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SMALLPOX AND VACCINATION.*

BY

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The following are simple remarks on a subject which is at the present time of lively interest to us, and which I desire to study with you.

For over a year smallpox has existed in our community and if we do not have recourse to vaccination, which is the only efficient means of fighting this dreadful disease, it will surely last for a good while yet. In the country, people, as a rule, are not vaccinated, nor do they isolate patients or disinfect houses. And what will be the result? As long as such a state of things exists, we shall have smallpox, and country places will infect cities.

We have to go back as far as the seventh century to find the first cases of smallpox mentioned in the history of medicine, but in the sixteenth century we find that this disease had spread everywhere, and, from that time until now, notwithstanding the efforts made by health authorities to stop the progress of variola, the number of its victims has been exceedingly great. This disease is generally manifested in an epidemic form and it is as such that it has caused the greatest ravages, especially among nations not protected by vaccination.

Variola is a disease having the following characteristics: It is eruptive, febrile and essentially contagious. As a rule persons do not contract smallpox more than once, although we have seen individuals who have had it many times. It can be transmitted from the sick man to the healthy in either of two ways; directly or indirectly. The liquid or pus that comes from the pustules, when put in contact with

* Read before the Montreal Medico-Chirurgical Society, Feb. 6, 1903.

skin deprived of its epidermis infects the body of a healthy individual; this is called the direct contagion. The microbe of variola enclosed in the organic particles which fall from the skin during the period of desquamation is closely connected to this organic debris; it has an extreme vitality and can thus live for years. Owing to the mobility of these particles and their being almost infinitely divisible, the microbe can be carried a great distance and contaminate persons who have never been in contact with those afflicted with smallpox. This is the indirect contagion. There is no spontaneous evolution for variola, nor for any other contagious disease. Variola always comes from an infected individual and the strength and effects of its poison varies according to the susceptibility of person and the nature of the epidemic. Both sexes and every age are apt to catch the disease, only those vaccinated being beyond the reach of this terrible plague. Anything that lowers vitality in the human system can be considered as a predisposing cause.

We have had at the Civic Hospital from October, 1901, to October, 1902, 503 patients affected with smallpox; 270 male and 233 female. Adults, 306, children, 152, and 45 babies, of which two had contracted the disease before their birth. We have had also an old man over eighty years of age and about ten persons of over forty years, a fact that shows that smallpox does not spare old age more than infancy. This epidemic was particularly mild, 58 had a serious attack, 143 an attack of medium intensity and 302 a very slight one. The rate of mortality was 2.7 per cent, yet I have here the temperature charts of very serious attacks contracted from persons having had a mild one, a fact that proves that a mild epidemic such as we have had for over a year is not without its dangers.

Symptoms.—From the first the symptoms show that the disease is in full activity. In variola, fever has a particular character which is very interesting to study. In the beginning there is a slight elevation of temperature,—about one degree—which lasts but a few hours (from 6 to 12) and is not constant. Twenty-four hours after there comes a marked chill or repeated chills, followed by vertigo, a feeling of lassitude and drowsiness, and painful constriction of the throat, nausea, vomiting, lumbar pains and violent headache. By twenty-four hours later, the temperature rises as high as 104° , 105° and even 106° , showing a slight diminution in the morning, but a considerable elevation in the evening. The skin is hot and dry and gives a disagreeable sensation to the one touching the hand of a person affected with smallpox. This disagreeable sensation cannot be well defined, but I call your attention to this fact and if ever you come in contact with a patient having smallpox, you will not only feel it easily but

never forget it. This elevation of temperature falls somewhat towards the second and third day, when the eruption appears. This first elevation of the temperature is undoubtedly due to the efforts made by nature in its struggle to throw off the poisonous germs and the fall of temperature, coinciding with the appearance of the eruption over all the body, is of great importance from a diagnostic point of view. To me this symptom is pathognomonic of variola. On being called in consultation some months ago to one of our principal hospitals, this fact alone gave me the opportunity of making an early diagnosis and of isolating the patient. No other disease has this peculiarity in the temperature. But, unhappily, when we are called to make a diagnosis in this disease this symptom is often wanting, the temperature not having been taken for the three days. Sometimes, although very seldom, an eruption of scarlatiniform appearance takes place, and what may greatly contribute to make one believe that it is true scarlatina, is that the rash lasts but twenty-four hours.

Eruption.—Towards the third day after the starting of the disease the eruption appears with the lowering of the temperature. It is characterized, first, by a papule, a small red nodule, hard to the touch and which gives a sensation of roughness to the finger, as though in contact with sand. These papules grow gradually and towards the third day after their appearance they become vesicles, whose contents are either clear or yellow. This vesicle has a pearly color and is often umbilicated. It is surrounded by an inflamed areola, which is the seat of an intense itching; little by little the matter contained therein is transformed into pus; and, towards the sixth or the seventh day after the appearance of the papule, there is noticed a new elevation of the temperature, which rises from one to two degrees in mild cases and in the more serious cases reaches 104° , 105° , even 106° and 107° . It is the ordinary manifestation of reaction provoked by suppuration. Eight or nine days after the papule is observed the pustule ruptures, and from it escapes a sero-purulent liquid, sometimes tinged with blood. In some places, where the epidermis has become very much thickened by friction, such as the sole of the foot and the palm of the hand, the pustules dry up without breaking. It is then necessary to remove the epidermis and its crusts before discharging the patient, as there would still remain material which might be a source of infection. This eruption is not confined to the skin only, but appears also on the mucous membranes; sometimes the tongue, the palate, the tonsils, and the pharynx are all covered with it. The patient coughs very much and can hardly speak, deglutition is most painful and he cannot take any food, a fact that is liable to entail grave complications.

Desquamation.—The pustule having ruptured the pus and the epidermis dry up and form crusts more or less thick and more or less adherent, which fall between the 12th and the 20th day after the appearance of the papule. With the desquamation, convalescence begins, and is more or less prolonged, lasting from ten to thirty days. The first crusts fall, leaving a more or less ulcerated surface on which another crust is formed and which falls again a little later and so on until a new epidermis covers the skin.

I have here before me the temperature chart of a child who came to the hospital with his parents. As may be seen, on the 30th January the temperature rose one degree and became normal the next day. On the 31st, it rose to 102°, a slight diminution occurred on the morning of February 1st, and in the evening it reached 105°; on the evening of the 2nd, it fell to 100°, and on the 3rd day to 99°, when the eruption appeared. The temperature kept about normal until the eighth, when the pustules were formed. On the 8th day the temperature rose again to 101° and declined gradually to normal on the 12th. On the 24th of February, this child, after twenty-six days illness, left the hospital completely cured. It is a typical case of variola in the mild form.

Pathological Anatomy.—The anatomical lesion has its seat in the malpighian body and the more deeply the malpighian body is affected, the more grave is the disease and pronounced the symptoms.

Papule.—Under the influence of the specific microbe of variola, which has not yet been recognized, but which according to present bacteriological knowledge is classified with those of parasitic origin, such as those of carbuncle (charbon), diphtheria, tuberculosis and typhoid fever. This specific germ, it is to be hoped will soon be known. Through the influence, as I have said, of this germ, a space is formed between the nucleus and the protoplasm of the dermic cell, detaching the nucleus. These spaces keep on increasing, until after a time they join together and form cavities. The vessels of the derma dilate and become engorged with blood and a great number of the nuclei are extruded and accumulate around the papillary vessels.

Vesicle.—This is a more profound and marked alteration of the malpighian body; the dermic cells have joined together, leaving only a part of their walls forming tracts which are parts of cells enclosed and separated from one another and which contain the debris of cells, nuclei and sometimes globules of blood, the whole floating in a serous liquid. We have also noted the presence of a very fine granulation that some think to be the microbe of variola, but this opinion has not yet been demonstrated to be true. Such is the seat of infection found in the

middle part of the malpighian body. The upper wall of this seat is formed by the horn-like tissue, the stratum lucidum and one or two rows of the superior cells of the malpighian body. They tend to proliferate and contain many nuclei. This process starting from the centre of the papule extends more and more toward the periphery and in the more advanced periods, the malpighian body is filled with cavities more or less regular and more or less enclosed by thin tissues, but not completely so. As the lesion gradually increases, these spaces are filled with a liquid containing not only globules of pus and epithelial debris, but also a considerable number of germs, especially the streptococcus and staphylococcus. This liquid irritates the derma and tends to make it proliferate and also transforms the cells of the derma into kind of shells, which, when united together, form the reticulum. Thus there are purulent foci formed in the altered malpighian body.

Pustule.—This period gradually succeeds to the preceding one, the pus becomes more and more abundant; the tissues are broken down and destroyed, so that there exists in the centre of the pustule a cavity which laterally communicates with other and smaller cavities. The derma all around the pustule is much infiltrated with leucocytes, which sometimes accumulate to such an extent that the papillary tissues are necrosed by want of nutrition. The white and smooth cicatrices, the indelible marks of smallpox are thus formed.

Period of dessication.—It is characterized by the drying of the contents of the pustule, which is thus transformed into a yellow or brownish mass, more or less round in shape. Sometimes this crust adheres only to the derma, this takes place when the lesions are limited to the superficial tissues of the derma, then the regeneration of epithelium takes place rapidly and the patient is cured without being marked by any cicatrices. The name of varioloid was given to this last manifestation, but it is nevertheless variola and can be transmitted to a healthy individual, whose system is in a condition to develop and multiply the microbes. In some cases, especially in certain epidemics the alterations in the papillary body are more pronounced, the action of the virus on the derma is more intense and causes necrosis of the tissue connected to the vesicle and forms another tissue which will leave a more or less large cicatrix.

Vaccination.—The ancients having noticed that a person did not as a rule contract smallpox more than once in his life, practiced inoculation by using either matter or scabs taken from a patient slightly affected with smallpox, hoping thus to protect the one inoculated

from a more serious attack. This custom seems to have originated with the Chinese who put in the nose of children a powder made with the scabs of an individual having had a milk attack. From China it passed to Constantinople and from there to England. It became popular through an English surgeon named Sutton who was the first to use the lancet, with which he introduced under the skin a small quantity of matter coming from a patient mildly affected with smallpox. This kind of treatment naturally did not always produce the expected results. It happened that individuals thus inoculated had not only a serious attack of the disease, but in some instances the attack proved fatal. These persons, moreover, became a source of infection, spreading smallpox everywhere. The use of such a questionable prophylactic measure was simply to start a fire that would cease only after having consumed everything. As can be surmised, this method met with many opponents who fought it energetically until Jenner demonstrated that the proper means of combatting the disease was vaccination.

Vaccine.—In former times the name vaccine was given to a specific virus contained in the pustules, which are found on different animals, chiefly the horse and the cow. In the case of the horse the papules manifest themselves especially on the mucous membranes of the lips, on the nostrils and the skin of the legs. On the cow it is found almost exclusively on the teats. Vaccine possesses active and virulent properties; when man, the cow or horse is inoculated with it, it produces an eruption similar to the one from which it comes and which has a great analogy to that of smallpox, being, it would seem, but a modified form of that disease. When a human being is inoculated with vaccine it protects him against smallpox for a time of more or less length, according to individual susceptibility. To-day this word vaccine has a much wider signification than it had formerly; we look upon vaccine as an attenuated virus which protects against a disease. We innoculate fowls against hen-cholera, hogs against hog-cholera, and human beings against carbuncle, diphtheria, tetanus and hydrophobia.

The origin of vaccination dates from the year 1796, when Jenner after twenty years of observation and research made known to the world his discoveries concerning smallpox. In 1881, Pasteur in a communication on the attenuated virus of the fowl cholera at the International Congress of London said:—"I have given to the term vaccination a wider meaning and one which I hope will be sanctioned by science as an homage to the merit and the immense services rendered to humanity by one of the greatest men of England." Pasteur obtained virus by cultivating microbes in a certain temperature, thus carbuncle

bacteria when cultivated at 44°, 45° C., undergo considerable changes and their virulence is greatly modified. When cultivated at 42° and 43° C., there is no modification whatever. So that a difference of one to two degrees was sufficient to modify the virulence of carbuncle bacteria. These facts may at first sight seem to have no relation to the subject which engages our attention, but if I have mentioned them, it is because they will help us later on to find an answer to this question: "Where does vaccine come from?" You will then allow me to place before you some other facts which will lead us to the same conclusion. In the spring of 1860, in the neighbourhood of Toulouse where the population was afflicted with an epidemic of smallpox, there suddenly appeared a disease resembling smallpox and which spread among horses. Its symptoms were the following: Starting with fever and anorexia, the popliteal region became enlarged, hot and painful. Towards the third or fourth day the skin was covered with papules and by the end of eight or ten days these papules became pustules and ruptured and a sero-purulent liquid escaped. These pustules dried up and towards the fifteenth day the scabs fell, leaving more or less marked cicatrices. This eruption took place on the mucous membranes of the nostrils and the lips. On April 25, 1860, a man named Laforce took from a horse affected with this disease the matter from one of the pustules, eight days after the eruption, and inoculated a cow with it on the 30th of the same month; the punctures began to redden and on the 3rd of May each puncture had developed into five large pustules, round, umbilicated, and in every way like those of smallpox. On the 4th of May, inoculation was successfully practised on a cow, a child and a horse. On the child the inoculation resulted in a characteristic vaccinal eruption.

In 1863, at Alfort, France, this disease existed among horses, presenting the same symptoms: Fever, pustular eruption, dessication and at the end of three weeks return to a normal condition. A student of the School of Alfort cut his finger while dressing the wounds of a horse affected with that disease. The results were that the wound became tumefied and very painful; three days after there came a general debility, anorexia; three or four days later a vesicular eruption appeared on the hands, the arms, the legs and the face, and tumefaction of the glands of the axilla. This eruption had a striking resemblance to vaccinia, being of a pearly white color, surmounted by an epidermal blister from which escaped a very clear liquid. This disease was probably vaccinia, which had developed on this student with all the symptoms of intensity that it assumes when transmitted from horse to man. A young bull having been inoculated with the virus from those pustules.

exhibited a well marked eruption of cow-pox; the virus from the latter animal having been introduced into the system of a child produced a fine vaccinal eruption. Last winter the three horses we had for the service of the smallpox section of the Civic Hospital contracted a disease absolutely identical with the one observed at Toulouse in 1860. The symptoms were the same; a few days later there appeared an eruption, first the vesicles and finally pustules. Towards the 10th day, the pustules ruptured, and sero-purulent matter escaped from the wound, having a strong smell. Crusts were formed which fell the 15th or the 18th day, leaving a well marked cicatrix. The hair never grew again, especially on the pastern.

Variola, horse-pox or cow-pox develop in a natural way in man, the horse or the cow, and are manifested by general and local symptoms, and hardly differ in these species in their intensity. Have these individual diseases belonging to the group of exanthemata a common germ? This question was raised in 1799, by Cunner and later by Turner, Hunter, Coleman, Bouilland, Thiel and Culy. It gave place to lively discussions at the Academy of Medicine of Paris, in 1862, 1863 and 1864. At its meeting of May 27th, 1862, Depaul said: "There is only one and the same morbid germ that acts on the horses and cows and which when inoculated to man produces vaccine, which is for me but a modified and mitigated form of variola." Chauveau and Viennoil held a contrary opinion. Therefore, Depaul defended these theories long before Pasteur had made known his discoveries on the attenuation of virus. Now that we are all acquainted with Pasteur's experiences on the attenuation of the carbuncle virus through heat, we can accept Depaul's opinion and believe in the unity of the morbid principle. If Pasteur can attenuate, *in vitro* such a virus by cultivating it in broth at a temperature of 43° C., why should not this same attenuation take place with the smallpox virus when cultivated in organs whose normal temperature is higher than that which is necessary to modify the character of this microbe? When in contact with the organs of the horse the smallpox microbe is placed in a medium, whose character is different to that in which it generally lives, it very probably undergoes a transformation similar to that of the carbuncle bacteria when cultivated in a temperature of 43° C. The temperature of the horse in a normal condition is one degree higher than that of man. By passing through the cow, horse-pox is once more modified and is much less virulent in man than the horse-pox. The normal temperature of the cow is one degree higher than that of the horse and two degrees higher than that of man. The few facts to which I have called your attention, such as the epidemic of Toulouse, and the ac-

cident that happened to the young student of Alfort, are really of a nature to make us believe that the opinion of Depaul is true.

It is now interesting to study the vaccinal pustule because of the analogy between it and smallpox. The characteristics in both cases are identical. The vaccinal pustule contains leucocytes in granulo-fatty degeneration at the beginning, more abundant in the purulent period; necrosed epithelial cells and multinuclear cells. The fluid, where these different elements are in suspension, varies with the age of the variolic pustule, and, like the plasma, the lymph becomes purulent later on. In former times people vaccinated by using matter taken from the arm of a person affected with smallpox, but this custom occasioned many lamentable accidents that greatly contributed to discredit a method by which humanity was to benefit so much. To avoid the recurrence of such accidents, vaccination from arm to arm is no more practiced, and vaccine matter is taken directly from the cow and inoculated to man. But it is not always an easy matter for people to break off suddenly from an old habit, and there still exists against vaccination much prejudice. It is then our duty to spare no efforts in making known this efficient mode of treatment which recommends itself so highly by the great services it has rendered to humanity.

