all right but I would like to differ with the author as to the title of the paper. "Climacteric hæmorrhage" is in my mind a misnomer, for there is no such thing as climacteric hæmorrhage. My objection to this title is really in the interests of gynæcology, for it has been a misfortune that for 50 or 100 years back, people, and especially women, have thought that it is a natural thing to have hæmorrhages at about 40 or 45 years of age; and to my knowledge, hundreds of women who have died from cancer would not have died from cancer if they had not had the idea that these hæmorrhages were natural. I have a number of young friends who are trained to suspect cancer when there is a climacteric hæmorrhage, and not long ago one of them called me in consultation in just such a case. I operated on that lady the next day at the Samaritan Hospital and took that uterus out because I thought it was cancerous. Her periods had almost stopped at 43 but became profuse again at 45. When that uterus was taken out it was cut in two, and there was seen a furious epithelioma going on in the cornua. That woman's life was saved. Another case occurred in the same way. I operated two days later although nothing was to be seen on the cervix. But the symptoms were enough to make me suspect cancer of the uterus; so large and hard was it, that I removed it without any risk to the woman. If you do not wait till it has got beyond the uterus there is no risk from the operation. That uterus when cut open was found to be invaded with cancer beginning in the mucous membrane and almost going through the wall of the uterus just between the internal and external os. That woman is also alive. Another case in the Western Hospital occurred this summer of a woman aged 50 who was having more and more hæmorrhage every month, "climacteric hæmorrhages." I curetted her and submitted the curettings to Dr. Nicholls who said that he suspected cancer, and one of my theories is that if you suspect cancer in this region get the suspected growth out, do not wait till you are sure; the time to get out cancer is when you suspect it. On the strength of Dr. Nicholls' report I removed the uterus and that woman got over the operation easily and she

is very well now. Perhaps I did wrong to act so promptly but I do not think so. I have not had the scientific training which the learned author possesses, but, as one of the younger members said to me a few days ago, a pound of experience and a pound of high science mixed together would make a very good working formula, and that is one of the advantages of these meetings, you get the experience of the older men and the high scientific spirit of the younger ones. Let me explain how these hæmorrhages come. The author has mentioned everything, only to my mind he has not got the facts into right line. The way I see it is that first there is a lacerated cervix (you should hurry up and find this out); this prevents that wonderful process of nature called subinvolution which changes the muscles into fat and carries it away; with a lacerated cervix this does not occur, and the uterus falls back and blocks the uterine veins; this causes a back flow of the blood just as you get a varicose condition of the legs from wearing tight garters. Over and over again I have curetted these women and got away a thick mucous membrane full of varicose veins, and following this curetting she is cured provided the uterus is fixed up. Now and then there is a case where the curetting does not cure, but if it is well done and there is no cancer it ought to cure or greatly improve the condition. If the uterus is curetted thoroughly, passing over the whole surface three or four times and iodine and carbolic applied, this condition will clear up. By leaving in iodoform gauze packing for five days it sets up contractions of the uterus which closes the veins. The muscles are transverse in every direction and the vessels which pass through them are closed up by that. Dilatation, curetting, repair of the cervix and ventro-fixation can be performed at the same time.

The doctor has done well to speak of miscarriages as a factor in menorrhagia. In looking over my note books, constantly the patient says, "I have never been well since a miscarriage five, ten or fifteen years ago. Most women and some doctors think a miscarriage a small affair, but it breaks down the health more than half a dozen births at full time. There is a certain kind of endometritis which is not cured by one curetting but is sometimes cured by two. I have only seen four or five cases in which the curetting did not cure non-cancerous hæmorrhage and they were in cases where there was disease of the arteries, and in my old books on gynæcology this is mentioned. In those cases there is only one thing to do and that is hysterectomy. Another point is with regard to the uteri the doctor has shown; I would say that they are young fibroids caught at the right time. When you cut out a fibroid uterus

you will find that the bleeding area is multiplied ten or twenty times. The earlier fibroids are removed the safer and better.

