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THE CENTENARY OF VACCINATION.[1]

MAY 14TH, 1796.

BY

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On May the 14th, 1796, Dr. Edward Jenner, of Berkeley, in the County of Gloucester, first inoculated a human being with matter taken from a vesicle of cow-pox. The inoculation so made developed into a well-marked pustule, the pustule with which now-a-days we are so well acquainted, and the inoculated individual was later found to be absolutely refractory to the inoculation of matter taken from a case of well-developed small-pox.

This successful experiment it was which inaugurated the practice now spread throughout the world, of vaccination against small-pox and led to the arrest of a foul disease so common during the last century that almost every other individual in Europe showed signs of its ravages, so rare now-a-days as to be extinct wherever vaccination and re-vaccination is rigorously enforced.

To-day, therefore, we celebrate the centenary of vaccination, and it is fitting that we, whose life-work is devoted to the combat with disease, should consecrate, even if it be but a few minutes, to calling into remembrance the great deeds which were of old, and should employ this occasion to look before and after, considering what has already been accomplished and what the future holds in store. For

[1] Lecture delivered before the post-graduate students, McGill University, May 14th, 1896.

only now, one hundred years after Jenner's first vaccination, are we beginning to apply successfully the principles underlying Jenner's method of arresting infectious diseases, principles which Jenner himself appreciated, but could not satisfactorily establish—and now with a fuller knowledge of those principles, a future dawns upon us, rich in hope.

Mindful of the day, and as a pious duty, let me first briefly recite the main facts that led up to the discovery of vaccination, recalling matters that are historical and, I doubt not, well-known to you.

Our knowledge of small-pox goes back to remote times. The earliest sure reference to it is of its appearing in the Abyssinian army at the siege of Mecca, in what was known as the Elephant War, of about the year 570. The earliest references to small-pox in England, if we leave out a possibly correct reference by Gaddesden early in the fourteenth century, occurs in letters of the years 1514 and 1518. The disease gradually rose to prominence about the end of Elizabeth's reign. In the autumn of 1641 we hear of 118 people dying with small-pox in London in one week, at a time when the population was between 300,000 and 400,000, or roughly about the same as that of Montreal. The experiences in England were similar to those on the European continent generally. Towards the close of the seventeenth century the disease became more and more general and more and more feared. In Iceland, in 1707 to 1709, after an absence of nearly 40 years, it killed 18,000 in a total population of 50,000. In England, in 1723, Dr. Jurin calculated that upwards of 7 per cent., or somewhat more than 1-14th part of mankind, died of small-pox.

In 1775 it would seem that in Chester, only 1,060, or 1 out of every 14, had not contracted small-pox.

I have seen it stated as an explanation of the lack of beauty revealed by the pictures by Sir Peter Lely, Sir Godfrey Kneller and others, of the Court beauties of the 17th and 18th centuries, that so common was the disfigurement by pock-marks that complexion was taken as the test of beauty, that the woman whose face was not disfigured by small-pox became of necessity the beauty of her neighbourhood, if only her features were not absolutely commonplace.

To arrest the ravages of small-pox it would seem that from a very early period, in various parts of the world, it had been the custom to inoculate young and healthy individuals with matter from those suffering from mild attacks of the disease, founded upon the common knowledge that one attack of small-pox protects against a second. It would appear to have been a most ancient custom in India, and at the

beginning of the eighteenth century the custom was spread through the Mahomedan world, Tripoli, Algeria, Turkey in Asia, Arabia and Circassia .The well-known Dr. Richard Mead explained the beauty of the Circassian women, or more truly the preservation of the same, as being due to the fact that by inoculation by the mild disease in their youth the effects upon the skin were practically nil, and thus they were protected from future ravages of the disease.

It was in Constantinople that that most advanced new woman of her period, the Lady Mary Wortley Montagu, wife of the ambassador to the Sublime Porte, was so much impressed with the value of the method that she obtained an old Greek woman, a professional inoculator, who with Mr. Maitland, the surgeon of the embassy, inoculated her son, and so successful was the procedure that on her return to England she subjected her infant daughter to the same operation.

Lady Mary was well known; the daughter of the fifth Earl of Kingston, she had at the age of eight been named a toast at the Kitcat Club and elected a member by acclamation. She married her husband against the consent of her father, and by special license—a distinctly advanced procedure in those days, both as regards the special license and the paternal consent. She was the friend of Mary Astell, the defender of woman's rights in her day. I mention these facts because perchance I am deterring some of you from attending the debates at the Woman's Congress, and I would not seem to forget the claims of that Congress upon our consideration. The great little poet, Pope, was enamoured of her and then of a sudden developed into a venomous foe. Why he did so has become one of the puzzles of literature. Two rival theories have gained strong support, one that she had borrowed a pair of sheets from him (he had induced the Wortley Montagu family to become his neighbours at Chittenham) and Lady Mary returned the sheets unwashed; second, that she had by her witty and engaging manner led him to the point of solemnly avowing his love to her, whereat she laughed at him loudly and scornfully. Whichever be correct, there is no doubt that he wrote bitter, not to say brutal, things about her, and she managed to circulate abroad stories and lampoons of almost equal strength. She was a great woman in her day, and her advocacy of small-pox inoculation did much to ensure the popularity of the process.