The first, second and third day after vaccination nothing particular is seen on the vaccinated spot. From the third to the fourth day a red spot which can be felt more than seen, appears at the site of abrasion. It can be easily located by a slight touch of the finger. The fifth day the small pimple that was at first seen becomes more pronounced; the sixth it flattens, enlarges and deepens slightly in the centre, having a white and pearly color. The base is surrounded by a small red areola, very limited, yet, but which extends more and more every day. The seventh and the eighth day the symptoms are the same, but more pronounced. The pustule which is then at its full growth is marked by the usual characteristics. Of a white-nacreous color, it is surrounded by a more or less large circle depressed in its centre; it becomes hard, tumefied and protuberant. The ninth and tenth day these symptoms are still more pronounced, but a most notable change takes place in the surrounding circle, whose red color disappears only when strongly pressed by the finger and extends as far as 9 or 10 lines in every direction. The subjacent parts are obstructed, and this obstruction is proportioned to the intenseness and extent of the areola. The axillary glands are hard and painful. The eleventh day, the vaccinal pustule diminishes and its silver color turns brown; the areola becomes pale and contracted; and, lastly, from the twelfth or the

thirteenth day the pustule dries up and a dark colored crust is formed, which falls between the twentieth and the twenty-fifth day, leaving an indelible cicatrix, whose origin can be easily determined. This cicatrix is either round or oval, deep, embossed, crossed by lines and covered all over by small dark spots. Vaccinal cicatrices do not always correspond in every point to this description; they may vary according to the structure of the skin as it is more or less smooth and delicate, yet this description is that of an ordinary case of vaccinal cicatrix.

The application of vaccine.—It is an operation whose object is to put vaccine in contact with the sub-epidermic tissue. For this purpose a lancet, an ivory point or a needle is generally used. A slight scratch is sufficient, but bleeding must be avoided. This operation, however, small and unimportant as it may seem, must nevertheless be made with great care and cleanliness in order to avoid the accidents that too often occur.

The arm must be well washed with lukewarm water and soap; then rub the part upon which you are to operate with a small amount of alcohol. If an antiseptic is used it is necessary to take off with pure water whatever may have remained on the skin, for it is evident that, however small may be the quantity of antiseptic on the skin, it would surely prevent the efficacy of the vaccine. Since vaccination is no more practised from one arm to another, we use either ivory points or glycerinated tubes of vaccine, which are well-known to you all. Yet it seems that glycerinated vaccine contained in glass tubes hermetically closed is to be preferred as being less apt to be polluted. These tubes must be kept in the dark, for light would affect the lymph. Vaccine must be pure and active, two essential conditions to make a good vaccination. The effect of glycerine is to annihilate foreign germs, which might have come in contact with the lymph. In every civilized country vaccination is accepted and practised as the safest and only means of preserving people from smallpox. Yet there are still sceptics who will express doubts as to its value, but such are eloquently contradicted by statistics. Almost the only objection made against vaccination is that we introduce into the organism an unknown and dangerous germ, which does not always protect against smallpox. It is true that hitherto the principle of vaccine is known only by its effects, but we can be allowed to believe that the virus of vaccine is probably that of smallpox in its attenuated form, protecting against smallpox almost in every case, if not always, and the exceptions are so scarce that it would be futile to enumerate them. It would be more logical to search the reason why on such and such persons vaccine proved ineffective, while

in 999 cases out of a 1000 it has proved successful. It is also said that by vaccinating we are liable to inoculate germs of other diseases. Since vaccination from arm to arm is no longer practised, transmission of syphilis and tuberculosis is out of the question. When called to vaccinate, take every antiseptic precaution that science and prudence teach and command, and you can be sure that no foreign germs will be communicated to the subject operated upon; recommend the child's parents to keep his arm very clean and no danger is to be feared. From having neglected these very simple precautions some physicians have met in their practice with lamentable accidents; but these were due to negligence, and it surely would be absurd to attribute them to vaccine. Vaccination is admitted everywhere; it has proved its efficacy by saving millions of lives; the very few accidents which may have occurred could have been avoided by a little more care and attention. It is also stated that through vaccination you inoculate a lymph coming from an animal and that this lymph may be prejudicial to the health of a human being. But how can such an accusation be made concerning vaccine, when the treatment of diphtheria by anti-diphtheric serum is by every one accepted without the slightest objection.

There only remains now for me to place before you a few facts by which you will be convinced that vaccination is effective. In the province of Westphalia, Germany, the rate of mortality, which had reached 2643 per million of inhabitants, during the thirty-one years preceding the discovery of vaccine, fell from 2643 to 114 for each following year. In Denmark, Sweden, and Austria, the rate of mortality among the inhabitants was considerably decreased. In London, where the victims of smallpox numbered from three to five thousands per million of inhabitants, the rate of mortality at first fell to 304, then to 149, and to 132 in 1855, a date when vaccination had become general. We cannot but be astonished when we think that these results were obtained half a century ago, a time when vaccination was practiced by anyone and with no scientific method. In Ireland when vaccination was not general, 1842 to 1860. the rate of mortality was 1972 in a million per year, but when vaccination became compulsory, this number 1972 fell to 583.

The following statistics published by the Government of Sweden are most interesting :

Pre-vaccinal period, 1774 to 1801. Annual deaths per million, 1973.

Period of non-compulsory vaccination, 1802 to 1816, 473.

Period of compulsory vaccination, 1807 to 1877, 189.

In Scotland where children must be vaccinated during the three

months following their birth, in the winter of 1871-72, the rate of mortality among children under five years of age was 514 per million, whilst during the same winter in Holland, where this protective law does not exist, mortality among children under five years of age was 6122 per million of inhabitants. In England mortality caused by smallpox before the discovery of vaccine reached every year three thousand deaths per million of inhabitants. The average mortality during the terrible epidemic of 1871-72 was 1824 per million in 1871, and 833 in 1872.

The statistics of the Civic Hospital of Montreal, smallpox section, are the following :

Patients admitted to the hospital from the 15th of October, 1901, to the 15th of October, 1902	503
Patients who had never been vaccinated	446
Patients who were vaccinated many years ago, having a bad mark	44
Vaccinated many years previously but bearing a good mark . .	9
Vaccinated within seven years (accepting the patient's statement as correct)	4

But because these four last mentioned contracted smallpox, are we to conclude that vaccination is of no use ? It would be absurd to come to such a conclusion. We must be more serious, for anyone contending that vaccination is useless, shows thereby a narrow-minded disposition and denies the existence of evident facts.

Of persons exposed to infection but successfully vaccinated before entering into the hospital, there numbered forty-four (44), and they did not contract the disease. It would take too much time for me to quote here all the statistics which have been published on different occasions, showing the value of vaccination. But those already placed before you are sufficient to prove beyond any doubt its unquestionable efficiency. Some persons, with no doubt good intentions, are strongly opposed to compulsory vaccination, arguing that it is an attempt made against individual freedom. There is only one answer to these arguments. Those who in exchange for the advantages society gives them, refuse at the same time to fulfil the most elementary and necessary duties for the protection and welfare of the community at large, have only one thing to do, and that is to find a far and solitary island where, as new Robinson Crusoes, they can do as they like. The liberty of spreading dangerous diseases is one of those prerogatives that common sense forbids. There is no disease more contagious than

smallpox, and citizens cannot reasonably oppose such a by-law, intended to ensure protection against this terrible plague.

I believe it is our duty to spare no efforts in making our legislators understand how grave is the responsibility they assume by not obliging people to get vaccinated. I have heard it often said that the duty of a legislator is not to impose a law, forcing those who do not want to be vaccinated, but on the other hand, it is certainly the duty of every intelligent and honest legislator to protect against smallpox the other citizens who form over three-fourths of the population of our country, and the only way of reaching this end is to make vaccination compulsory.

CASE REPORTS.

BY

JAMES BELL, M.D.,

Professor of Clinical Surgery, McGill University; Surgeon to the Royal Victoria Hospital, Montreal, etc., etc.

Hair-Ball in the Stomach.

H. Carr, *et. 12*, was admitted to the Royal Victoria Hospital on November 13th, 1902, with a tumor in the epigastrium and complaining of vomiting and diarrhoea. She had been in good health until January 1st, 1901, when she was seized with an attack of vomiting and diarrhoea, which persisted rather badly for about 10 days, and continued more or less for three months. She also complained of some pain in lower part of abdomen. The vomiting had no relation to meals and while the vomitus often contained food particles, it was mainly frothy mucus. By the 1st of May she returned to school and continued until May, 1902, during which time she had fair health with occasional vomiting and more or less persistent diarrhoea. In May last, she was obliged to leave school with a more than ordinary severe attack of vomiting and diarrhoea, when a mass was felt in the abdomen and thought to be an abscess in the left lobe of the liver. During the summer, the symptoms persisted more or less although she was able to go about. She was very irregular about her food, very fastidious, craving one thing at one time and another at another time, and taking only small quantities at any time.

On admission to hospital, she was a slightly built child, weight 49 lbs., with a normal temperature, pulse, 144. A mass could be felt in the epigastrium occupying the position which could be definitely outlined as the stomach extending up into the cardiac region and disappearing in the neighbourhood of the pylorus. It was painless, very hard to the feel, and a probable diagnosis of hair-ball in the stomach was easily made. On the 17th of November, the abdomen was opened in the mid-line from the ensiform cartilage to the umbilicus and the mass was found to be, as suspected, within the stomach. The stomach, however, could not be delivered on account of the extension of the mass upwards into the cardiac region and downwards into the pyloric; the wound was packed off and an incision about 4 in. in length made along the anterior surface of the stomach, midway between the lesser and greater curvatures. The pyloric prolongation was hooked up with the finger and the mass drawn out end-wise and easily delivered. A small loose mass of hair was detached from the pyloric end and picked out with the forceps. The stomach wound was closed in the ordinary way and the abdominal wound closed without damage.

She has since continued to make excellent progress towards recovery although the gastro-enteritis from which she had suffered for two years still continues, making feeding somewhat difficult, especially on account of the diarrhoea. The child is now craving for food, very hungry and the only difficulty about feeding her is on account of the loose bowel movements.

On enquiry into her past history, her mother, who is a very intelligent woman, tells us that the child has always been bright mentally, has done fully as well at school as other children of her age and that at about three years of age it was noticed she had a habit of breaking her hair with the fingers, although she was not positive that she put it into her mouth. Various expedients were tried to stop this, such as the putting on of gloves and mitts which were tied on at the wrists; finally these were abandoned as it was thought the habit had been overcome and nothing of this has been noticed for the last two or three years.

There are several extraordinary features about this case,—first of all, that a child at the age of 12 years could have been able to pick off all this hair and introduce it into her stomach; and secondly, that it should remain there for so long without producing any definite symptoms, and finally, that this could have been done without its being discovered by an intelligent mother. A further report on this case will be made later on.

Three Genito-Urinary Conditions.

S. Blakely, *et. 32*, was admitted to the Royal Victoria Hospital 6th November, complaining of tight stricture of the urethra. He had turbid urine, which also contained blood, and suffered from crampy pains in the lower part of the abdomen. He was in perfect health until two and a half years ago, when he began to suffer from frequent micturition, especially at night. His urine became turbid with a deposit of reddish sediment. During the following winter blood was observed in the urine very frequently and this has increased in quantity and frequency ever since. Eight months ago he jarred himself by falling upon his feet and soon after this the left testicle swelled and in about a week broke and discharged yellowish pus, this continued about six months.

On examination, the remains of two or three sinuses were found in the left testicle, the left epididymus slightly enlarged, very hard and tense, the vas deferens enlarged and hard, left seminal vesicle enlarged and nodular, prostate nodular but not enlarged. Urine slightly turbid, reddish-brown color, contains a good deal of albumin, no sugar and neither tubercle bacilli nor gonococci. He most emphatically denies ever having had gonorrhoea. He was a married man with four children.

On the 18th of November, a filiform guide was introduced and an

internal urethrotomy with dilatation up to No. 28 F. was done. There were no bad symptoms following the urethrotomy, urine was passed freely and in large quantities. On the 19th he complained of weakness in the movements of the right wrist and hand; on the 20th weakness of both hands was complained of, and at midnight he died suddenly—probably uræmia. There was no tubercular heredity and no lesion discoverable to account for the brachial plexus paralysis. Clinically the case was distinctly one of uro-genital tuberculosis and there were no evidences of any lesion of the nerve centres.

Stephen Guest, æt. 38, admitted to the Royal Victoria Hospital on the 4th of October, 1898, with stone in the bladder. His history was as follows:—On the 14th of January, 1894, he was taken ill with what was diagnosed as grippe, characterized by pains in the legs and body and general malaise. Next day he had very severe pain in the small of the back, and was then told by his doctor that he had inflammation of the kidneys. Three days after the onset of this attack he was unable to pass his urine for about 12 hours when it was drawn off by his doctor, about a teacupful of dark red urine, as he describes it, the redness being due, he thinks to blood. The catheter passed easily and about 12 hours later he passed about half a teacupful of urine colored with bright red blood. From this time till admission to hospital he had drawn off all his urine by catheter, being unable to evacuate urine spontaneously.

He was a poorly nourished man, apparently somewhat weak-minded, had a distinct tubercular history on the maternal side. On the 13th of October a large oval stone, an inch and a half in diameter was removed by suprapubic cystotomy. On the 5th of December he was discharged with his wound closed and passing his urine spontaneously.

He was readmitted on November 6th, 1902. After leaving hospital in December, 1898, he remained in good health and passed all urine spontaneously for about six months, then had to use the catheter occasionally, sometimes once a week, sometimes every day for a time until about a year and nine months ago, when it was used habitually. Fifteen months ago he took to bed complaining of weakness, pain and difficulty with his urine and has remained in bed ever since. About a year ago the suprapubic wound reopened and since that time most of the urine has passed away through this fistula; on two occasions it closed over externally for a short period, but soon reopened.

On admission in November, 1902, his weight had fallen from 130 to 90 lbs., his body was bent, his knees flexed and he was greatly emaciated. It was found impossible to introduce any instrument

through the urethra on account of blockage of the urethral orifice by a large stone, this could also be felt with the probe through the suprapubic fistula. It was also quite impossible to collect any urine for examination, which all dribbled away through the wound.

On the 10th of November, the patient was anaesthetized with ether, the suprapubic incision enlarged vertically and transversely at the lower extremity to some extent and a large phosphatic stone broken up and removed in fragments, weighing 42 grammes. The bladder was simply filled with the mass of stone formation. The urine flowed freely and there was no lack of secretion, but the patient sank, became delirious and died uræmic at 8.35 p.m., November 12.

This is a very extraordinary history, as it will be observed that a young man in perfect health was taken suddenly ill with an acute affection diagnosed as grippe at a time when he had never had any urinary symptoms whatever, and that from that time was unable to evacuate his bladder normally. The stone formation was evidently secondary to this acute condition, which was probably some affection of the brain or spinal cord.

Adolph Perras, æt. 28, was admitted to the Royal Victoria Hospital September 10th, 1902, complaining of bladder trouble and pain in the right side of back. He dated his trouble to an attack of gonorrhœa contracted three years ago. Frequency of micturition began about two years ago and soon became very severe. Five months from beginning of this symptom, he was unable to retain his urine at all and was obliged to give up his work altogether.

On admission he was found to micturate about every 10 to 20 minutes. Urine cloudy with slaty, grey sediment, containing pus, albumin, but no sugar, tubercle bacilli or gonococci. A large tender fluctuating mass was discovered in the right loin (evidently the right kidney), which varied in size from time to time. On the 22nd of September this mass was exposed by an oblique incision in the right loin and the kidney was found enlarged and very tense and very adherent. It was incised and a large quantity of thick, creamy pus evacuated. On exploration, it was found to contain a number of cavities which were opened into one another. The opening of the ureter could not be discovered by exploration from the pelvis of the kidney. A drainage tube was inserted into the kidney wound and the loin packed.

He rallied well from the operation, but did not make any progress. Vomiting began at the end of 24 hours and continued; the patient dying at 9.30 on the 25th.

A CASE OF PERFORATING TYPHOID ULCER, OPERATION: RECOVERY.*

BY

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H. J. L., clerk, aged 30, was referred to my clinic in the Montreal General Hospital by Dr. Chas. C. Gurd, on September 14, 1902, with evidences of a general peritonitis, which had come on suddenly some hours before admission to hospital. I am much indebted to Dr. Gurd for the carefully prepared notes of the condition of the patient prior to his admission to hospital, as it was largely on these data that I founded my diagnosis of a perforating typhoid ulcer.

History of the case before admission. Patient had been feeling unwell since September 6th; tired, no appetite and dull headache, but kept at work. He had to stop work (storeman) on September 10th, owing chiefly to headache and weakness. On September 12th, Dr. Gurd saw him, at which time he complained most of severe occipital headache and anorexia. Pulse, 88; temperature, 102.4° F. Beyond a peculiar feverish odour to the breath nothing was noted to account for the fever.