F. A. L. LOCKHART, M.D. The Society is to be congratulated in having presented before it this evening such a scientific treatise as Dr. Goodall has given us. It has been intensely interesting to me and I am sure it has to every member present. I am sorry that Dr. Goodall did not do as Dr. Smith suggests, and that is lay more stress upon the question of carcinoma. To begin with I think we might antedate the onset of chronic metritis by at least five years. We come across quite a large number of cases of this condition from the age of 30 on, and of course we do come across cases before that, due undoubtedly to abortions and to unrepaired lacerations of the cervix preventing proper involution. I do not doubt but that this last is the more frequent cause of this condition of chronic metritis. I think that we cannot emphasize too strongly the difficulty of diagnosing cases of hæmorrhage about the climacterium. I do not know any class of cases which gives one more worry than the case of a woman losing more and more blood at each period and sometimes losing a certain amount in between the periods. There are so many causes, and carcinoma is one, that it puts the clinician in a difficult position to make a diagnosis. Of course the best thing to do is to curette and then act upon the advice of the pathologist. If he says that the scrapings are suspicious, we ought to treat the case as one of carcinoma and remove the uterus; if he says undoubtedly the condition is due to inflammation or hypertrophy of the endometrium, then of course the curettage ought to cure the condition. As to the source of the hæmorrhage in these cases of chronic metritis, I do not think there is any one at all who will dispute the contention that the hæmorrhage comes from the uterus itself and has very little dependence upon the ovaries. I have removed these and in some instances it has ceased, and in some not only the uterus was removed but the ovaries as well, and always in these cases where we remove the ovaries curettage is done at the same time and it may well be that this last cured the condition. In very many instances the hæmorrhage does not cease because we still have a disease of the arterioles and arteries in the actual uterus itself. The strictly histological aspect I confess I am not qualified to discuss with Dr. Goodall, and I must say that I am very grateful to him for this paper to-night.

D. J. EVANS, M.D. Dr. Goodall's most excellent paper has thrown a great deal of light on what has been to me a very dark and intricate subject, and I am very grateful to the writer of the paper for clearing up many matters in connection with the subject that have been

for some time troubling me. I had occasion not long ago to look up this subject and found it difficult to understand just how vessels of the pregnant uterus involuted and returned to their ordinary calibre. To-night I feel as though I had begun to see light.

I feel I am incompetent to criticise such a paper, but I think the author's findings, if correct, must add not a little to the burden of the obstetrician, as it must be apparent that upon him devolves the responsibility of seeing that uterine involution is completed.

I would like to express my belief that Dr. Goodall is probably correct in what he says about lack of involution being responsible for these hæmorrhages, for if one thinks back over one's work, one can find many things off-hand which bear out his theory.

One might ask the question, If after a subinvolution has existed for some time may not another pregnancy act as a curative agent by again stimulating the whole structure so that subsequently complete involution may follow the delivery? I think I have had such experiences and would like to ask the author if such is not the case.

W. W. CHIPMAN, M.D. I hope we are not unduly prolonging the discussion on this paper but it is a very interesting one at least to us in the department of gynæcology. Dr. Goodall has been working in Germany for the last 18 months, and we have been interested in the work that he has been doing, and confident of the result he would obtain, knowing the man and the conscientious kind of work he has been accustomed to do. I may say that when he returned with the fruit of his labours that that confidence was amply justified. I have had the good fortune to go over some of the work with him and to see his slides, and really they show very clearly and very beautifully the changes which he has spoken of to-night. Of course the subject itself, this subject of chronic metritis, fibrosis uteri, or subinvolution, is an extremely difficult one, and very few authors are agreed at all upon the matter. The trouble heretofore has been this, that for the most part these observers have not examined specimens enough, they have not examined the whole life history of the uterus; that whole question of the life history of the uterus has not been sufficiently brought into prominence. They have examined one phase of that life history and one phase only, and then have drawn general conclusions. One of the chief virtues of Dr. Goodall's work has been its thoroughness and its extent. He has taken the whole history of the uterus from its early to its late stages. It is the study of all these stages, the adolescent, the mature, and the senile, that gives a perspective, something definite, something fundamental to work from. In this way the work attains a true scientific value.