Seven years previously the patient had had typhoid fever, being for fourteen weeks in the Royal Victoria Hospital. Patient passed a restless night though he had some phenacetin and the next morning (13th) his temperature was 100.4°, pulse, 84. Patient was very carefully re-examined by Dr. Gurd, but no cause for the fever was discoverable. That same evening the temperature rose to 103° and the pulse was 86; headache more severe. The bowels moved once (constipated) after calomel triturations. He took milk well. The patient had an excellent night and awoke on the morning of the 14th feeling much better; at 8 a.m. he was seized with severe abdominal pain, rigors and vomiting. Temperature, 104.4°, pulse, 90; abdomen suddenly became rigid and absence of abdominal respiratory movements was noted. At 2 p.m., temperature, 104°; pulse, 96, abdominal rigidity, tenderness and distension more marked. Had vomited four or five times, but not since 10 a.m.; tongue moist and furred.

Condition on admission. Patient was sent to hospital at 4 p.m., and on admission, pulse, 100, regular and of fair volume, temperature,

* Read before the Montreal Medico-Chirurgical Society, January 2, 1903.

104°; abdomen distended, rigid, face anxious, no rose spots to be seen. I examined the patient, and from the history in conjunction with the sudden onset of the acute peritonitis, I diagnosed typhoid perforation and advised immediate operation, which was carried out at 6.30 that same afternoon.

Operation. I made the lateral incision as for an appendectomy and found a general peritonitis with no walling off, and free pus and fæces in the abdominal cavity. The appendix was examined and found of much the same appearance as other portions of the bowel, *viz.*, congested and swollen, dark red, with patches of adherent lymph. About ten inches from the cæcum was a definite, punched-out perforation in the ileum, about the size of the tip of the little finger and on the border opposite the mesenteric attachment. Fæces and gas were escaping from this perforation. The opening was closed with a continuous suture of fine silk, and a second layer of Czerny-Lembert sutures of catgut infolding the sutured perforation. Other perforations were looked for, but none found, nor could I find any evidences of other intestinal ulceration, though the intense peritoneal inflammation present made it easy to overlook such a condition, even were it present. The abdomen was flushed out and two drainage tubes left in, one up towards the liver and the other down into the pelvis. The abdominal wound was closed in layers in the usual manner.

The patient rallied well from the operation and was given nutritive enemata with brandy every four hours. The abdomen was pretty tense and no flatus passed until the evening of the following day, when he had a small diarrhoea stool and passed some flatus. As he had considerable gastric distress and vomiting, the morning after the operation his stomach was washed out and one ounce of magnesium sulphate dissolved in four ounces of warm water thrown into the stomach. This produced full catharsis in the afternoon, and after the bowels moved he convalesced rapidly and feeding by mouth replaced the nutritive enemata on the fourth day. The fever only once (on the fourth day) went above 101°, but promptly yielded to tepid sponging and coming down to normal on the tenth day after operation, remained normal or nearly so. The rubber tubes were removed on the fourth day and replaced by small gauze drains. Patient left the hospital within a month of admission, resumed work on November 3rd, and has since been at work as usual.

The pathological aspects of this case are of some interest. Blood tests were repeatedly made and gave a negative Widal reaction. Cultures taken from the peritoneal discharges gave us only mixed infection.

B. colon predominating, but no typhoid bacilli; so that the clinical diagnosis is not borne out by the pathological tests. However, as a number of cases are on record of well-marked typhoid fever where the Widal reaction was not present or only temporarily so, and as here we had ocular evidences of a typical perforating typhoid ulcer, I do not hesitate to place this case in the happily increasing category of a recovery after operation for perforating typhoid fever.

Points of interest in the case.

(1) A second attack of typhoid fever.

(2) Perforation occurring in a practically ambulatory case. (I have seen one such case before in the Montreal General Hospital).

(3) The failure of the Widal reaction, or at least its rapid disappearance. Was it modified by the previous attack? Not likely.

(4) The comparatively low range of temperature after operation and the speedy convalescence. Does opening the abdomen affect favourably the course of typhoid fever analagous to a similar procedure in tuberculous peritonitis? Sometimes in cases where the abdomen has been opened as the result of a mistaken diagnosis of typhoid perforation, we do notice that the fever appears to run a less violent course, and all the previous distressing symptoms quickly disappear. *Post hoc*, but not necessarily *propter hoc* is all that can at present be said; but not even a sufficient number of instances of *post hoc*.

A CASE OF HABITUAL MISCARRIAGE.

BY

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The term "habitual miscarriage" as used in this case is intended to mean the habitual expulsion of the uterine contents after viability. Some writers prefer the name "habitual abortion" and include expulsions up to the twenty-eighth week; in either case the direct result is foetal death or uterine contraction.

The causes which result in foetal death or uterine contraction, according to Priestley, who gave a very exhaustive course of lectures on the subject in 1887, are those referable (1) to the father, (2) mother, and (3) foetus. These may be predisposing or exciting. Exciting causes act quietly, or more directly on the uterus or ovum, *e.g.*, blows, falls, contusions, lifting, sea bathing, stretching of arms and running of a sewing machine. Many of these causes are not active save in connection with some constitutional predisposition.

Father.—Those referable to the father are syphilis, which is the most common and may produce disease in the ovum without infecting the mother, and, more rarely, youth, old age, feebleness and debauchery.

Mother.—Predisposition on the part of the mother to miscarry purely through habit as recently thought and I think conscientiously taught, is giving place to the idea that it is due to the continuance of the original constitutional cause. Tuberculosis and syphilis, on account of lowering the vitality of the mother, cause disease of the placenta and malnutrition of the ovum. The latter is the more frequent cause of recurrent abortions. The high temperature of acute disease causes disturbance of the uterine contents by toxic action on the foetus through the placenta, possibly by creating a tendency to placental hæmorrhage. Diseases of the heart and kidneys may destroy the foetus by passive congestion of the placenta. Excess of carbonic acid gas, lead poisoning, convulsive seizures of eclampsia and epilepsy, vomiting or violent coughing, fright and anxiety, are all factors towards evacuation of the uterine contents. Hot sitz and foot baths, by causing disturbance of the pelvic blood vessels, local conditions of endometritis and subinvolution, acute and chronic inflammatory diseases of the uterus and appendages,

* Read before the Montreal Medico-Chirurgical Society, November 21, 1902.

as well as tumours, adhesions and malpositions, associated with some simple exciting cause, might tend to cause uterine contraction sufficiently to evacuate its contents.

Fœtal.—Knotting and shortness of the cord, syphilitic disease of the membranes and placenta, cystic degeneration of the chorionic villi and abnormal relations of the placenta, are frequent causes in the fœtus. Most frequently, and what I think we have to deal with in this particular case, is degeneration of the placenta, or placental apoplexy, as described by Sir James Y. Simpson in his "Memoirs on Congestion and Inflammation of the Placenta." According to him congestion is a forerunner of apoplexy and consists of an extraordinary accumulation of blood in the spongy tissue of the placenta. This only requires a slight exciting cause to push it to a degree further, causing rupture of the vascular coats and escape of blood into the parenchyma or on to the maternal surface of the organ. He then describes the changes which take place in the extravasated blood, and the effect upon the placental structure. If several of these changes take place on the face of the placenta it interferes with the nutrition of the fœtus, with consequent death and subsequent expulsion.

If one is able to exclude all possible causes except placental apoplexy, much can be done to tide a pathological condition to a successful physiological issue and probably bring, as we did in my case, much happiness and comfort to an anxious household. I am indebted to Drs. Gardner and Chipman for the successful issue of the present case. Dr. Gardner on one occasion casually asked me if I had ever met a condition where there was premature death of the fœtus in utero in advanced pregnancy, and mentioned a course of treatment that might be of benefit. Suddenly recalling this case I promised to give him an opportunity to try the treatment the next time she became pregnant. A month or so after this the patient's husband came to me, stating that his wife was again pregnant about five months and close on the time she usually miscarried, and begged of me to do my utmost to save this child. I immediately advised Dr. Gardner who took her into the Royal Victoria Hospital, and through the kindness of Dr. Chipman in Dr. Gardner's absence, careful observations were made and notes taken of the case.

Mrs. F., aged 30 years, married at 21. Menses commenced at 13 years, regular every 30 days, lasting three to four days, normal until marriage.

Family history negative.

Appetite and digestion good, urine normal. Within the past nine

years has had ten miscarriages, child still-born in each case, dying usually from two to three days before each birth. The time she carried the children varied.

The first was carried only four months, not viable; second carried almost nine months, longest; third carried seven months; fourth, eight months; fifth had been carried five months when the mother developed pneumonia and was taken to the Montreal General Hospital, and miscarried again two days after her return home. She returned to the hospital suffering from endo-metritis and was curetted by Dr. Lockhart. The sixth one was carried six months, and the mother had right-sided paralysis or numbness while carrying it. The eighth was carried seven months and she had a very severe antepartum hæmorrhage. The ninth was carried six months, and the tenth seven months.

The patient became pregnant with the eleventh child in November, 1901, and was admitted to the Royal Victoria Hospital on April 11th, 1902, remaining there until August 3rd, 1902, when she was discharged. On her return home I kept her in bed and under observation until 11th of the month, when I delivered her of a full term, healthy, male child weighing $4\frac{1}{2}$ to 5 pounds. It might be stated that she always became pregnant again in from two to four months after her previous miscarriage. The fetal heart was first heard on May 6th by phonendoscope.

Labour commenced at 10 p. m. August 10th, and terminated at 1 p. m. August 11th. The pains were short and sharp; the liquor amnii was grumous, not copious and of a very offensive odour.

Placenta was small, about the size of an ordinary man's hand, with about a third or more degenerated. She made an uneventful recovery and got up on the tenth day.

Treatment, while in the hospital, was rest and careful diet. Three grains of potassium chlorate and fifteen minims of the tincture of iron were given three times a day after meals, the chlorate of potash being increased up to eight grains at the time of discharge. Strychnine sulphate, grain $1/10$, was given three times daily as a tonic. Constipation, which was obstinate, was overcome by aromatic cascara and occasional enemata.

This case seems interesting, not so much on account of the rarity of the condition, as on account of the rarity of obtaining a successful result. As far back as fifty years ago, Sir James Y. Simpson reported some successful cases and advocated the use of potassium chlorate, claiming that it gave up oxygen freely to the blood, which compensated for the loss of placental area.

In 1887, Dr. W. C. Priestley gave an exhaustive description of the etiology and pathology of intra-uterine morbid conditions, and endorsed Sir James Y. Simpson's medical treatment.

In October, 1902, in the *British Medical Journal*, Dr. Robert Jardine, of Glasgow University, reported three cases, one very closely resembling our own, with thirteen miscarriages. The first five were normal, the 6th, 7th, 12th and 13th, where no medicinal treatment was given, all miscarried. The 8th, 9th, 10th and 11th, where potassium chlorate was given, were brought to a successful issue. He does not altogether agree with Sir James Simpson that the potassium chlorate gives up oxygen to the blood, but thinks that it has some specific action on the endometrium. What this is he does not say.

CLINICAL NOTES ON A CASE OF LANDRY'S PARALYSIS.

BY

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W. L. G., male, aged 22 years, English Canadian, laborer, unmarried.
Dec. 10, 1902, (eleven days before death), complained of weakness of right arm and right leg.

Past History:—Patient has had an enlarged thyroid since infancy, which has been considerably reduced in size for the last six months, and is said to have been reduced by taking some patent sarsaparilla preparation.

He was accidentally injured three years ago through the explosion of a cartridge, severely burning his face and eyes with powder. Afterwards he was subjected to a prolonged operation under chloroform for the removal of the burnt powder from the cornea. He failed in a business venture about four months ago and has been worrying a great deal and drinking considerably, mostly beer, since that time.

Hereditary Influences:—Paternal grandmother died of cancer. Mother and mother's family highly neurotic.

Present Illness:—He first felt a weakness of the right ankle and right forearm and hand about a week ago, but after resting for a day or two it disappeared, to come back again after hauling cordwood all day in a cold rain two or three days ago, and it has been growing worse since.

Present Condition:—Patient is a robust, rugged laborer. General nutrition good and muscles well developed. Walks with a peculiar awkward gait. Has a short neck and his thyroid gland is somewhat enlarged. Cerebral and mental functions normal; intelligence good and sleeps well.

A marked weakness of the right forearm and hand and right leg as compared with the left is present. There is inability to completely close the right hand; the extensors of the wrist and flexors of the ankle are more palsied than the opposing muscles, thus giving a partial wrist-drop and foot-drop on the right side. Nutrition and tone of the affected muscles is unchanged; there is no inco-ordination. Muscular sense normal. Reflexes normal. No pain, numbness, tingling, or other abnormal subjective sensation is present now, but he says that he did have some tingling sensations in the right foot and hand at the beginning, some days ago.

Sensation is unchanged; special senses normal. Pupils react to light and to accommodation. Appetite and digestion good; temperature, pulse and respiration normal.

Dec. 23, 1902:—Weakness of the right arm and leg is more marked. Now walks with a cane with a *steppage gait*. Right patella reflex considerably exaggerated; other reflex normal.

Dec. 24th:—Weakness of the right arm and leg increased, with some weakness of the left leg as well. Cutaneous reflexes slightly exaggerated on the right side, especially those of the right foot. Both patellar reflexes increased, the right one being very much exaggerated. Ankle clonus can be obtained on the right side. Bladder and rectum acting all right. No subjective sensations; ordinary sense and muscular sense unchanged.

Dec. 25, morning:—Walked about the room in the morning with the help of a cane. Left leg weaker than yesterday and left patellar reflex more exaggerated. Took longer than usual this morning to void urine. Was carried down stairs and ate a Christmas dinner at the table. Soon after dinner his temperature was under 97° F., and pulse about 45 per minute.

Evening, 8 p.m.:—Voluntary power. The muscles of the trunk are involved, especially those of the right side, which are much weaker than normal. He is able to move the legs and right arm only slightly in bed. The left arm and the muscles of the neck are not affected.

Reflexes. The cutaneous reflexes over the paralyzed limbs are slightly increased and ankle clonus can easily be obtained at both ankles. There is also exaggerated tendon reflex of the right arm, and when the muscles of the paralyzed limbs are massaged, there is involuntary tonic contraction causing involuntary movements of the limb.

There is dribbling of urine without power to void it voluntarily. There was no stool to-day. No sensory disturbance or change in the special senses.

Dec. 26th:—Voluntary power. The left arm is slightly weaker than normal to-day and the muscles of the trunk are more affected than yesterday. There is also slight paresis of the lower part of the right side of the face.

Reflexes. The cutaneous reflexes and posterior pharyngeal reflex are normal. Cremasteric reflex normal. Patellar reflexes are present, but very slight. There is no ankle clonus to be obtained to-day. The spastic condition of the legs noted yesterday has passed off.

Passing urine involuntarily; catheterized and obtained about a pint

of normal urine. Constipation, not affected by purgatives, but a good stool obtained by enema.

Digestion impaired. No sensory disturbance or change in sensation. No change in the special senses. Complained to-day of a cold in the head and pain in the chest.

Heart and lungs normal; temperature and respiration normal, pulse strong and full between 60 and 70 per minute.

Dec. 27th:—Voluntary power. Condition of the legs and right arm unchanged, can move them very slightly in bed by a strong effort. Left arm weaker than yesterday and only able to move it slightly. No power to move the feet and right hand and only able to move the left hand very slightly. Paresis of the facial muscles on the right side noticed yesterday has completely disappeared. Muscles of the head and neck and the muscles of deglutition and articulation seem to be the only ones unaffected.

Reflexes the same as yesterday. When the muscles of the arms are massaged, there is involuntary tonic contraction with movement. This muscular irritability has passed off from the muscles of the legs.

Patient begins to pass urine involuntarily about ten hours after catheterization. The urine is normal and the bladder contains about a pint when catheterized. No sensory disturbance. Cerebral functions normal; no change in special senses. Temperature and pulse normal, respiration slightly accelerated.

Dec. 28th:—The only change noted is that the left hand is completely paralyzed and it could be moved slightly yesterday.

Dec. 29th:—Voluntary power. Complete loss of power over all voluntary muscles except those of the head and neck. Muscles of deglutition and articulation not affected.

All reflexes of right leg disappeared, and those of other paralyzed limbs diminished. Penis became erect while withdrawing the catheter to-day. This has not occurred before. He is passing flatus involuntarily. There is diminished sensibility of the skin of the right leg.

Respirations are more accelerated; temperature and pulse normal.

Dec. 30th:—There is loss of all reflexes of the skin and of the deep reflexes of the limbs and trunk below the neck. Muscular sense is present. There is no paralysis of the face nor of the muscles of deglutition or articulation. The penis became erect while passing the catheter. Passing flatus and faeces involuntarily. No perceptible wasting of muscles or loss of tone.

No pain or other subjective sensations. Complete loss of sensation

in skin over the limbs and body below the neck. Laboured breathing, about 50 to the minute, with mucus in the throat, which he is unable to expectorate.