I sympathise a little with the author of the paper in the matter of his title, and can see the difficulty of selecting a title. As I understand, the paper is not an attempt to give a classic exposition of climacteric hæmorrhage; of course no attempt was made to cover such a theme as carcinoma of the cervix or of the body. It is a very difficult subject really to name for the reason that really very few are agreed at all on the pathology of the condition. To come back again to the pathological side of the question. As we know, the uterus is a rather singular organ, subject to intermittent strain during its life—the intermittent strain of the menstrual cycle and of pregnancy and labour. It is only to be expected that the vascular change consequent upon this intermittent strain would be clear and conspicuous. These changes Dr. Goodall has carefully followed out, and the use of the Weigert stain has been very satisfactory in his hands. You all know the microscopic appearance of the wall of the ordinary parous uterus, how the vessels possess thick swollen walls. When stained with eosin this wall appears as a pink homogeneous zone with little or no distinct cell structure. Heretofore we have spoken of this as a hyaline degeneration of the musculo-fibrous wall of that vessel. Now Dr. Goodall says that this wall is due to the swollen elastica interna, and that really we are looking at elastic tissue. Accordingly this is a distinct addition to the pathology of the uterine wall. This elastic tissue is obtained both in the wall of the vessel, and also in the musculo-fibrous wall of the uterus itself. He has worked this out in different conditions and has traced it very particularly here to-night. You can as a result clearly see how the term Chronic Metritis is a misleading one because after all it may not be, indeed is not, an inflammatory condition at all, for it is simply the fact that this elastic tissue in the walls of the vessels has not been sufficiently absorbed; that the absorption of the old walls, the walls of the large vessels of pregnancy, has not been sufficiently carried out. A good deal of stress has been laid on a torn cervix uteri as an ætiological factor in this condition. My own conception of the etiology of such conditions is this, that a torn cervix leads to a certain amount of septic absorption, and it is this septic absorption which leads to the subinvolution, the Chronic Metritis. If this absorption had ceased, and frequently it has ceased in the old tears, why then the mere repair of an old tear will do little to prevent the subinvolution. I feel certainly like congratulating Dr. Goodall upon his work, and also feel proud that this work has come from the department of gynæcology, and I also feel like congratulating the Society upon this addition to its noted papers.

WESLEY MILLS, M.D. The more one is conversant with the latest

principles of modern biology the more he will see how remarkably scientific a paper we have had. I would especially call the attention of the Society to the recent Lowell Lectures by Professor Minot of Harvard. These lectures have been published in the "Popular Science Monthly" of last year, and they are upon the subject of Age, Growth and Development, Rejuvenation and Decay. When one reads these admirable lectures and then heard Dr. Goodall's paper he must realise how in detail this pathology fits in with this most recent biology as set forth by Professor Minot and others. It seems to me that Dr. Goodall has been intent on showing us the anatomical grounds for hæmorrhage and Dr. Smith would rather lay stress on its physiological aspects. If Dr. Goodall has done no more than simply present the pathology of this subject he would have given us one of the most scientific papers that has ever been presented to this Society since I have been a member of it. Dr. Chipman's view appeals to me—that it would be better not to refer to this condition as an inflammation but as a failure of involution, as a defect in a part of the cycle that Dr. Chipman has so illuminatingly referred to. Perhaps I may be permitted the gratification of expressing my satisfaction as one who had at one time some little to do with Dr. Goodall when he was a student. I think I see evolution and no failure in him.

J. C. CAMERON, M.D. The full significance of this paper cannot be grasped in one evening, it will need time for thought and study. I am sure that then a good many old cherished theories will have to be modified, that many dark places will be illumined, and perhaps many doubtful perplexing cases will be cleared up and a rational explanation given of them. From a practical point of view, this paper has appealed to me very strongly; it has emphasized the great burden which we as teachers of obstetrics have to bear, and the responsibility resting upon us. We should insist even more strongly than we have been accustomed to do, upon the great and far-reaching effects of subinvolution, and also upon the grave pathological significance of early abortion and repeated abortions, facts which by the general profession are not sufficiently realised. And for all of us as practitioners it has a great and wholesome message, namely, that our responsibilities in attending a woman in confinement do not end when we have paid her a last visit on the tenth day. We have not done our duty by her if we dismiss her without having made sure that involution is complete. We should foresee the possible complications of a later date and try to guard against them. With regard to early abortions and repeated abortions, we should not regard them as lightly as we are too often inclined to do, but must

remember the possible and probable after-effects. If there is one thing more than another which experience brings home to me more and more, it is that practitioners do not give sufficient care to cases of abortion. I am quite sure that if we would revise our ideas respecting subinvolution and abortion, there would be fewer cases of chronic metritis.