Slight elevation of temperature and pulse. Cerebral and mental functions normal.

Dec. 31st., 8.30 a.m.:—Condition remains unchanged since yesterday, only had a few minutes sleep during the night.

Respirations ceased at 12 noon, but the heart was still beating and a faint radial pulse could be felt at 2 p.m.

Although there was a change in his condition each day, the changes were not continually progressive, but occurred rapidly about once in twenty-four hours. He would remain in much the same condition for twenty-four hours or more, with perhaps a slight improvement, when he would become rapidly worse and then remain unchanged for some time again. Before an increase in the paralysis, he would sometimes complain of chilly sensations and once, at least, at such a time the temperature was under 97° F., and the pulse 45 per minute.

NOTES ON A SHORT VISIT TO SOME OF THE HOSPITALS AND MEDICAL EDUCATIONAL INSTITUTIONS IN THE UNITED STATES AND CANADA.*

BY

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In the spring of the present year I took an opportunity of visiting some of the principal cities in the United States and Canada, with the object of seeing the construction and management of their chief hospitals and medical educational institutions. I have thought that it would not be without interest to give a short account of the impressions formed from what I saw, but as impressions gained by a short visit to a vast continent, such as America, are apt to be erroneous, and not likely to do full justice to the subject, I have hesitated a long time before committing them to writing. It is only at the urgent request of some friends that I venture to publish these brief notes, and I do so with the hope that they may encourage others to visit America and Canada, and to see what very valuable work is being done there. In this country we know too little of the amount of good work which is being done on the other side of the Atlantic, and how very up-to-date are their hospitals, and how advanced are their methods of medical education. The more the scientific workers in this small kingdom know their brethren on the great American continent, the better it will be for the progress of medicine and surgery.

The time at my disposal was short, but by keeping the primary object of my visit—that of obtaining information—always in view, I was able to visit the chief hospitals and medical institutions in New York, Washington, Baltimore, Philadelphia and Montreal. In every place I received the greatest consideration, and every facility for inspecting the various institutions which I had come to see. I cannot speak too gratefully of the kindness shown to me by members of our own profession, and laymen in all the cities I visited. I have often heard of the cordial reception which Americans generally give to strangers from this country, and the accounts are not at all exaggerated. The amount of trouble and unselfishness which so many showed me was very great. Everything was done for me in a most kindly and ungrudging manner.

Nearly all the large cities in America possess one or more fine mod-

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ern hospitals. I do not propose to weary you by an account of the various individual hospitals which I visited, but rather to give a summary of their main features. Much attention has been paid of recent years to the details of hospital construction in America. The general type, which does not differ materially from that in vogue in this country, is the Pavilion hospital. The height of the various hospitals differs, but generally we find that the architects in America do not favour the very high buildings, which are now so much in vogue for business purposes. In some instances, however, we see one run up to nine stories, but the majority do not exceed four or five stories. One large and important hospital is chiefly composed of single-story pavilions, but this arrangement, although providing for an adequate supply of light and air, has been found to present many disadvantages from an administrative point of view. As will be readily understood, a large hospital composed of single-storied pavilions covers a very great ground space, and this renders it most difficult to bring the food to the patients in a satisfactory and hot condition. This defect is so much recognized that I understand that any new extensions of accommodation required will be provided by building new stories on the old pavilions, rather than by erecting more new single-storied pavilions.

The principal departments of the hospitals may be considered separately as follows:—

1. *Medical and surgical wards with their accessories.* The wards are generally large and bright, and I was frequently impressed with their great width and the consequent extensive free space which existed along the centre between the rows of beds. In some instances at the end of the wards was an open terrace, on which the beds could be wheeled, so that the patients could be out in the open air in the summer. The accessories to the wards are a most important feature of many hospitals, they commonly include a dining-room for convalescent patients, and small wards adjoining the larger ones for noisy and other patients whom it is not desirable to treat in the general ward.

The ventilation of the wards in the majority of the American hospitals is affected by air driven in by fans, and drawn out by fans or hot air shafts. In winter the air is warmed by being forced over hot-water pipes before coming into the wards, or hot coils are placed in the wards in various positions. I saw no open fire-places in any of the American hospitals.

The construction of the floors of the hospitals varies, and this has been a serious source of trouble to all hospital managers and architects. It appeared to be the universal opinion that the perfect hospital floor has yet to be found. The ward floors were generally composed

of polished wood, but in some cases they were of polished figured tiles, a material which will strike many in this country as cold and unsuitable for a ward floor. Some tiled floors looked extremely well, and were considered by the superintendent of the hospital to have advantages over a wood floor. The corridors and the floors of the operating theatres were composed of simple concrete, lignolith—a composition comparatively recently introduced of wood pulp and concrete,—tirazzo—cement with small irregular chippings of marble interspersed,—mosaic, or tiles of various sizes. In the modern hospitals the tirazzo and mosaic floors were very general and very popular, but their great fault appeared to be the tendency to crack. Large sized tiles for corridors and operating-room floors did not seem satisfactory, but the weight of evidence would, I think, be in favour of small unglazed tiles for such situations. The mosaic floor, however, is undoubtedly an extremely attractive one, and at the present time is having a great run in America, not only being largely used in hospitals but in nearly all the large new hotels and restaurants. As I said before, however, no floor yet discovered is without faults for hospital purposes, and the perfect floor has yet to be found.

The walls of the wards were generally painted, while those of the corridors were provided with a dado of marble or some other hard material which was a great protection against damage by trucks, couches, etc. A dado composed of some hard material which cannot be scratched and so rendered unsightly, is certainly a great desideratum for the corridors of a hospital.

2. *The operating department* is a conspicuous feature of all modern general hospitals in America. Frequently a very large sum of money has been expended upon this section especially with a view to facilitate the keeping of it as aseptic as possible.

The operating department is commonly placed in a separate building from the wards, to which it is, of course, united by corridors. It commonly includes a large operating theatre, sometimes one or two small theatres, rooms for the sterilisation and storage of dressings, anaesthetising rooms, and rooms for the recovery of patients from serious operations.

The majority of the operating theatres and adjuncts have the floors composed of mosaic, tirazzo or tiles. The walls for a distance of 5—7 feet above the floor are frequently faced by beautiful marble slabs. It will be readily understood that such a method of construction must cost a very large sum, and although it conduces to the maintenance of asepsis and perfect cleanliness, it appears to be open to question whether such expensive structures are absolutely necessary, and it was

evident to me that many thoughtful members of the profession in America were beginning to question the necessity for such elaboration of details in the buildings devoted to operations. Buildings so constructed conduce to perfect purity of the atmosphere, but it is felt by many that this purity of the atmosphere is a much less important factor in maintaining asepsis than the condition of the operator's hands, instruments and whatever material comes into immediate contact with the wounds. American surgeons carry out the principals of asepsis most thoroughly, but the idea which prevails among many members of the profession in this country, that the American surgeons carry these principals so far as to always take a bath immediately before operating, is of course erroneous. Some of the operating departments are provided with baths for the use of the surgical staff, but such are probably more frequently used after performing a series of operations on a hot American day than previous to commencing work in the operating theatre.

I visited many operating departments, and admired the elaboration with which everything had been carried out, at great expense, with a view of promoting asepsis, but I could not help feeling that although this department of a hospital must be a structure which can be readily and thoroughly cleansed, it is not necessary nor desirable to go to the great expense which is incurred in many modern operating departments both on this and the American continent.

3. *The emergency department for medical and surgical cases* has attached to it small wards for the temporary detention of patients who are likely to only need hospital treatment for a few hours, and whom it is not desirable to admit into the general wards. Such small wards are extremely valuable, as they allow patients to be detained for further observation, who would otherwise be sent to their own homes or to the police department, and thus lessen the risk of sending away cases which, when first seen, appear trivial, but subsequently develop serious symptoms. They facilitate also the administration of the in-patient department, since cases frequently come to the accident and emergency rooms which are not in a sufficiently cleanly condition, or are too noisy to go into the general wards.

4. *Dispensary or out-patient department.* The only point which specially attracted my attention in this department was the fact that in some a very perfect system of note-taking and recording of cases by means of the card index system, was in thorough working order. Records of the cases were taken by the assistants, and if any patient was sent for an opinion to a department other than that to which he was first admitted, records of this fact and of the condition found in

the second department were made. The result of the examination of secretions or blood made in the clinical laboratory concerning any out-patient were recorded, and were attached to the notes. The system adopted appeared to be not only theoretically good, but to be actually carried out in a practical manner. By this means a very valuable mass of evidence was gradually being obtained, and we all know what a large amount of similar material is wasted in this country for the want of some system of note-taking in the out-patient departments of our large hospitals. Of course such a system cannot be carried out without a sufficient number of assistants, who must not only have had experience of the method, but be willing to spend a large amount of time over the work.

5. *Private wards for paying patients.* Nearly every large general hospital in the principal cities of America makes a conspicuous feature of private wards for paying patients. This department is a considerable source of income to the hospital, as large sums are charged for the privilege of a private room, and the department appears to be well supported. The well-to-do American does not appear to have the strong objection to a hospital which the average well-to-do Englishman possesses. Private nursing homes are much less in vogue on the other side of the Atlantic than here, the private paying department of some general hospital taking their place.

In these private departments of the hospitals the amount charged varies with the size and position of the room, but very considerable sums are obtained for the privilege of using them. The fees paid for the room, which include board and nursing, go to the funds of the hospital, but the patient has in addition to pay a fee to the physician or surgeon in attendance. A patient may select any one of the physicians or surgeons attached to the hospital, and the amount of the fee for professional services is usually a matter of private arrangement between the patient and doctor. In some cases, however, where there is not an opportunity for such an arrangement to be come to, the general superintendent of the hospital fixes the fee to be paid to the medical man. One would expect that such a system was fraught with various dangers, and likely to lead to much trouble and friction in the management of a large general hospital primarily intended for poor people. So far, however, as I could ascertain, it worked well in America, and nearly all hospitals encouraged it and derived a considerable income from it. The only adverse comment which I heard of the system was that in some hospitals there was a tendency to make too much of the paying department to the detriment of the charitable portion of the institution.

6. *Clinical and pathological laboratories.* These form an essential and important feature of all large American hospitals. A very large amount of space is commonly devoted to the pathological and clinical laboratories, and the boards of management of the hospitals appear to attach great importance to these, and to regard them as a very essential feature of a well-equipped general hospital. The importance of good clinical laboratories, thoroughly equipped and in immediate connection with the hospitals, appears to be much more fully and generally recognized in America than in this country. A very large amount of good scientific work is being done in these laboratories, and the system of recording the results of the investigations brings it into direct connection with the clinical work and notes taken in the wards. The boards of management generally of the American hospitals seem to fully recognize and to encourage scientific work in the clinical laboratories, and to attach greater importance to it than is frequently done in this country. The pathological departments are, moreover, excellent. The mortuary invariably has some system of cold storage, and this, with the maintenance of perfect cleanliness and good ventilation, avoids, to a great extent, those objectionable odours which are so common in the pathological departments of hospitals. Although the weather was very warm during my visit, the *post mortem* rooms were never objectionable, and in some instances one would never have recognized by the nasal organ that one was in such a room. In some cases very nice arrangements existed, in connection with the mortuary, for friends to view the body. We may certainly learn much in America as to the best arrangement of a mortuary and *post mortem* rooms, and as to the best means of avoiding the unpleasantness usually associated therewith.

7. *A nursing home* adjoins every large general hospital. America learnt, I believe, her nurse-training methods from this country, but I think we must admit that she has now excelled her teacher. The nursing department in American hospitals is generally very efficient. At nearly every hospital I was much impressed by the type of nurse I met. The nurses evidently have a good general education before undertaking their purely professional work, and I had no doubt that there was a higher intellectual standard among the nurses of the American hospitals than is the case in this country. The training of the nurses is, I believe, very complete. In many of the hospitals the nurses take notes of the cases under their charge on points bearing upon the nursing, and such notes are preserved with the other clinical records of the case. I examined several lots of such notes, and was impressed by the evident care taken over them, and the value of such

a system. The adoption of this systematic taking of notes of points, which a nurse can observe in a hospital, is not only a valuable addition to the record of a case, but it is an education to the nurse, and makes her more thorough in her work. If more of the nurses in this country would make suitable notes, which were also legible, they would be a greater help to the medical profession than they are even at present. In reference to the legibility of nursing notes. I noticed that at one large hospital the nurses were taught to print rather than to write, and to make each letter of a word not only distinct, but detached and separate from its adjoining ones. The result was that there was more or less uniformity in the style in which the nursing notes were taken, and their appearance was not only most neat and satisfactory, but they were very legible.

In some cases the nurses were specially trained in the cooking of invalid foods, and in one hospital a special kitchen, with the necessary apparatus, was set apart for this portion of the nurses' training. I was told that some of the private paying patients were very particular about their food, which was considered not to be an altogether unmixed evil, as it tended to keep the nurses up to one of their duties—that of seeing that invalid foods were properly prepared.

The management of the hospitals in America is generally on much the same system as in this country. Usually there is a board of lay governors, with a layman as superintendent of the hospital. I was introduced to many of these lay superintendents, and was favourably impressed with the general management of the institutions. The superintendents were generally thoroughly trained, well educated men, and appeared to work harmoniously with the visiting medical staff.

The visiting medical and surgical staff is usually subject to a different arrangement from that in vogue in this country. Usually the hospitals have what is known as an alternating service, part of the staff being on duty for a certain number of months at a time, after which they have a period off duty and their place is taken by other physicians and surgeons. This alternating service was a necessity, I understood, chiefly because during the hot months of the summer the majority of the physicians and surgeons left cities like New York and went into the country, so that their services were not available for hospital duty. Where this alternating service prevails it is not uncommon for a physician or surgeon to be attached to two general hospitals, and so to arrange his hospital duties that he is at one hospital for one period and at another for the succeeding period, the seniors arranging to be away during the hot months of the year. In some hospitals, however,

a continuous service obtains, the visiting staff retaining office during the whole of the year.

The resident staff in American hospitals usually retain office for a longer period than is commonly the case in this country. A common arrangement is for a resident to be in office for two years; he may take his first six months on the surgical side and his second six months in the medical wards; and then for the final twelve months reverts to the surgical wards; or if he elects to begin on the medical side, he is first a house physician for six months, a house surgeon for six months and afterwards spends the remaining twelve months on the medical side. The number of residents and assistants who are not resident in the institution varies in the different hospitals, but they seem to be thoroughly well equipped and in some—as for instance the Johns Hopkins Hospital, at Baltimore—the number is very considerable and would surprise some of the boards of management in this country. The considerable number of assistants connected with the American hospitals facilitates the keeping of clinical and pathological records, and I was impressed by the care which is bestowed on the taking of such records and with the indexing of the same. The Americans never lose sight of the fact that the principal hospitals ought to be scientific institutions, whereat the treatment of the sick is only one of their duties. The recording of the cases and the general scientific work of these hospitals is maintained at a very high standard of excellence.

The education of the medical student in America. There are a very large number of degree-granting corporations in the United States, and the value of the degrees varies considerably. In the more important schools the general medical and surgical course of study extends over a period of four years. In many a very high standard of education is maintained and generally medical education in America has considerably improved of recent years.

The method of teaching adopted in instructing the American student is very similar to that seen in our English schools, but in the third and fourth years of study there appears to be a strong tendency to attach less importance to didactic or systematic lectures than with us. A very large amount of time is devoted to teaching in the clinical laboratories and to practical clinical work at the bedside. There appears to be a strong feeling among the members of the profession who are engaged in medical teaching in America that the time of the student can be much better spent in this way than by attending systematic lectures on medicine and other subjects. In place of systematic lectures a large part of the time is devoted to what are

termed "Quizzes." A certain portion of a recognized text-book, say of medicine, is given to a student to read, and he is subsequently questioned upon it. Although the general tendency on the American continent appears to be to attach less and less importance to systematic lectures, there are still some teachers who maintain the old system, consider it the best and deprecate the system of so largely doing away with systematic lectures. As to whether the plan of replacing didactic lectures by such a method as I have referred to above is altogether advisable may be open to question. The value of systematic lectures so largely depends upon the individual lecturer, and it is certainly a fact that few men are capable of giving a student information in a form which he cannot more readily and perfectly obtain from text-books. General systematic lectures on such a subject as medicine, which shall give a student commencing his clinical work a broad and general view of the subject, must be of value, and almost indispensable to obtaining a general insight into the subject. But full and complete lectures entering into the details of all the various branches of so wide a subject as medicine occupy so much time, and extend over so long a period that their value to the average medical student is most questionable. Elementary lectures on medicine, giving a student commencing clinical work a broad, general outline of the subject of medicine must still have a value which a prolonged course, treating in detail the various diseases, cannot possess. Such elementary lectures of the type I have in my mind, are probably the most difficult to provide, as so few teachers are capable of delivering them in a manner to interest and keep the attention of the young student, or are willing to devote their energies to them. The teaching of elementary medicine is most difficult and requires a physician of large and broad experience, and yet we usually find the junior medical students in our hospitals are taken in hand by the junior members of the teaching staff, whilst the senior physicians and surgeons almost entirely devote themselves to the senior students. Such an arrangement does not appear to me the most advantageous from a teaching point of view. The value of systematic lectures depends, as I have said, so largely upon the type of lectures, and so few men are capable and willing to give what we may term general elementary lectures, that one can quite understand how the present position of the subject in America has been brought about. There the tendency is to abolish systematic lectures, to replace them by setting portions of a recognized text-book to be studied, and then questioning the student upon the part read.

It seems to me advisable that we, in England, should consider

whether our plan of numerous systematic lectures on various subjects, and each course trying to embrace the whole subject of which it treats, is best calculated to conserve the time of the average student and to give him the best insight into his professional work. I think there can be very little doubt that if a vote were taken among the medical students of this country, who had completed their courses of systematic lectures, that there would be a large majority which would condemn our present system, and, although many would except some specially capable lecturer from their strictures, the majority would say that generally speaking the time spent at lectures, although not entirely wasted time, could much more profitably have been spent at tutorial classes, in the clinical laboratory and in ward work. This appears to be the position at which the teachers in the American medical schools have arrived. Didactic and systematic lectures are thus becoming less numerous every year. Some teachers, however, feel that the tendency to abolish such lectures is being carried too far and that without them it is not possible to give that broad and general survey of the subject which is desirable. Probably a middle course will turn out to be the best, and if a remodelling of our systematic lectures on various subjects so as to shorten them and make them more general in their scope, is the result, it is probable that we shall conserve both the time and energies of the professor and student and make their work more valuable to the community in general.

In America, more and more importance is being attached to teaching in the clinical laboratories and in the wards. When speaking of the construction of the American hospitals I called attention to the large amount of space which was given to clinical laboratories and how very well equipped they are. A very large amount of time is spent by the American student in these laboratories and there he is taught the examination of the blood, the qualitative and quantitative examination of the urine, the examination of the expectoration, of vomited and other matters. In his third year he is thoroughly ground in the details of these examinations in special classes, under the direction of the assistants, and in his fourth year he continues his investigations, when he is engaged in more direct bed side work; and his reports, still checked and superintended by the residents in the hospital, become valuable in the hospital records. My impression was that the clinical laboratory work was more systematic and more thoroughly taught at some of the best schools in America than is usual in this country. A large number of the present teachers in the medical schools of America have been students in Austria and Germany, and it is evident that they have been much impressed with the methods of teaching adopted in

those countries, and with the scientific work which is being done there. They are now engaged in training a large number of students on similar lines in their own country and are themselves doing valuable scientific work.

It is difficult for the average medical man in England, who has not visited America, to form an accurate opinion about the scientific work in medicine and surgery, which is being carried out on the other side of the Atlantic. The number of medical periodicals which is published in America is extremely numerous, and unless one knows which are the best of those publications, we are very apt in this country to think that quantity rather than quality is the feature of the medical work published in America. In all countries it is probably true that much matter is published which is not only not worth reading, but would have been better left unwritten. In a large continent such as that of America, especially where advertisement and specialism have reached, let us hope, high water mark, this becomes very evident and it is only by getting to know which are the first-rate medical journals, or by a visit and personal contact with the workers, that we can form an accurate idea of the really valuable medical work which is being done in America.

During my visit I had the good fortune to have an opportunity extended to me of attending the meetings of the Association of American Physicians, which was being held at Washington. This association is something the counterpart of which we have not in the old country. It is an association composed of physicians and pathologists who meet together once a year to discuss scientific medical subjects. They have no medical politics and the time of their meetings is devoted to the discussion of papers of interest to the clinical physician, the pathologist and the clinical laboratory worker. The membership is limited to 125 members, and to be elected a member of this association is considered a high honour. The desire for membership is so great and the number of men doing good scientific work is now so numerous, that it is proposed to raise the limit of membership to 150. The roll of members is a most distinguished one and there can be no doubt about the high scientific value of the work which they are doing. There are similar associations of surgeons and various specialists. These several associations hold a conjoint conference once in every three years.

As the annual meetings of these various associations bring together the workers from different parts of America and Canada, the members are kept in touch one with another and with the work each is

engaged in. The absence of medical politics, the devotion of the time of the meetings to scientific work, which must be of general interest to the various members of the particular branch of the association, together with the limitation of the number of members in the particular association, are important features of these conferences.

Our American confrères are doing very valuable scientific work, and I can strongly recommend any medical man to visit the United States and Canada with a view to seeing up-to-date hospitals and associated medical institutions, and to see how great is the number of men—nearly all of whom are comparatively young—engaged in medical education and in valuable scientific medical work. As I have said before, a visitor from this country is certain of a very cordial and kindly welcome and I have no doubt he will return, as I did, grateful for many kindnesses and with broader views on many subjects. If the above fragmentary notes encourage more of my fellow countrymen to visit the medical educational institutions on the other side of the Atlantic, I shall feel some recompense for having been rash enough to allow to be printed my impressions of a very brief visit.

RETROSPECT OF CURRENT LITERATURE.

Gynaecology.

UNDER THE CHARGE OF WILLIAM GARDNER.

Tuberculosis of the Female Genitalia. A Summary.

While the existence of genital tuberculosis has been recognized for something more than a century, the first case having been described by Morgagni in 1774, a scientific and more or less accurate appreciation of the condition dates only from the appearance of Hegar's monograph in 1886. In 1881 tuberculous Fallopian tubes and ovaries had been successfully removed in a laparotomy by Mandach, and Babes in 1883 had discovered the tubercle bacillus in the vaginal secretion, but Hegar was the first to gather into a coherent thesis the mass of outstanding and variable facts which had been before his time, merely cumulative and chaotic, and to him belongs the credit of imparting a definite individual impulse to the halting progress of our knowledge of this disease. Since the advent of this monograph newer and more scientific conditions have obtained. There have been an increasing frequency of surgical intervention and all the added opportunities for investigation and experience, which such intervention entails, a perfecting of the various methods of examination, both clinical and pathological, and a widespread dissemination of a systematic and thorough use of such methods together with a careful statement of all issues and results. Consequently data have accumulated and advance has been made. The monograph of Whitridge Williams, which appeared in 1894, punctuates the history of this general advance, and at the same time enables us to measure the results of the eight years which had elapsed since Hegar's work. Another eight years and in 1892, at the meeting of the International Congress of Gynaecology and Obstetrics held at Rome last September, the third subject for discussion was "tuberculosis of the female genitalia." This discussion was introduced by Professor Martin of Greifswald, who was followed by Faure of Paris, J. A. Amann of Munich, and J. Veit of Leyden, and proved a most

able disquisition of our present-day knowledge of the subject. While nothing strikingly new was forthcoming, the clinical and pathological picture was clarified and in parts redrawn in stronger and in less ambiguous lines. Than ever before there were here a keener and more impartial scrutiny and judgment of the pathological and clinical data of which we are possessed.

The object of this paper is merely to give a summary of the discussion. In the main I shall follow Veit's thesis, perhaps the ablest of the four, but at the same time I shall reinforce the statement at various points by abstracts from the others. Veit begins his paper by discussing various "theoretical considerations" under which he includes the following :

1. *The frequency of occurrence of genital tuberculosis.* The statistics of various observers are cited, but the case is perhaps most fairly put by quoting the figures of von Hanseman derived from the Hospital Am Friedrichshain at Berlin. During a period of five and a half years, 7,000 autopsies were made at this hospital, and of these 450, or 6.5 per cent., were of tuberculous women. Among these 450 cases, the genitalia were tuberculous in 18, or in 4 per cent. In this matter the citations of different observers vary considerably, but the statement can be justly made that the genitalia are affected in from 4 to 6 per cent. of women suffering from any form of tuberculosis. Faure affirms that in men this proportion is but 3 per cent., and so claims that genital tuberculosis is more common in women. Of the organs themselves the Fallopian tube is out of all proportion the most frequently affected, seldom is the uterus and extremely rarely the ovary.

2. *Pathology and modes of infection.* It goes without saying that the pathology is indissolubly linked with the presence of the tubercle bacilli in the tissues and the various reactive changes therein which these organisms produce. As conditions predisposing to a nidus, within the generative organs, suitable to the growth of the bacillus, Faure mentions hypoplasias, all chronic inflammatory processes pyogenic or gonorrhæal, and especially the latter. The disease is found commonly between the ages of ten and thirty years.

The bacilli themselves, we may say, reach the generative organs either :

(a) Directly, by ascending through the vulvar orifice and vagina, or descending through the ostium abdominale of the Fallopian tube, or

(b) Indirectly, through the lymphatic and blood streams.

(a) Directly:—In the ascending infection the organisms are introduced directly into the vagina at coitus or by contaminated fingers or

instruments. If the host of these bacilli be the patient herself, as may happen when the respiratory or alimentary systems are tuberculous, there results an auto-infection; if a stranger host, a hetero-infection. If the vagina be healthy, offer no abrasions, "le microbe et les lésions qu'il occasionne se propagent par continuité le long de la muqueuse. Rappelons toutefois que la bacille peut cheminer sans occasionner des lésions jusqu' aux trompes; celles-ci peuvent rester ensuite seules atteintes ou bien, de là, les lésions peuvent, par voie descendante, gagner peu à peu les régions sous-jacentes." So Veit's argument is defined, and this in spite of the fact universally accepted, of the non-motility of the organism itself, and of the carefully performed experiments of Popoff with guinea-pigs, where cultures of bacilli placed directly in the vagina produced no infection whatever at any level of the genital tract unless the vaginal mucosa had been previously wounded or diseased. In the matter of the passage of free bacilli up to the level of the Fallopian tube without producing any lesion, Hegar's contention seems the more reasonable, his argument being that the bacilli, through minute abrasions and occasioning only microscopic lesions, pass from the vagina into the para-vaginal and para-uterine tissues, implicate thence the pelvic peritoneum, and then descending pass directly into the Fallopian tube. If, on the other hand, the bacilli be included within active spermatozoa their innocuous passage up to the level of the Fallopian tube is explicable, and, according to Veit, this form of hetero-infection does occur, for, as has been shown by Gaertner, Landouzy, Martin and others, the spermatic fluid of individuals, the subject of advanced tuberculosis even other than genital, contains tubercle bacilli, though these are few in number.

In the descending infection the organisms, either free, included in cells or caseous debris, enter the Fallopian tube from the peritoneal cavity. This possibility has been demonstrated by Pinner, who in his experiments, has shown that substances introduced anywhere into the peritoneal cavity, even if these be motile organisms, tend to accumulate in the lowermost portions of the cavity and pass thence into the Fallopian tubes.

(b) Indirectly. (1) *By the blood stream.* According to Kleinhaus there are three facts which support this method of dissemination.

- (x) The existence of a genital tuberculosis consecutive to a pulmonary tuberculosis with no intermediate foci.
- (y) The frequency of the localization of tuberculosis at the placental site.
- (z) The transmissibility of the bacillus from the mother to the foetus.

To these three considerations Veit adds as a rider the following fact:—The frequency with which there occurs an acute widespread military tuberculosis subsequent to the existence of a single circumscribed focus.

(2) *By the lymphatics*;—the phenomena here being simply those of an infected wound. If the primary focus be in the upper two-thirds of the vagina or the cervix uteri, the hypogastric glands become in course affected and tuberculous foci establish themselves near the most vulnerable segment of the genital tract—the Fallopian tube.

(3) *Primary genital tuberculosis*. Veit approaches this much discussed question with extreme caution and lays down the following axiom. “The conditions absolutely requisite in order that a genital tuberculosis be considered primary are essentially anatomical; apart from the genital organs there ought not to exist tubercular lesions in any other part of the body, exception being made to those regions (meninges, joints and peritoneum), where the infection is necessarily secondary.” But the difficulty here begins, from the fact that the primary focus, superficial, glandular or visceral may be very small, and to be found only after thorough search and such search made post mortem. For example, given a genital tuberculosis co-existing with a tuberculous peritonitis and these the only lesions in the body, invariably must careful and minute search be made throughout the whole gastro-intestinal tract for any trace whatsoever of a primary focus or even cicatrix before the genital tuberculosis can be pronounced primary. Clinical proofs as to the primary nature of the lesion must be totally disregarded, for the conclusion in this matter is only to be founded upon careful pathological research. “Hence, if we consider as primary genital tuberculosis only those cases in which there does not exist, outside the genital organs, save in regions where the lesion is necessarily secondary, any other lesion, or remains, or cicatrix of a lesion, the autopsy having been made with all care, our diagnosis will have every given possibility of approaching the truth.” On the point of primary genital tuberculosis Veit plays havoc with the several tables of statistics which place as primary 8 to 12 per cent of all the cases of genital tuberculosis. Analysed according to the above strict conditions, he considers that we have only the following indisputable cases:—Primary tuberculosis of the Fallopian tubes, ten cases (Orthmann cites 33); of the ovary, none; of the uterus, five cases; and of the vulva and vagina, none. Upon the moot point, as to whether or not tubercle bacilli can pass through a mucous membrane without producing therein a local lesion, the pronouncement is as follows:—“I believe that al-

ways at the point of entry there is produced a local lesion, but the lesion may heal so quickly as to pass unperceived." (In this strict sense accordingly the primary lesion must always be at the point of ingress, and all subsequent manifestations of the disease, wherever found, secondary.)

Symptoms:—In the words of Martin, "at the present time we do not possess any symptom or sign pathognomonic of tubercular infection of the genital organs; . . . the fact upon which the great majority of my patients insist is the absence of pain in the genital sphere." The anamnesis may disclose significant facts in the shape of a suggestive family history, or account of some previous chronic trouble in the glands, lungs, bones or joints. If associated with such a history we get a persistent uterine catarrh, a gradual thickening or increase in the size of the Fallopian tubes, a peritoneal reaction, ascitic or adhesive, not otherwise to be accounted for, suspicion of the nature of the condition cannot fail to be aroused.

Diagnosis:—The following methods are, if possible, to be employed:

(1) Microscopical examination of portions of tissue removed from any doubtful lesion of the vulva, vagina, or cervix uteri, or from the interior of the uterus by a curetting; a careful search to be made in every case not only for the tubercles with their characteristic histology, but also for the bacilli themselves. In tubercles when the process of healing has begun, the organisms are few and indeed often absent.

(2) Examination of the secretions from the uterus microscopically and by cultural and inoculation methods.

(3) Careful bimanual palpation at all times where the uterine appendages are involved. When the appendage lesions are small and of doubtful character, some considerable importance is to be attached to the following points as indicative of early tuberculosis.

(a) Beaded nodosities in the substance or on the surface of the utero-sacral ligaments.

(b) Irregular nodes in the isthmian portion of the Fallopian tube (salpingitis isthmica nodosa).

(c) Widespread adhesions about the Fallopian tubes with small tendency at least at first to complete occlusion of the tubes themselves.

In these ways a distinction from gonorrhœal salpingitis is to be drawn, a differentiation which in these cases is often of very great difficulty, and an approach to a diagnosis made.

(4) General examination of the patient. Much that appears here deserves no capitulation and three considerations only demand mention.

(a) A blood examination offers us no help in these cases as we possess as yet no hæmatological sign of any value whatever.

(b) The frequent coincidence of tubal pregnancy and tubercular salpingitis justifies the conclusion that the latter may be oftentimes the cause of the former and warrants us in any given case of ectopic gestation to keep in mind the possibility of genital tuberculosis.

(c) Hegar has drawn attention to the fact that children born of tuberculous parents are more frequently malformed. Veit, while endorsing this statement, concludes that the converse of the argument, namely, that deformed offspring establishes an inference of parental tuberculosis, scarcely enters the field of practical medicine.

Prognosis:—This is ever grave, albeit spontaneous cure is always possible and numerous cases are on record in which removal of the diseased segment afforded permanent relief.

Treatment:—Veit institutes a plea for early diagnosis as being after all the most efficient means of treatment, here, as elsewhere, of tuberculosis. Again he urges upon our recognition the constant tendency to "spontaneous cure" of all lesions of such nature, provided that the resistance of the individual be not greatly impaired. Accordingly the first effort in treatment is to maintain, and, if possible, increase this individual resistance by the exhibition of all the hygienic and therapeutic agencies at our command. Prophylactic measures can be summed up in two phrases—a careful hygiene for the healthy, and a suitable segregation for the diseased. A strong protest is entered against the marriage of tuberculous individuals. Among therapeutic agencies we possess as yet no specific.

Veit's standpoint in the question of operative interference is more than usually conservative; it is thus defined by himself. While in cases of primary genital tuberculosis operative measures are probably often justifiable, "in the treatment of secondary genital tuberculosis, or at least in the treatment of the infection localized to the genital organs, radical operation should constitute the exception, and, on the contrary, general and local treatment the rule." And, again, in the words of Hegar, which he quotes,—“Operation is indicated only in the cases of tuberculosis which are circumscribed and where there does not exist any indication of any arrest or a regression in the evolution of the lesions.”

When operation is determined upon, the disease being in the appendages, choose the abdominal route and make the operation radical, removing uterus, ovaries and tubes, unless, as in very exceptional circumstances, the disease be practically confined to the appendages of one side, in which case remove only the diseased segment.