J. R. GOODALL, M.D. There are only two points to which I have to reply and that is Dr. Evans' question as to whether a subsequent pregnancy will relieve the woman of a chronic metritis. I think that question can be answered most emphatically in the affirmative. After a woman has been delivered of a child and has suffered from some infection that will not affect subsequent pregnancies but which has left the uterus in a condition of chronic subinvolution, if her next pregnancy and puerperium are normal her uterus will return to the normal, just as a fibroid of the uterus may be absorbed after a pregnancy. As to the question of the title of the paper, I debated a long time on this. I think a new term should be introduced in the gynæcological text books to denote this disease. Considering the etiology of chronic metritis, the name that appeals to me most is "Chronic Subinvolution," which term not only defines its etiology, but also eliminates the idea of inflammation, which, as we know, is very frequently not present at all, but which would be implied in the name "chronic metritis".

TETANY OCCURRING DURING OPERATION UPON THE STOMACH.

A. E. GARROW, M.D.

WESLEY MILLS, M.D. The question as to the causation of tetany is an interesting one. I think it is pretty well known that the nerves are in an irritable condition, that is they respond to various kinds of stimuli very readily. Experiments throw perhaps some light on this question. It was early observed when the thyroid began to be removed experimentally that some of the animals developed tetany. I made some experiments at that time and most of the dogs and all the cats did die in a condition of unusual muscular excitability, and prior to death they had developed tetanic symptoms. This condition was then believed to be due to changes in the metabolism of the body owing to removal of the thyroid. I think since then it has been thought to be really due to removal of the parathyroid, which in these animals is present with the thyroid. Now the question is: Is the immediate cause of the tetany the condition of the nerves or of the centres? The professor of the Diseases of Children in Leipzig was the first to make experiments on the cortex of newly-born animals. I took up that work and extended it to different kinds of animals, and at the same time studied

the mental development of these young animals. Now, as was pointed out by my predecessor in this research, in the animals that are born in a very defective condition, blind and deaf for example, the cortex does not respond to electrical stimulation, and Fleischig has since shown that myelinization of the brain is very incomplete at birth, so that the infant's brain is at birth an imperfect one. What I would like to know is if a young child, say less than a month old, can have tetany. If he can, then it cannot be an affection of the centres, but the immediate cause must be a condition of the peripheral nerves, if we are correct in referring the condition to the nervous system at all.

D. J. EVANS, M.D. I have never seen a case of tetany in an infant under a month old.

The fourth regular meeting of the Society was held Friday evening, November 19th, 1909, Dr. W. Grant Stewart, President, in the Chair.

LIVING CASES: RADICAL MASTOID OPERATION.

W. H. JAMIESON, M.D., and E. H. WHITE, M.D.

G. H. MATHEWSON, M.D. I also would like to congratulate our colleagues of the Royal Victoria Hospital and to point out the excellence of the scar behind the ear which results from the fact that now-a-days we do not leave the skin incision half open as was done previously, and is still done on the Continent, but sew it up completely and treat the wound through the external auditory meatus. The result is that you get a nice clean scar and have all the drainage you need through the external auditory meatus.

I exhibited two cases some years ago. In one I removed the matrix and in the other I did not. One case had shown prominent labyrinthine symptoms and in that case I removed the matrix. In these operations one cannot go too deep, and I simply curetted the place where this cholesteatoma was lying and got as much of the matrix as I could. I also did skin grafting in this case, which did not take very well though the ultimate result was excellent.

R. H. CRAIG, M.D. I wish to congratulate Drs. White and Jamieson upon the successful result of their cases. I did my first radical operation upon the ear nine years ago, and placed it on record before the members of this Society. I have had the opportunity of doing many radical operations since that time, but if possible I prefer to preserve the ossicles and do the so-called Heath's operation and thus preserve as much of the hearing power as possible. Of course where cholesteatoma is present, the radical operation is

often indicated, but even then one cannot lay down any definite rule. In such cases one must be guided by general surgical principles.