Where there is an associated tubercular peritonitis, attempt at first general treatment. If there be no tendency to cure and ample time have been given for the formation in the tissues of reactionary antitoxines, perform a coeliotomy, evacuating any fluid present; if the inner genitalia reveal the presence of foci of disease in their parenchyma and not merely an implication of their peritoneal surfaces, remove them, even though there be tubercular foci in other regions of the body.

In the topical treatment of genital tuberculosis the first place belongs to iodoform.

Veit concludes his paper by a separate chapter on tubercular peritonitis. He recognizes two forms of peritonitis, an ascitic and an adhesive, discusses at some length and accepts Gatti's theory of the formation of reactionary antitoxines in the tissues, and so accounts for the good results which often follow the complete evacuation of the ascitic fluid, the antitoxines consequently reaching the bacilli in a more concentrated solution. He advocates in any given case a period of watchful general treatment in the hope of securing a "spontaneous cure" and at the same time allowing ample time for the formation of the antitoxines, operates by a coeliotomy with complete evacuation of any fluid and, if the uterine adnexa are extensively diseased, performs at the same time a pan-hysterectomy.

W. W. Chipman.

Reviews and Notices of Books.

A TEXT-BOOK OF SURGICAL PRINCIPALS AND SURGICAL DISEASES OF THE FACE, MOUTH AND JAWS FOR DENTAL STUDENTS. By H. HORACE GRANT, A.M., M.D., Professor of Surgery and Clinical Surgery in the Hospital College of Medicine; Professor of Oral Surgery in the Louisville College of Dentistry. W. B. Saunders & Co., Philadelphia and London. Canadian Agents, J. A. Carveth & Co., Toronto. Price \$2.50.

This book is interesting for dental students, and is clearly written and well illustrated. It deals with the conditions which come specially under the care of dentists. Syphilis, tuberculosis and malignant diseases of the cavity of the mouth and face are considered as well as the inflammations, ulcerations and tumour formations. It would seem that fractures, particularly of the lower jaw, scarcely receive the attention which they deserve.

The sterilization of instruments and dressings is mentioned. This is a most important subject and should be strongly emphasized. It is a neat book which can be recommended.

G. E. A.

SAUNDERS MEDICAL HAND-ATLASES. ATLAS AND EPITOME OF ABDOMINAL HERNIAS. By DR. GEORGE SULTAN, First Assistant in the Surgical Clinic of Gottingen, Prussia. Authorized Translation from the German, Edited by WILLIAM B. COLEY, M.D. Philadelphia and London, W. B. Saunders & Company, 1902. Canadian Agents, J. A. Carveth & Company, Toronto. Price \$3.00.

This is one more of the series of admirable atlases published by W. B. Saunders & Co. The names of the author and the editor would seem a sufficient guarantee of the quality of the book. It deals with the theoretical and operative side of a subject of great interest to the general practitioner and the surgeon in a most comprehensive manner. A brief and most interesting summary is given of the experimental work done by Roser, Busch, Lossen, Bidder and Kocher. The diagnosis, varieties, complications and sequelæ receive full consideration. The different operations for the radical cure are described in detail and are made quite clear.

In speaking of gangrenous intestine in strangulated hernia the

author quotes figures which show that, if the condition of the patient warrants, better results are obtained by resection than by establishing an artificial anus. Peterson has reported twelve primary resections of the intestine in the Heidelberg clinic with but one fatal result, a mortality of 8 per cent. The operations were performed under local anæsthesia and the Murphy button was employed.

The book contains 119 illustrations, 36 of them in colours; the publisher's work is of a very high order; we recommend it very highly to our readers.

G. E. A.

CANCER OF THE UTERUS. A CLINICAL MONOGRAPH ON ITS DIAGNOSIS AND TREATMENT. By ARTHUR H. N. LEWERS, M.D., Lond, F.R.C.P. Lond, 8vo., pp. 328. Price, 10s. 6d. H. K. Lewis, London, 1902.

There is an admirable book by the Obstetric Physician to the London Hospital. In the first part much attention is given to the all important question of early diagnosis. In the vast majority of cases when first seen for examination by a medical man, diagnosis is easy, but in most cases all hope of cure is gone. "Too late" is what the doctor must say to himself, if not to the patient. All who have much to do with this dread disease know that it is because women do not appreciate the significance of the early symptoms, the bleedings and meat-water discharges.

In order that more cases may be reached by surgery sufficiently early, Dr. Lewers makes a suggestion with which we cordially agree. It is that something of a practical nature be done to make women familiar with these suspicious symptoms. The diffusion of knowledge should, of course, be quite impersonal and for England might be, by wide circulation of a leaflet issued by the two Royal Colleges of Physicians and Surgeons, to be sent to every registered medical man with the suggestion that copies be sent to nurses, matrons, district visitors, and others of a class who are often consulted by patients before they are seen by medical men.

The gross and microscopical characters of the malignant diseases are well and concisely described and illustrated. The illustrations and descriptions are, however, far inferior to those of the monumental work of Cullen, of the John Hopkins Hospital. While claiming that the clinical characters and microscopical appearances of carcinoma and sarcoma are distinctive, the author remarks that "the malignancy of an adenoma of the uterus cannot always be proved by examining sections of the growth under the microscope, that its true nature is really malignant may only become apparent by watching the progress of the

case." All gynæcologists of large experience will concur in this opinion.

In the sections on treatment the various operations, partial and radical total extirpation of the uterus are fully considered. In discussing the modern extension of radical operation to the broad ligaments, cellular tissue and lymphatic glands, the author shares the opinion of conservative operators that they are of doubtful advantage, while primarily of great danger to life. Numerous illustrative cases are reported, and tables appended giving the after results of each of the various operations.

This admirable inexpensive little book should be in the working library of every gynæcologist and general practitioner, and should be carefully read.

W. G.

THE INTERNATIONAL TEXT-BOOK OF SURGERY BY AMERICAN AND BRITISH AUTHORS. Edited by J. COLLINS WARREN, M.D., LL.D., Eng., Professor of Surgery Harvard Medical School; and A. PEARCE GOULD, M.S., F.R.C.S., Surgeon to the Middlesex Hospital, London. Second Edition, thoroughly revised. W. B. Saunders & Co., Philadelphia and London. Canadian Agents, J. A. Carveth & Co., Toronto. In two volumes. Price per volume, \$5.00.

That a new edition of the International Surgery is required in two years is evidence of the quality and popularity of the work, and also of the rapid strides being made in Surgery. The most up-to-date book very soon gets out-of-date, and carefully revised and improved editions are necessary.

The authors and editors have made some important alterations in the present edition. Diseases of the lymphatic system have received increased attention, and a more thorough and radical removal of tuberculous glands is recommended in the present than in the former edition.

The chapter on the therapeutic results to be obtained by the use of the Röntgen ray and the Finsen light will be much appreciated. Every one is interested in the possibilities of these therapeutic agents, which seem to promise much in suitable cases.

It is to be regretted that more notice has not been taken of some of the more recent investigations into the nature of malignant disease by Plimmer and Russell in England, San Felice in Italy, and by Park and Gaylord in America.

Altogether the work is to be heartily commended as representing the best in English and American Surgery.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

Stated Meeting, December 5, 1903.

G. E. ARMSTRONG, M.D., PRESIDENT, IN THE CHAIR.

A Case of Sarcoma of the Ovary.

DR. F. R. ENGLAND read the report of this case.

DR. LAPHORN SMITH stated that in this case the diagnosis had been appendicitis and it often was not easily made. As soon as he saw the abdomen open and the ascitic fluid escaping he remarked that it was a malignant case as he considered this a sure sign of malignancy. He was glad Dr. England had removed both sides as the disease was likely to recur in the other side, and he cited an instance of this. The prognosis in his experience in sarcoma was very favourable. The frequency of sarcoma was only 1 in 100 cases of ovarian tumour.

A Mass of Hair Removed from the Stomach of a Girl of Twelve Years.

DR. JAMES BELL read the report of this case and DR. KEENAN gave the pathological study of the condition. See page 94.

DR. ADAMI said that three cases had been reported in Canada, two in Montreal,—this case of Dr. Bell's and one reported by Dr. Osler. In the latter there were two portions, one fitting the pyloric end of the stomach and the other the cardiac, the two evidently playing upon each other during life. Possibly this separation into two parts indicated that there had for a time been arrest of the habit, and that on resumption the new hairs formed into a separate bolus. This was altogether the third case on record in which the condition has been diagnosed before operation; in every other case a false diagnosis was made. He would like to ask Dr. Bell, taking into account these frequent mistakes in diagnosis, what were the particular conditions which led him to a correct diagnosis here.

One point not noted by Dr. Keenan in his review of the subject was that in these cases the hair was often noted to be much darker than the hair of the patient. The accumulation of the hair extended over a long period of time, and it was quite natural to suppose that the darkening was due to the action of various sulphides produced by certain foods in the stomach. Another point was the extension down the

duodenum. In looking at the specimen he found himself a little puzzled to determine which was the part corresponding to the pyloric ring: there appeared to be two constrictions of the hair mass towards the duodenal end. These hair balls were very common in cattle. At the last meeting of the American Veterinary Association ten hair balls were exhibited taken from cattle.

DR. BELL, in answer to Dr. Adami, with regard to the making of a diagnosis, said that the child was very thin and the mass was easily palpable and definitely a cast of the stomach. There was a history of gastro-enteritis of nearly two years duration, and it was obvious that no neoplasm could have so exactly outlined the stomach. Then the sensation to the finger was not that of a tumour growth, but of some foreign body, and thus there was left only one gap to fill in, the nature of the material. Knowing that such conditions had been recorded there was little difficulty in setting it down to this. With regard to the colour and length of the hair, that of the child was quite flaxen and in no place was more than 8 or 10 inches long. There was no doubt about the position of the pyloric ring as it was of normal shape, only considerably enlarged, and could be seen where the tumour became small.

Various Genito-Urinary Conditions.

DR. JAS. BELL read the reports. See page 95.

DR. ADAMI said that the first two cases were of some interest as showing the parallelism between a chronic gonorrhœa affecting the genito-urinary organs, and tuberculosis. In the first case, although the lesions in the kidney closely resembled tuberculosis, no tubercle bacilli could be detected, in the second there was undoubtedly tuberculosis implanted upon gonorrhœa. In the first case described by Dr. Bell the kidney was the seat of an abscess formation which, in parts, closely resembled tuberculous softening. The breaking down of the lower end of the kidney had led to the interesting condition of fistula into the intestine, there being two fistulæ opening from the broken down lower end of the right kidney into the beginning of the ascending colon posteriorly. Associated with this there was a condition of gonorrhœal vesiculitis of the left side. The seminal vesicle of this side was markedly enlarged with evidences of chronic inflammation. It contained thick jelly-like material which extended into the first part of the vas. The globus major and the globus minor of the epididymis of the left testicle showed extensive chronic inflammation with atrophy of the testicle, not unlike what is to be seen in tuberculosis. Yet the history in this case gave no evidence of tuberculosis nor of tubercle

bacilli being found on repeated examination of the urine or again in the tissues. The condition also of the testis and epididymis was not quite what one would expect to find in tuberculosis inasmuch as the process was limited and did not implicate the capsule or lead to surrounding fibrosis.

The kidneys in this case resembled closely those exhibited before the Society two years ago of neglected gonorrhœa contracted some four years previous to death. In that case there was marked cystitis and specialists in New York diagnosed tuberculosis, but although on the patient's return to Montreal the urine had been examined some forty times tubercle bacilli were never found, while at the autopsy, in the pelvis of the kidney smears were obtained showing characteristic diplococci.

In the second case there were similar evidences of old gonorrhœa. The prostatic tissue here was largely wanting, the prostate being converted into a series of wide saccules, an appearance arising probably in the first place from acute prostatitis with loss of tissue and being exaggerated by the internal pressure resulting from stricture. In this case pus was found in the left seminal vesicle and the vas showed two very considerable fusiform dilatations, one at the lower end, one at the upper end of the pelvic portion. These dilatations contained pus but no tubercle bacilli. The left testicle resembled much that in the previous case, save that here definite miliary tubercles were present throughout the body of the testicle and there was a very definite tuberculosis of the uterus.

The third case showed similarly atrophy of the prostate, but this atrophy here appeared to be connected with the previous operative removal of the left testicle and there was, in addition, intense cystitis, and chronic inflammation of the ureter with surrounding fibrosis. The pelvis of the kidneys were markedly distended and contained a gritty material.

Two Cases of Cæsarean Section followed by Subperitoneal Hysterectomy.

DR. CHIPMAN read this paper. See page 17 of the January number.

DR. WILLIAM GARDNER had seen the first patient during her first pregnancy with Dr. Wilson for the purpose of discussing the question of operation, but had advised against it. When labour came on she was put under chloroform and a slight but very ineffectual attempt made to use the forceps. At the operation he had been struck with the extraordinary thickness of the uterine wall which had to be gone through, and the explanation of this had become apparent on striking

with a knife an ordinary fibroid, which accounted for the enormous development. He had not quite gathered in Dr. Chipman's case whether the impediment was to the muscular action of the uterus, or to obstruction from the presence of the two nodules on either side of the cervical canal.

The speaker had been associated with Dr. McCallum in the care of a lady nearly 40 years of age, pregnant for the first time, and who had appeared to have a mass of fibroids in her uterus. They had been prepared, if necessary, to operate during labour, but when the time came they succeeded in raising the mass and delivering the patient, but she had died suddenly before recovering consciousness and after delivery of the placenta. No cause could be ascertained, but it illustrated the point that danger might be met with in attempting to displace such a fibroid mass at the time of parturition. He did not think the fundal incision was at all likely to become popular, and Dr. Chipman's case seemed to add further evidence against it.

DR. LOCKHART thought it was rather an extraordinary coincidence that Dr. Gardner should have taken the ordinary incision and struck the placenta, and Dr. Chipman the unusual one and done the same thing. He believed that the fundal incision had rather fallen into disuse. Dr. Lockhart had had only one case of Cæsarean section himself, and his success had been in a measure due to Dr. Gardenr's presence. After removing the whole mass from the abdomen and covering it carefully with warm antiseptic towels, one assistant had controlled the hæmorrhage digitally by a hand on each side, while another steadied the uterus while the incision was being made. He thought if these precautions were taken it was quite unnecessary to cut off all the circulation except by one artery.

DR. CHIPMAN, in reply, thought the danger to the child was not much increased by cutting off half the blood supply. Digital control of the vessels of the broad ligament was all very well, where one could get down into the uterus, but if the fibroids had grown into the broad ligament it was impossible to get down far enough, and the loss of blood might mean the death of the patient.

Stated Meeting, Jan. 2, 1903.

H. S. BIRKETT, M.D., PRESIDENT, IN THE CHAIR.

The following were elected Officers of the Society for the Session 1903-04:—

President—Dr. H. S. Birkett.

Vice-President—Dr. John A. Macdonald.

Treasurer—Dr. Alfred T. Bazin.

Secretary—Dr. A. Mackenzie Forbes.

Dr. James A. Jack was elected a Trustee to succeed Dr. G. A. Brown, who retires.

Analysis of About One Hundred Cases of Gastric Ulcer.

DR. F. A. CANTLIE read this paper by Dr. C. F. Martin and himself.

DR. F. G. FINLEY was much surprised at hearing there were so few male cases, and thought at the Montreal General Hospital the number was very much larger. He had been struck by the number of sailors who suffered from gastric ulcer, and thought this might be attributed to the proverbial hard tack and coarse food to which they were accustomed. He had noticed that Dr. Cantlie did not say much about hyperacidity, and presumed the authors of the paper had been somewhat chary about passing the stomach tube. Although the Germans said there was no harm in using it, the speaker did not like to use it unless there was some indication specially for it.

DR. F. W. CAMPBELL speaking of the nine operations which had been reported in the paper, wished to know how the diagnosis was made, and how duodenal ulcer was excluded. He referred to a case seen many years ago, in which the late Dr. Palmer Howard, Dr. Osler and himself had been interested, and where a diagnosis of gastric ulcer by the two last named had not been agreed to by Dr. Howard, solely on the statement that blood was passed by the bowel and none whatever vomited, and that consequently the ulcer was duodenal. The patient had refused to submit to rectal treatment and on the speaker's suggestion had consulted Dr. Austin Flint, who told him that the condition present was melæna, due to liver trouble and that he had no ulcer. Before this consultation the pain and discomfort had been so great that he had been kept for days under the influence of morphine, but on returning to his hotel he ate a hearty meal without discomfort and thereafter remained well for a long time. He finally died of hæmorrhage from the rupture of a large vessel, and left word that a post mortem examination was to be made, which Dr. Osler performed, and the ulcer was found in the duodenum. The peculiar part of the history is that for weeks he did not suffer any inconvenience whatever. Dr. Campbell said that he had not seen very many cases and it seemed a great advance that to-day we could do so much, where formerly we were absolutely powerless.