H. S. BIRKETT, M.D. I wish to express my appreciation of the work which my colleagues have presented to us this evening, and to congratulate them on the results obtained. These patients represent a group of cases which has been until the past decade rather a source of worry to the otologist on account of the rather alarming symptoms which this condition is apt to give rise to. Owing to the work of many otologists on the Continent the operation, which has been introduced by them, has been so perfected that the dangers associated with such conditions as these under consideration to-night have been practically eliminated. Otologists, however, are practically unanimous that the radical operation is the proper measure in dealing with this class of case, but the one point in question is that of the dealing with the matrix. On the Continent we find the camps divided into two classes,—those which are strongly in favour of the removal of the matrix and those strongly in favour of its being left. Amongst those who are opposed to leaving the matrix are:—Politzer, Heine, Kirchener and Ostmann; these are representative men in otology and they express doubt as to the advisability of leaving the matrix. On the other hand, we find the opposite side ably represented by Siebenmann, Habermann and Hartmann. These men we find are very strongly in favour of leaving the matrix as a preliminary to the epidermization which takes place, and which is so well evidenced in these two cases here on exhibition. However, there is one person, Koerner, who does not express himself quite so emphatically. He takes the stand that when the choleostoma is rather sodden and the underlying bone diseased, it should be removed, but should the matrix be found lying upon dry healthy bone, he is in favour of its being left; and it seems to me that this is the broader view to follow. The above-mentioned author, from his pathological investigations, has found that this choleostomatous mass dips in the Haversian canals, and if left would necessarily endanger the life of the underlying bone. But the fact that it might be left and we may get excellent results, is seen in the two cases exhibited here to-night. There is one question which I would like to ask Dr. Mathewson. If I remember rightly he exhibited a case some two years ago before this Society in which I think he removed the matrix. I would like to know what the ultimate issue of that case has been, as it is rather in contrast to the cases exhibited to-night.

H. S. MUCKLESTON, M.D. Something in Dr. Birkett's remarks reminded me of a conversation I had with Siebenmann's assistant, Dr. Nager. On an examination of sections of the ear showing this

condition, I remember drawing his attention to certain cystic spots not actually within but above the matrix and lower than the actual cholesteatoma itself. The spaces were filled with epidermal debris and pus. To my question, "won't you have trouble later on with these?" his reply was that he did not interfere with these masses but preferred to leave them, and the results were uniformly satisfactory. The inmost recesses of the tympanum, e.g. the lower part and the posterior wall, cannot be reached with any degree of efficiency, and he left this untouched. I think the practice of the moderate operation, the so-called Heath operation, originated with the Bezold school of Munich, of which Siebenmann is one of the most prominent disciples: local jealousies between the different schools would account in part for the tardy acceptance of the method by men elsewhere.

G. H. MATHEWSON, M.D. Two points are of interest in connection with these cases. First of all this operation will not cure every case; there are a certain number of cases that do not remain dry after such an operation; and secondly, that the operation is not perfectly safe as I think Dr. Birkett has remarked. In the Manhattan Eye and Ear Hospital of New York, there have been quite a number of deaths from the radical operation in patients who were operated on solely because their ears had been running for such and such a number of years, such patients dying of intracranial complications.

E. HAMILTON WHITE, M.D. In bringing forward this modification of the radical mastoid operation I had no wish to create the impression that it was of universal application. It is a special method to be used in a special class of cases, namely, those complicated by the development of cholesteatoma. In my opinion this is the most important type of chronic middle ear suppuration, giving the greatest danger of intracranial involvement. As regards what has been said of the dangers and unsatisfactory results which may follow a radical mastoid operation, I think these are quite as uncommon as after any other major operation if done by a properly qualified surgeon. The operation certainly requires special training and some operative experience to get the best results. I think some of the disappointments result from operation upon cases whose chronicity is due to the condition of the Eustachian tube, which cannot be dealt with radically with any assurance of success. As "Heath's operation" has been mentioned, I may say that in the opinion of his colleagues in London it is not even a new method. As I understand it he opens the antrum by removal of the posterior upper wall of the meatus. I can see no indication for or advantage in such an operation. If the antrum is to be drained it can be opened much

more easily and safely by the ordinary route. His conservatism is reserved for the outer table of the mastoid which may be removed with impunity, whereas he operates in the region of the deeper and more vital structures without the advantages of a free exposure.

PATHOLOGICAL SPECIMEN: MICROPHTHALMUS AND
CONGENITAL CYST.

J. W. STIRLING, M.D. I mentioned at our last meeting, in connexion with Dr. Byers' case of Microphthalmus, that I had a case of congenital cyst associated with microphthalmus and I have the specimen with me to-night. The patient was a child about three months old when brought to me; the eye affected was the right eye. There was a large swelling about one half inch in diameter behind the lower lid; it was bluish in colour and on palpation there was fluctuation. The upper lid was markedly retracted and as far as I could see there was no sign of any eyeball, but on deep palpation a small rounded body about the size of a very small marble could be felt far up and back. After keeping the case under observation for a short time I arrived at the conclusion that it was one of these rare cases of congenital cyst associated with microphthalmus. I enucleated this minute eye and the cyst. As you likely all know, in the lower inferior quadrant of our eyes there is congenitally a cleft in the secondary ocular vesicle and through this the mesoblast projects into the anterior of the globe. This as a rule in the 6th week of life of the fœtus closes up. But sometimes, from one reason or another—possibly thickening of the mesoblastic tissue—the healing is incomplete. If it be incomplete at the anterior end you may get what is commonly known as coloboma of the iris, or it may be of the ciliary body or only of the choroid; or if the cleft extends back into the optic nerve, of the nerve itself. In this case there had developed a cyst in this imperfectly closed cleft and it has enlarged so that the dilatation has developed into the form of this cyst which is projected forwards behind the lower lid. As a rule it is found to be lined by a more or less developed retina and sometimes choroidal tissue. During the enucleation of this growth and eye I accidentally punctured the cyst and there was an escape of a straw-coloured alkaline fluid. The eye itself is very small; the cornea although small is transparent; there is an anterior chamber and I presume also a lens. These are the main points in connexion with the case and when sections are made of the specimen further details will be forthcoming. These cases are quite rare and interesting. I will pass around photographs of the child and also a drawing which will help to illustrate the case and for which I am indebted to Dr. Tooke.

**TWO CASES OF SO-CALLED DOUBLING OF THE PUNCTA
LACRIMALIA.**

FRED. T. TOOKE, M.D.

G. H. MATHEWSON, M.D. These cases are very interesting. I have seen quite a number of these so-called double puncta. All that I have seen have been in the lower lid, and the second punctum, the inner one, has been flat and nearly the same size as the other but perhaps a little bit longer. It had not struck me that it was flat until my attention was drawn to this fact by Dr. Tooke. Those that I saw had no effect on the patient, the tears went down the canal just as well as in normal cases.

**AMBLYOPIA EX ANOPSIA WITH ACQUISITION OF GOOD VISION
AFTER LOSS OF THE SEEING EYE.**

G. H. MATHEWSON, M.D.

There has been much controversy as to whether such a condition as amblyopia ex anopsia, i.e. blindness or very poor vision from non-use of the eye, really does occur. The following case, which is unique in my experience, though a few similar cases have been reported by others, gives conclusive proof that there are eyes which do not see simply because they have not been trained to do so. On May 27, 1908, W. G., a boy of thirteen years of age, was brought to me with a badly damaged eye. The history given by the boy's mother was that while playing with some companions on the previous day he had been struck a violent blow on the left eye by a large stone thrown by one of the other boys. Both the boy and his mother stated also that he had never had good sight in the right eye. On examination I found that the left eyeball was ruptured and disorganised. On June 2nd I enucleated the left eye and after an uneventful convalescence the boy left the hospital a week later. At this time the vision of the right eye was found to be no more than ability to count fingers at 12 feet, but with the addition of a plus 4.00 D. spherical glass it was improved to 6-36. He was unable to read even coarse print with the glass. After a second examination under homatropin, which showed about the same degree of refractive error, I gave him the plus 4.00 D. spherical, telling his mother that there was some hope that his vision would improve. Five weeks later she brought him back and I was both surprised and delighted to find that without any glass he could see 6-12, while with the glass he could see 6-9 and read the finest print with ease.