DR. JAMES STEWART agreed with Dr. Campbell that the diagnosis of gastric ulcer was often a matter of considerable difficulty. He had made the diagnosis in some of the reported cases and had not been

quite sure that he was correct. If there was no hæmorrhage and only pain, the condition might be due to various troubles, but it was always safer to take the worst opinion regarding these doubtful cases, especially as regarded treatment. Of course Dr. Cantile had not had time to analyze correctly the treatment that had been employed, but the speaker thought the question of diet was often a difficult one; although hyperacidity was generally the rule, one found that many of these patients would not take nitrogenous food, but insisted on taking the food which was theoretically the worst for them, and yet they got on fairly well. The speaker wished to know from Dr. Adami regarding the frequency and importance of secondary infection of the parotid gland. Quite recently he had seen two cases of gastric ulcer, where suddenly a suppurative inflammation of both parotids had set in, and he could remember two other cases where the same form of septicæmic inflammation of the parotids had occurred.

DR. LAPHORN SMITH, speaking in reference to the remarkable frequency of this disease in women, drew attention to the reason commonly given of tight corsets constricting the stomach and exerting sufficient pressure to interfere with the circulation and produce a local necrosis. Another point was that women were more liable to suffer from indigestion; this might be one of the factors in domestic servants. Dr. Smith questioned whether the very tight belt used by sailors, who were mentioned by Dr. Finley as especially prone to the disease, acted in the same way as tight corsets. The remarkable success of operative treatment in these cases was wonderful, but no doubt the difference was very marked between a general peritonitis due to perforation in appendicitis and that due to perforation of the stomach.

DR. W. F. HAMILTON asked if the subsequent history of many of the cases had been followed up. He had had occasion to see from time to time two of the operative cases and both in remarkably good health. He could recall also another case with severe exhaustive hæmorrhages in which the subsequent history was thoroughly satisfactory.

DR. F. J. SHEPHERD drew attention to the fact that even where the symptoms were quite characteristic the surgeon might find no ulcer. He had opened the stomach in a case in which there was bleeding, vomiting, pain and inability to retain food at all, and found absolutely nothing but minute bleeding points, no erosion. He had seen two other cases with similar symptoms and yet at post mortem nothing had been found in the way of an ulcer.

DR. G. E. ARMSTRONG said that the question of this form of bleeding from the stomach was very interesting. The late Dr. Wyatt

Johnston had told him that he had performed autopsies upon patients who had bled to death from hæmorrhages from the stomach and yet could not really say where the blood had come from. He had himself come across similar conditions in operating for hæmatemesis. One sometimes found a little oozing here and there, and on touching it up with the cautery the hæmorrhage was easily arrested and did not return. In other cases there was sometimes a patch the size of the hand, and in others again the stomach looked as if one had taken a knife and made a sharp slit, and there was oozing from that fissure. Dr. Armstrong also drew attention to the value of a gastro-enterostomy on the posterior wall in many of the hæmorrhagic cases, as it gave the stomach rest and secured perfect emptying of the organ. He thought it would be interesting if Dr. Cantlie could furnish the figures to ascertain the length of time symptoms had existed of the disease before the hæmorrhage or perforation had occurred, whether in the first few weeks, months or years. He knew of one case of hæmorrhage where the history extended over nine years. He would also like to know whether there was any relation between the length of time elapsing after taking food before the onset of the pain and the situation of the ulcer.

DR. ADAMI agreed with Drs. Armstrong and Shepherd, that there might be oozing of blood from the greater vessels of the stomach without anything that could be properly spoken of as gastric ulcer. In a post mortem lately he had seen similar oozing in the jejunum with but slight injection of the mucosa and absolutely no sign of any vessel or anything to show where the blood came from. With regard to Dr. Stewart's question about the occurrence of parotitis, he had never come across the condition and was ignorant in regard to it.

DR. ARMSTRONG, within the past twelve months, had had one case of hæmorrhage from the stomach operated on, which was followed by suppuration of both parotids with bursting into the middle ear and perforation of the drum. Another case was that of a young lady with acute appendicitis, who also suffered during convalescence after operation from suppuration in both parotids.

DR. SHEPHERD had seen the same condition in connection with injuries to the intestine.

DR. CANTLIE, in reply to Dr. Finley's question regarding the examination of the stomach contents, said there were so few cases on record of passing the tube that he did not record them. He had not made the diagnosis, simply including all those on the records as gastric ulcer. Of the post mortems performed, there were only two, in one of which

an enormous perforation was found, and in the other multiple erosions. He was unable to answer the other questions.

A Recovery after Typhoidal Perforation.

DR. ELDER read the report of this case. See page 98.

DR. ARMSTRONG believed that the figures of recovery after typhoid perforation were improving, and that we could claim that perforation of the intestine in typhoid fever was not always fatal. This case was interesting because the operation was beyond the 12-hour limit, which had been a very marked dividing line in the Montreal General Hospital cases. The total recoveries, the last time he had worked out the figures, were 18.18 per cent., and in cases operated upon before 12 hours, 40 per cent. Dr. Armstrong went on to say that the more he saw of these cases the more he felt that he must look for some disappointments because of the difficulty of diagnosing a perforation in many instances. A case of perforation had occurred within the week where there had been no variation of pulse for hours, not a half degree variation in temperature, no variation in blood count except a lessened leucocytosis, soft abdomen, movable tenderness giving every characteristic of being more due to flatulence or a colicky condition of the bowels, and a tenderness which would permit of very great pressure without much discomfort. He had operated without finding perforation in two cases in which the symptoms were more marked than they were in this case, which had perforations; in one a leucocytosis of 15,000 had developed within four or five hours and in the recent case it rather lessened. Incision was made with a very dilute solution of cocaine about 6 or 8 hours after perforation, and the condition being found the operation was completed under ether. Thus the symptoms were very often vague and if one waited until definite symptoms declared themselves the chance of cure might be passed. In such cases the speaker advocated opening the abdomen with local anaesthesia under cocaine as avoiding shock, and, in the event of there being no perforation found, the unpleasant effects of general anaesthesia.

DR. F. J. SHEPHERD was not satisfied that the case reported was one of typhoid perforation, unless it were possible for an ulcer to remain in the bowel for some years. The rapidity of recovery after operation was also against it. He denied the claim that operation for perforation improved typhoid fever, and referred to three of his published cases, in two of which the after course of the fever was unaltered by the operation. He was not such an advocate of cocaine as Dr. Armstrong, believing that ether did not do harm even if there

was no perforation found on opening the abdomen. Speaking of the Widal reaction, he felt that it was sometimes not obtained in typical cases.

DR. FINLEY agreed with Dr. Shepherd that one must feel a little sceptical about this being typhoid perforation. He thought that the perforation took place about the eighth day, and the subsequent history and absence of Widal reaction were against its being typhoid fever. At the same time he could not suggest any satisfactory explanation.

DR. REILLY, in reference to Dr. Armstrong's point about the 12 hour limit of time for a successful operation after perforation, recounted a case in which recovery took place when operation had not been done until 19 hours after perforation, but as the disease had run a comparatively mild course it might be that the time under which a successful result might be expected would bear some relation to the severity of the disease.

DR. ADAMI said it was difficult to see what other form of ulceration could be present in this case; the fact that the ulcer was opposite the mesenteric attachment, the age of the patient, the possibility of a second attack of typhoid and of an attack in which only two or three Peyer's patches were ulcerated, all had to be taken into account. It had to be kept in mind that the Widal, or Widal-Grünbaum reaction is not absolute. It is not obtained in absolutely every case of undoubted typhoid. There is a margin of five per cent. or so of typical cases of the condition which do not exhibit it.

DR. ELDER thought the theory that this might have been an old ulcer persisting from the former attack of typhoid was more open to doubt than his own diagnosis. The character of the ulcer and its position, together with the history of the case led him to stick to his diagnosis in spite of the absence of the Widal reaction.

Stated Meeting, January 16, 1908.

H. S. BIRKETT, M.D., PRESIDENT, IN THE CHAIR.

A Case of Metastatic Parotitis.

DR. LAPHORN SMITH exhibited a patient with this affection.

A woman, aged 56 years, came to the Western Hospital a year before for some bladder trouble. Menstruation had stopped two years before she sought advice. She had no children. She was put under Dr. Smith's care, and on examination found to have a pretty large fibroid tumour which was removed by abdominal hysterectomy. The patient was making a very even recovery when pain in the left parotid region was complained of. The temperature was mostly normal, never going

above $100\frac{1}{2}^{\circ}$ F., and the pulse ranged between 80 and 85. About the time that this trouble developed in the parotid gland she began to have strange mental symptoms, though a French woman and having slight knowledge of the English language, she persistently refused to speak French. This continued for three weeks, when she just as suddenly recovered her power to speak French again. The next three weeks she had other forms of delusions.

The speaker said that he had put this down as a case of metastasis; older writers stated that there might be a sudden show of inflammation in a distant part, while modern ones hold that there was proneness for inflammation to extend by recognized channels. In Whittaker's Practice of Medicine, Babinsky reports three cases of mental aberration after operation on the genital organs of women, and it would seem that this condition was not uncommon. In his own case there was suppuration, although there was no such condition present in the genital organs, and no evidence of pyæmia or septicæmia.

DR. CHIPMAN asked if Dr. Smith had done a supravaginal amputation or total hysterectomy. The cases of suppurative parotitis were not so frequent after abdominal operation. He had seen three and thought that in all of these there was actually a suppurating focus somewhere at the seat of the operation, and that might be the explanation in Dr. Smith's case. Although there was not much indication for this view, one could get a slight slumbering infection without any signs or symptoms at all. His reason for asking the question was that when the abdomen was opened and the cervix removed there was much less liability to slow infection.

DR. SMITH in reply said that in this case he had removed the uterus down to the internal os which he had left.

A Case of Congenital Cardiac Disease.

DR. H. S. SHAW read the report of this case as follows:—

M. D., female, æt 12, was at birth small but breathed well. First trouble was noticed when one week old, the child on being tossed into the air becoming suddenly markedly cyanosed. This quickly passed off and apart from that she enjoyed good health until $1\frac{1}{2}$ years old, when she developed whooping cough and from then on had blue lips and fingers with dyspnœa, and the further development was very slow. She learned to walk at $2\frac{1}{2}$ and from this on during childhood she was a chronic invalid, the slightest exertion causing dyspnœa. She only attended school for one month being drawn to and fro, because unable to walk. In spite of her condition the child grew quite tall for her age, but was very thin. During the past summer she was at her best,

and while living in the country could take short walks with occasional rests by the way, until she developed measles. About Christmas she complained of headache and pain in her back, kept to her bed now more than usual, and then was taken ill with slight pyrexia, headache, vomiting and constipation.

The cardiac examination showed slight enlargement of the præcordial dulness to the right, and a harsh systolic murmur heard all over the præcordium, with maximum intensity at the pulmonary cartilage. Temperature 102° F., pulse 100, pain in the back of the neck and down the spine. Patient then sank into a stuporose condition, from which she would suddenly awake and cry out with the pain in the neck. Kernig's sign was definitely present, the urine scanty and highly albuminous. A few hours before death loss of vision occurred.

DR. W. F. HAMILTON when first he saw the patient recognized that it was most likely congenital cardiac disease with a superadded condition involving the brain, possibly cerebro-spinal or tuberculous meningitis. The course of the case was rapid and after death an examination of the heart only was permitted. The following is the description of the heart:—

This heart shows briefly the following things: It is considerably hypertrophied and shows marked enlargement of the ascending aorta. The apex of the heart is greatly rounded and participated in by both ventricles. The right ventricle is greatly hypertrophied and the right auricle is also greatly dilated. There is a defect in the interventricular septum. On close examination I found the pulmonary artery and its orifice greatly stenosed, indeed it was impossible to put anything through it except a very small probe, and on opening this artery through the valvular orifice we found the valve greatly thickened and consisting of two cusps. Dr. Adami very kindly examined the specimen and described an acute endocarditis involving the misformed pulmonary artery. The conus arteriosus presents considerable narrowing, and the parietal endocardium is thickened at this point, showing a very marked form of endocarditis. There are, then, three special deformities here, the persistent foramen ovale, hypertrophy and especially enlarged right ventricle, the enlargement of the right auricle, and the pulmonary stenosis.

Dr. Hamilton went on to say that he regretted not having got further down the aorta and not having looked carefully for the ductus arteriosus. The case was found in a female, and therefore somewhat an exception to the rule, as 64 or more per cent. of these cases were found in males. The explanation of the condition was likely that there was some defect present from birth, and with the onset of whoop-

ing cough a more serious condition developed. Cyanosis and clubbing of the fingers were found specially in pulmonary stenosis, the former being rarely attributed to defective septum. The condition of the admixture of blood was one of the old theories to account for a marked stenosis, but Morgagni's theory afforded the most ready explanation. The speaker concluded that patent ductus arteriosus did not exist from the absence of the characteristic murmur and the presence of so much cyanosis. At the autopsy the lungs had been examined for pulmonary tuberculosis, bearing in mind Peacock's evidence of the frequency of congenital cardiac lesions being complicated in this way. As already said, he had suspected meningeal inflammation, but on looking more carefully into the literature had seen that the symptoms might all be accounted for by the congestion of the brain due to the congenital defect.

DR. ADAMI discussed the question as to whether the pulmonary condition and the deficiency of the septum were to be regarded as of coincident development or whether the second should be regarded as the result of the first condition. Just as in the genito-urinary system when one portion is defective another is also liable to be imperfect, so, in the heart, one imperfect development has frequently associated with it others which do not appear to be directly related. But on the other hand, a congenital stenosis of the pulmonary orifice would undoubtedly help to prevent the natural closing of the interauricular and interventricular septa. In this case undoubtedly the pulmonary condition was of primary development for the valve was formed of only two cusps. On the top of the narrowing produced by this condition there was evidently added an endocarditis which had still further reduced the orifice until, at the time of death that orifice would barely admit a small probe. This orifice seemed too small to allow sufficient blood to pass through to the lungs to support life, and it might be that this defect had been remedied by the persistence of a ductus arteriosus. Nevertheless, in the specimen, he could recognize no process of such. His experiments with the late Professor Roy, conducted now some years ago, had shown how the normal heart could overcome an extraordinary amount of narrowing of the aorta and could preserve the blood pressure in the arteries beyond that point of narrowing. The enormous hypertrophy of the right heart in this case might enable a much larger amount of blood to be pumped through into the lungs than one would suspect from the size of the opening. While, as he has already indicated, it must not be taken for granted that the orifice had always been so small; it had been materially reduced by progressive endocarditis.

DR. MAUDE ABBOTT stated that among the collection of defects of the septum in the museum of the McGill Medical Faculty were two hearts which she thought of some interest in this connection. One was the heart of an infant aged 14 days from a post mortem performed by Dr. Osler in 1880, and pictured in the Montreal General Hospital reports of that date. A somewhat similar condition to Dr. Shaw's case was shown, in that the interventricular septum was defective at the same point and there was atresia of the pulmonary artery, which seemed to be seated above the valves, but brought about the same result, namely, stenosis of the pulmonary. There was a patent foramen ovale with much enlarged right auricle, and dilated and hypertrophied right ventricle. The defect in the interventricular septum was closed in by a false valve, apparently a mass of vegetations, and was anchored to the wall by two cords which present themselves as false chordæ tendineæ. The point of interest seemed to be that though the infant was only 14 days old the defect of the septum and atresia of the pulmonary artery were present, an argument against defects of the septa being due to rupture of the wall later in life in the case shown by Dr. Hamilton. The other heart was one placed in the nucleus of the museum by Dr. Holmes in 1824 and showed complete defect of the interventricular septum. A full illustrated report of this case appeared in the Journal for

DR. LAPHORN SMITH asked Dr. Adams if the trouble did not probably begin as an endocarditis sometime during intra-uterine life.

DR. ADAMS, in reply, pointed out that the fact that there were but two cusps showed that there had been a narrowing of the pulmonary artery and of the valve from the onset, so the trouble had not begun here as an endocarditis. Endocarditis of the valves was well known to affect those subject to the greatest strain and in such a case as this the congenital deficiency would undoubtedly favor the development of an endocarditis of the pulmonary valve.

DR. SHAW had enquired into the history, and could find nothing that would throw any light from either side of the family.

A Case of Ectopic Gestation.

DR. LOCKHART gave the following notes of a case and exhibited the pathological specimens of the excised parts.

The patient, married, 55 years of age, had complained for the last eight or nine years of very severe attacks of pain just below McBurney's point. These attacks had been fairly frequent and she had had the last severe one in December, 1902. Seventeen years previously she had what was diagnosed at the time as ectopic gestation and the ovum

was killed by the application of electricity. After this she had complete freedom from pain for eight years when these severe attacks came on and continued up to the present.

Puberty had occurred at the age of 13, menstruation regular every four weeks, lasting 5 to 7 days, profuse in amount, but accompanied by little pain. She had four full time children, the last 27 years ago, the labours having been perfectly normal.

On examination the perineum was found lacerated, there was collapse of both vaginal walls, cervix soft, small and low, and in the right fornix could be felt a mass in the pelvic wall, which was removed.

The specimen was apparently one of a foetus several months old, certainly five or six months. It was very hard and distinctly bone-like in consistence, except in one or two places. At one part there was a distinctly curved bony prominence which was composed of various laminæ, the foetal spine; radiating out from this were fine bony spiculæ, the ribs; in another part a humerus, and below that a radius and ulna. The other mass, which was soft, was probably what was left of the foetal brain. The other specimen removed from the same patient was the vermiform appendix, which showed slight constriction just above the centre.

DR. LAPHORN SMITH said he had operated upon a number of such cases and at one time the use of electricity for the purpose of destroying the life of an ectopic gestation had been looked upon as a great discovery.

THE

Montreal Medical Journal.

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

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No. 2.

SMALL-POX AND VACCINATION

The paper by Dr. J. E. Laberge, which we publish in the present number of the "Journal," while presenting no new light upon the subject, should serve to rouse the profession to the existing state of apathy towards the continued presence of small-pox in our midst. It comes as a timely warning of the dangers associated with the existence of a few cases of even the mildest form of small-pox in the City or country districts. As has been time and again pointed out, there is a tendency in even these more or less benign forms of the disease, for the virulence of the epidemic to increase rather than to decrease, and this has actually been observed to be the case during the latter part of the present epidemic in some of the cities of the neighbouring Republic. Then, again, the very mildness of the present epidemic is a source of danger; familiarity breeds contempt, and while the lesson of 1885 must surely have given our citizens a true appreciation of the power of this terrible scourge, the present experience serves in great measure to allay their fear of it. The general willingness to submit to vaccination which has been such a noted feature of the past two

years as compared with the strong outcry against it in 1885, was due, we believe, in great measure to past experience, and with the waning fears of the disease, if not the old fanaticism against vaccination, at least a spirit of indifference, will arise. There is every reason, then, as Dr. Laberge insists, for the passage of a compulsory vaccination law, now while the disease is under control, and so to insure for all time, or for as long as this law shall remain enforced, that small-pox shall never again be able to get such a hold upon the community as it did seventeen years ago. The enactment of such a law, which comes within the powers of the Provincial Legislature, can only be procured by the influence of the profession as a whole.

The statistics furnished by Dr. Laberge in his paper of the number of vaccinated and unvaccinated persons who were admitted to the Civic Hospital suffering from small-pox are most conclusive evidence of the efficacy of thorough vaccination and revaccination, and will appeal to the public far more than those obtained from outside sources not because they differ from the figures as reported elsewhere, but they indicate its value here, at home, in the Province of Quebec, under conditions with which they are acquainted. Of the 503 cases of small-pox treated in the Civic Hospital, 446, or 88 per cent., had never been vaccinated; and 44 had been vaccinated but once in childhood and showed one bad mark, thus making 97 per cent. not properly protected. Of the remaining cases, those with one good mark numbered 9; and 4, according to their own statement, had been vaccinated within seven years. Against this, we are told that, of the 44 attendants exposed to the disease and protected only by vaccination properly done not a single one contracted it. The nine reported cases of small-pox in persons having one good mark bear out the contention that a greater degree of protection is afforded by two or more vaccination marks.

The McGill Graduates' Society of the District of Bedford held their Annual Meeting and Banquet in Cowansville on the 30th of January, 1903. There was a very large representative gathering of McGill Graduates. Principal Peterson was present to represent the University, Dean Walton to represent the Faculty of Law and Dr. Armstrong the Faculty of Medicine.

Mr. McCaskill, the President, occupied the chair and the success of the meeting and the enthusiasm manifested were in large measure due to his great interest and genial manner. The scholarly address of the Principal was one of the features of the evening. He impressed upon the Society the high quality of the work done at McGill and

the important place occupied by the University in educational work in Canada.

Dean Walton and Dr. Armstrong gave an outline of the advances made in their respective Faculties and of the hopes entertained for even greater things in the near future. In reply to the toast of the Empire and Canada, proposed by Mr. Nutting of Waterloo, Judge Lynch gave a most eloquent address. He briefly reminded his hearers of the immense resources of our great country and of the rapid strides it was making in all departments of trade and industrial development.

Addresses were also given by Dr. Catton, Dr. Macdonald of Sutton, the President elect, and by Mr. Palmester the Federal member for Shefford. Mr. Baker, the Secretary, came in for great praise for his untiring energy in getting together so many members and so excellent a programme.

Among the medical men present were Dr. Martin of Waterloo, Dr. Fuller of Cowansville, Dr. Green of Freylessburg, Dr. Oliver of Cowansville and Dr. McCorkill of Farnham.

FOR QUARTER ENDING JANUARY 31st, 1903.

STATISTICS.

Number of readers,	3,950
" " Days the Library was open,	77
" " Holidays Library was closed,	0
" " Public Holidays Library was closed,	2

ACCESSIONS.

" " Volumes bought,	37
" " Pamphlets bought,	0
" " Volumes given,	253
" " Pamphlets, reports etc., given,	423
" " Books taken out for home use,	1,217
" " Journals and pamphlets taken out,	272

November, 1344 Readers.

December, 1,310 Readers.

January, 1,296.

FROM NOV. 1st TO JAN. 31st, 1903.

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Brief Historical Sketches of Famous Anatomists.

EUSTACHIUS.

BY

R. JEFFREY McMEEKIN.

Bartholomeo Eustachius was an Italian and next to Vesalius the most noted anatomist of the 16th century. He was born at San Severino, in 1520, and died at Rome in 1574. His earlier life history is very obscure and even his later life is not well known with the exception of his works on anatomy.

In the controversy on Gallenic anatomy he was the principal opponent of Vesalius and associated with him was Engrassius of Naples, the most accurate osteologist of his day. He rebuked Vesalius for asserting that Galen had described a monkey instead of a man, and then himself described the kidney of a dog without making the fact known that it was not a human organ.

Eustachius was City-physician and Professor of Anatomy at Rome and Physician in Ordinary to the Popes. As an anatomical author he was known principally by his work "The Controversies of Anatomy," but as some of his works were lost and others were stolen he may have written others equally valuable. In his "Opuscula Anatomica," published in 1564, he describes the tube leading from the middle ear to the pharynx, which he had discovered in 1562, but he says this was known to an ancient Greek, Alcineon. (It was also described by Aristotle about 350, B.C.). However, it appears that Eustachius was the first to fully describe it, and even he supposed it to be for the purpose of allowing pus to escape and the introduction of medicines into, the ear. In this work also he promises to give a full account of "human" anatomy on copper plates. Unfortunately he died before he had time to publish them, and they then became lost and were not found until 1712, and were published by Lancisei in 1714. These plates, while being better than anything of the kind before attempted, were not very accurate on account of the author having to draw a certain part from one subject and another part from another different subject and then uniting these into one whole drawing. This

may be accounted for by the fact that he was not a dissector. The excuse that he gives for this is that his health was bad, and also that it was hard to get material.

Eustachius' name has only been given to the Eustachian tube and valve, but he also discovered the stapes, maleolus, membranous cochlea, tensor tympani, origin of the optic and sixth nerves, and suprarenal glands. He also made researches in embryology, especially of the teeth and kidneys. He was the first to give an exact account of the thoracic duct, muscles of the neck and throat, uterus and the pulmonary veins. He also noted that the course of the cardiac veins was oblique and not transverse as described by Vesalius. He applied his knowledge of anatomy to pathology, but none of his works lead us to believe that he applied it to the treatment of disease.

MALPIGHI.

BY

W. L. MCDUGALL.

Marcello Malpighi was born near Bologna, in Italy, on March 10, 1628. His youth was devoted to the study of Latin and Physiology, and being left to his own discretion at the age of twenty-one by the death of his parents, he chose the profession of Medicine. His choice was prompted by Prof. Franciscus Metalis, who was his teacher and counsellor for some years. He graduated from the University of Bologna in Medicine in 1653. The thesis sustained by Malpighi on the occasion of taking his degree was in defense of "The Opinions and System of Hippocrates." This was regarded as a bold procedure, as the doctrines of the Arabian school were chiefly entertained and professed.

The University of Bologna at this time enjoyed a great reputation as a school of medicine and Malpighi greatly distinguished himself as a scholar. At Bologna he held the position of professor for a short time after 1656. On the invitation of Ferdinand II., Grand Duke of Tuscany, he left here to accept a position at the University of Pisa. Here he formed the acquaintances of Borelli, renowned for his research and advocacy of the mechanical philosophy. From his association with this man he learned the advantages of experimental research over the purely metaphysical. They worked together, and one of their important discoveries was that the muscle of the heart was of spiral form. Unfortunately the climate of Pisa was unfavourable to his delicate health and he resigned after three years had elapsed.

He returned to Bologna to resume his former duties and again

quitted it for Messina, where he accepted the professorship of Medicine. He was unwilling to leave Bologna, but yielded to the urgent entreaty of his friend Borelli. Here he stayed for four years, but at the end of this time he returned once more to Bologna, although the Senate of Messina tried to persuade him to remain. But the persecutions he had endured from the blind adherents of the ancient doctrines, from the jealousy of his colleagues, and from the controversies in which their disputes involved him, made him decide to retire to Bologna, where he carried out those anatomical and physiological enquiries by which his name has become famous.

Among these were treatises on: The Structure of the Lungs and of the Pulmonary Circulation by the use of the Microscope; treatise on the Brain, Sense Organs, Rete Mucosum or Malpighian layers of the skin; on the Viscera; on the Analysis of the Blood; and on the Anatomy and Transformation of Minute Insects.

In 1668, Malpighi was elected an honorary member of the Royal Society of London. This honour was much appreciated by him and he was greatly flattered by the distinction. His autobiography was addressed to the Presidents and Fellows of the Royal Society with whom he maintained a constant correspondence. He communicated to them the results of his researches, announced to them his discoveries, and presented them with his portrait.

In 1683, he received from the University of Bologna a most flattering remark of the regard entertained for his talents and services in the form of a Eulogium in Latin, which was engraved on marble and placed in one of the public schools of the University.

In 1691, Pope Innocent XII., sent for Malpighi to come to Rome, and made him his chief Physician and Chamberlain. This position he occupied, however, for only a short time. He was subject to attacks of gout, and on the 25th of July, 1694, he had a fit of apoplexy, by which he lost the use of half of his body, and in November of the same year death released him from his sufferings at the age of sixty-seven. His remains were embalmed and taken to Bologna and there interred with great pomp and all funeral honours in the church of St. Gregory, where a statute is erected to his memory. It is reported that two pounds of coagulated blood were found in the ventricles of his brain.

The only portrait ever executed of Malpighi was by the celebrated Tabor, who skillfully depicted his serious and melancholy temperament and his highly intellectual countenance. He lived at a time when nature was studied rather than books, and his keenness of observation

and great originality showed a powerful insight into the kingdom of nature. His contemporaries have described him as a man no less distinguished by his physiological zeal than by his singular modesty.

His name will always be impressed on the mind of the medical student by his description of the minute anatomy of the kidney and spleen, whose corpuscles bear his name.

MORGAGNI.

BY

WALTER C. MCMURTRY.

John Baptist Morgagni was born at Forli, in Italy, on February 25, 1682. At the age of sixteen he began the study of medicine at the University of Bologna, and in 1701, graduated with the degree of Doctor of Medicine and Philosophy. Among his teachers were the celebrated Valsalva, Albertini and de Sandris. With Valsalva he formed a life-long friendship.

Soon after graduating, fears were entertained for his eyesight, and he returned to his native place, where with proper attention his eyesight was restored. Returning to Bologna he assisted Valsalva in his anatomical researches on the ear, making the greater number of the preparations described in that valuable work "De Aure Humana." During Valsalva's absence from Bologna, Morgagni filled his place and became exceedingly popular as a lecturer, being eloquent in discourse and illustrating his subject by a great variety of preparations.

Desirous of increasing his store of knowledge, Morgagni visited Venice and then Padua. After attending the lectures of the most celebrated teachers he returned, and for a time practiced his profession at his native place. Finding that here the sphere of his utility was too contracted, he returned to Padua. In 1710, one of the chairs of anatomy became vacant, and in 1711 Morgagni received the appointment. At this time he contracted a lasting friendship with Lancisi, and assisted him in his Explanation of the Labours of Eustachius. In 1715, by the death of Molinetti, the First Chair of Anatomy at Padua became vacant, and the same year the Senate of Venice appointed Morgagni to the professorship. He held this until his death in December, 1771.

Although his requirements extended beyond medicine into literature and history, his chief object of study was anatomy and his whole life may be said to have been devoted to its elucidation. The value of his researches was acknowledged during his life time and his name was

enrolled as a member of the Royal Society of London, 1724, and the Academy of Sciences of Paris, 1731. He was also made a member of the Imperial Academy in St. Petersburg, in 1735, and of the Academy of Berlin, in 1754. He was also one of the first associates of the Institute of Bologna. In short, his fame spread throughout Europe. Few men secure for themselves more friends or receive greater attention from those who were distinguished by rank or intellect than did Morgagni.

It is impossible to enumerate the writings that came from Morgagni's pen, which was never idle during the seventy years that elapsed between his taking his degree and his death. He wrote on Archæology, history, geography and philology, as well as medical subjects. His chief works were: "Adversaria Anatomica," published in 1706, the *Epistolæ Anatomica,*" and his great work "De Sedibus et Causis Morborum," which laid the foundation of pathological anatomy.

His name in anatomy is found associated with the Column of Morgagni, Hydatid of Morgagni, Sinus and Valve of Morgagni.

SCARPA.

BY

W. A. L. STYLES.

Antonio Scarpa was born of Italian parents at Motta, in Lombardy, June 13, 1747, and died at Pavia, October 31, 1832. He pursued a course of medical studies at the University of Pavia, where from the first he inclined to anatomy. So ardent were his studies in this branch of learning that by his second year he was appointed an assistant demonstrator under the celebrated Morgagni, and later, in conjunction with Calza, Scarpa prepared a series of wax anatomical preparations. He next went to Bologna to take a course in surgery under Riviera, after which he returned to Pavia to receive his degree as Doctor of Medicine, which was conferred by Morgagni himself. After the latter's death in 1771, Scarpa, at the early age of twenty-four, was appointed to the vacant chair of anatomy and surgery at his Alma Mater, which office of honour he ably upheld for eight years. After handing in his resignation, he undertook a two years' tour of France and England, in which latter country he continued his studies under Hunter and Seldon. In 1783, he was persuaded to accept his former charge at Pavia, and in the following year, in company with Volta of electrical fame, made a second tour of Europe.

In 1796 he was compelled to hand in his resignation as Professor of Anatomy and Clinical and Operative Surgery, which post of duty

he so worthily occupied for upwards of twelve years, to his own credit and that of the University at large, on account of his having refused to deliver a compromising address at a certain public reception. Not until 1805, when Napoleon was crowned King of Italy at Milan, was Scarpa reappointed to his former office. It chanced that the great General was paying his respects to the professoriate of the University when incidentally he enquired the reason of the absence of Scarpa from the gathering. Much to his surprise he was informed that the famous anatomist had been dismissed from the teaching staff of the University and that he no longer held any chair in the faculty. This so incensed Napoleon that he caused Scarpa's reappointment, and endeavoured to efface the disgraceful conduct of the governing body of the college by conferring on him, as a mark of his esteem, the Cross of the Legion of Honour and a purse of four thousand francs. Becoming advanced in age, Scarpa handed in his resignation in 1812, whereupon, as a token of the regard in which he was held, and as a recompense for the celebrity he had brought upon the University, he was appointed Professor Emeritus and Dean of his Alma Mater. It was in this latter capacity that Scarpa again stirred up some bitter feelings, for it appears that he had planned some few innovations as regards a revised and modern curriculum, and these designs so enraged the fog-bedimmed minds of a certain faction that they were instrumental in causing his final dismissal from all offices within the gift of the University.

During the last five years of his mortal career Scarpa suffered untold torture from renal calculus and a chronic inflammation of the bladder, and finally he gave up from sheer exhaustion to his malady in 1832, at the advanced age of eighty-two.

Scarpa was undoubtedly the personage to whom surgery and anatomy is most indebted. He contributed largely to the promotion of science by his numerous publications, of which upwards of fifty-one are extant, and as a practitioner, whose advice was eagerly sought after from all quarters of the Old World, he was justly celebrated. To him we owe much of our present day knowledge of aneurisms, hernia and neurology. As an ophthalmologist he is famous as being the discoverer of the macula lutea, and as having devised an operation for the removal of cataract, and another for the cure of abnormal pupil by detaching the iris. His name had been given to certain regions and structures in anatomy to commemorate his investigations in these areas. As an eloquent and erudite practitioner his presence was much sought after by medical societies both at home and abroad, and so expert was he

in the art of drawing that it was his custom to illustrate his varied volumes with his own sketches.

He accumulated a vast fortune by the practice of his profession and this amount was further augmented by his innate frugality. We have much by which to remember Scarpa; and although some of his views are to-day untenable and are superceded by the more modern theories of an advancing science, nevertheless he, by his untiring zeal in investigations, was instrumental in placing anatomy and surgery on the lofty pedestal which they occupy at the present day.