**THROMBOSIS OF THE CENTRAL VEIN OF THE RETINA WITH
RECOVERY OF NORMAL VISION.**

These cases of thrombosis of the retinal vein are not common and

usually occur in people between 60 and 70-years of age. The prospects for recovery of normal vision are bad. Schöbl says vision may be partly restored, while Ball says that complete restoration of vision is hardly to be expected. I have seen two cases, in the first of which vision was entirely lost, while the second I shall now briefly narrate. On March 16, 1908, I was asked to see H. C. P., a man of 38 years of age, who complained of sudden loss of sight in the right eye. The history he gave of the trouble was as follows:—On February 20th, while looking out of the window he suddenly became blind in the right eye. He had never had anything wrong with either eye before. He had no pain in the eye nor has he any now, nor any other symptoms beyond the blindness. Previous history: Right leg amputated at the junction of the upper with the middle third of the thigh at the age of eight, on account of what was probably an osteomyelitis. The stump is healthy. Present condition: Circulatory system normal except that the radial artery is somewhat thickened. Temporal arteries are normal. Urine normal. Blood normal. Ophthalmoscopic examination showed great swelling of the optic disc and retina, extreme congestion and tortuosity of the retinal veins. Where the arteries can be seen they are narrowed. The swelling of the disc reaches a height of 5 dioptries. There are a great number of hæmorrhages, nearly all flame-shaped, arranged in a stellate manner about the optic disc, while many other hæmorrhages are scattered irregularly in other parts of the retina. Two white patches of exudate were to be seen in the neighbourhood of the disc. There was no red spot in the macular region. R.V.—Fingers at 12 feet. L.V.—6-16. The Calmette Tuberculin test gave negative result. He was given inunctions of mercury, also potassium iodide, and pilocarpin sweats with little effect. On April 5th there were many less hæmorrhages, perhaps only 1-10 the number seen a month previously. There was still great swelling of disc and retina. On Feb. 19, 1909, he returned stating that he could see with the right eye, and I found the R.V.—6-6. L.V.—6-6. The right fundus showed absolutely no abnormality beyond one or two slate-coloured spots, probably on site of former hæmorrhages. I wish to express my thanks to Dr. Finley for permitting me to publish the report of the physical examination, etc., of the case which is taken from his records.

R. A. KERRY, M.D. Dr. Mathewson's first case is very interesting, Recovery of sight after a venous thrombus, though infrequent, is not so rare, as in the case of embolism of the artery. Recently a patient came to me with complaint of sudden blindness coming on eight days previously. The fundus showed a typical picture of

embolism of the central artery, although the blocking of the vessel was probably not quite complete. There were numerous venous hæmorrhages about the disc, the macula was bright red, the fundus about it yellowish-red, instead of dead white as is often the case. The veins were somewhat congested, the arteries of moderate size and showing broken blood-columns, no reversed pulsation was observed. There was a trace of albumen in the urine, and Dr. Robins, who kindly took the blood pressures, reported it very high, a little over two hundred. She was given treatment to reduce the high pressures and in a few days reported the sight as improved. At this time the arteries contained continuous instead of broken columns of blood and the fundus appeared to be clearing. If the opportunity should occur I will report further progress of this case.

Regarding Amblyopia ex Anopsia I have made a practice of correcting these cases for a number of years, usually with good result. The time required to develop sight varies a good deal. I have seen an eye with less than 6-60 vision come to normal in a little over a month. At the other end of the scale, I may instance a case with rather high myopic astigmatism in which corrections produced but little improvement. After a year the left eye had developed to nearly normal, while the vision of the right eye showed but little gain. Yesterday I operated for divergent strabismus upon an eye, which, excepting for the divergence, was practically normal and in which the sense of form was quite undeveloped. There is in many cases some other factor besides non-uses of the eye, a want of capacity for function in the nerve tissue or sometimes a cerebral condition which interferes with the proper perception of impressions made upon the retina. A few years ago correction was not given for these eyes. I now always prescribe a glass, excepting in cases in which the amblyopic eye requires a very strong lens and the fellow eye none.

G. H. MATHEWSON, M.D. In reply to Dr. Martin I would say that recovery of normal vision in cases where retinal hæmorrhage has occurred is quite common. The prognosis for the recovery of vision depends on the number and size of the hæmorrhages, their depth in the retinal tissue, their nearness to the macula lutea, and finally whether the blood leaks through into the vitreous body. Very often the hæmorrhage is not the main factor in causing loss of vision, it being only an accompaniment of other lesions. In the case which I have just described the chief cause of the loss of vision was the great œdema of the retina which caused pressure on the nervous elements. I was asked to see a case in Dr. Finley's wards about two years ago, a man with very severe anæmia, secondary

to malaria, whose retina showed a great number of hæmorrhages, some very large and some situated in the macular region, with great loss of vision and yet he recovered normal sight. With regard to the other case, this boy had simply enough sight to move about, and yet with proper glasses and the strong impulse to use the eye from having lost the other, he had almost normal vision within five weeks. I believe that formerly he had mentally suppressed the images or sensations derived from the poor eye.

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