The successful results excited widespread interest, and the method gradually became extensively employed. It is calculated that in England alone up to the year 1758 there had been at least 200,000 inoculations or variolations, while in the latter half of the century the

Suttons, Dimsdale, and others would seem to have variolated thousands of individuals. Dimsdale indeed was invited over to Russia to inoculate the Empress, the great Catherine, and he did this with such success that he was made a baron of the Russian Empire, appointed Councillor of State, physician to her Imperial Majesty, and, in addition to an annuity of £500, was presented with the not inconsiderable douceur of £10,000—truly an imperial gift. But while this process of variolation spread, small-pox at the same time became increasingly frequent. The process, indeed, was essentially dangerous; while it is true that those who were variolated very rarely died, not unfrequently the same could not be said concerning their friends and neighbours, for those who were variolated suffered from the true disease, and were as much liable to be carriers of infection as were the victims of pox by natural means—indeed more so, because the mildness of the induced disease led to a lack of care. Thus it was that towards the end of the eighteenth century small-pox, instead of being stamped out, was more prevalent than ever. It would not seem to be an exaggeration to say that almost every second man was pock-marked.

While this was the case, it had also been recognised among the farming classes, not in Great Britain alone, but elsewhere—sporadically—that milkmaids were specially exempt from the disease; and it was further noted that there was a relationship between this exemption and the fact that these milkmaids had at one time or another been affected with cow-pox, a disease of a vesiculo-pustular nature, appearing in an epizootic form, and showing itself more especially upon the teats of milch cattle. And it is evident that even before Jenner's great experiment there had been occasional inoculations with cow-pox, so as to protect against small-pox. The best authenticated of these cases was that of Benjamin Jesty, a Dorsetshire farmer, who in 1774 inoculated his wife and two sons with virus taken on the spot from the cows of Farmer Elford, of Chittenhall, whither Mr. Jesty carried his family for that purpose; and in 1791 a schoolmaster in Holstein, Peter Plett by name, did similarly. Holstein then as now was a great dairy district, and there, as in the south and west of England, the tradition existed that milkmaids who had been infected with cow-pox were unaffected by small-pox. Thus, having seen a physician practise variolation, Schoolmaster Plett came to the conclusion that he would employ cow-pox lymph, and in the year above mentioned, there being an epizootic of cow-pox in the neighbourhood, he inoculated three children with the virus from a cow. His method was rather crude, he used a pocket-knife and made cuts upon the back of the

hand between the thumb and first finger. The operation had the desired effect. Three years later when all the other children of the school sickened with small-pox the three remained quite healthy; but unfortunately the choice of region for inoculation had led to so severe an inflammation that Plett never again ventured to repeat the process. These and yet other observers, it may be, had vaccinated prior to Jenner, but with this difference, that they made no attempt to repeat the process, to establish the correctness of the process by later inoculation with variolous matter, or to spread abroad the beneficial results accruing therefrom. Only after the publication of Jenner's famous "Inquiry" was any attempt made to publish the results obtained. Jenner, on the other hand, having once succeeded, was not satisfied until after repeated attempts he felt assured that he had determined that an attack of induced cow-pox protected from the small-pox. Then, two years after this first experiment, he published the inquiry into the causes and effects of the variolæ vaccinæ, and thereby inaugurated or led to the inauguration of the process of vaccination. That motion can be brought about by the boiling of water may have been known for centuries, but it is not to Hero, of Alexandria, or even to the Marquis of Worcester that we are to ascribe the honour in connection with the discovery of the steam engine, it is to James Watt, to him who applied a knowledge of the properties of steam to the production of the steam engine the honour is due. Hundreds of patriotic Germans may have dreamt of and sighed for the unification of Germany, but the honour and the glory of having brought about that unification is now and must always be Bismarck's. And so in connection with vaccination, while we are ready freely to acknowledge that there were others who inoculated before Jenner, yet it is to his labours and his researches, and to him alone, that the honour and glory must be ascribed, if now-a-days small-pox has almost vanished from our midst, not to mention the further honour of having inaugurated the method of protective inoculation.

So now for a brief sketch of Jenner. He was born in the year 1749, a younger son of the Rev. Stephen Jenner, vicar of Berkeley. He was apparently not very strong as a boy, and his education was conducted partly at home, partly at Cirencester, which is not very far distant; and being intended for the medical profession was, after the good old fashion, bound apprentice to a surgeon at Sudbury. Completing his apprenticeship he went to London, and there became a pupil to him whom we may truly call the father of British pathology, the great John Hunter. And he would seem to have been a

favourite pupil, for Hunter recommended him to Sir Joseph Banks to aid him in arranging the collections which he had made during Captain Cook's first celebrated voyage of discovery. One biographer, indeed, states that Hunter solicited Jenner to become his partner; but the old life in Gloucestershire was more to his liking, and he returned to Berkeley, where he soon became the leading practitioner. But at the same time, he did not lose his love for observation, and his publications, more especially a paper upon the habits of the young cuckoo, gained him his F.R.S. It was here at home in Gloucestershire that he learnt the tradition concerning the effects of cow-pox, and set himself to work to collect together what cases he could find of cow-pox having rendered those affected thereby refractory to small-pox. He collected together a considerable number of very clear cases, some of which he tested by variolation, and he found that inoculation of matter taken from small-pox patients constantly was without effect in those antecedently affected with the genuine cow-pox. And the conclusion was forced upon him that it might be possible to propagate the cow-pox by inoculation, not only from the cow to the human subject, but also from man to man. And as the complaint when transferred from the cow to the milker possessed the quality of preventing the small-pox, it seemed probable that this quality might be retained even by propagation of the virus in succession from one human being to another. At length, in the spring of the year 1796, the cow-pox having broken out in a dairy near Berkeley, Sarah Nelmes, a milk-maid, became infected in one hand which had accidentally been scratched by a thorn. Here was an example of the genuine disease, and Jenner selected a healthy boy named Edmund Phipps, a boy who had not suffered from small-pox, and on him on the historic May the 14th he made his first trial. On the seventh day the boy complained of uneasiness in the armpit and had a slight headache. On the following day he was perfectly well, and by now the incision of the arm had assumed nearly the appearance of a part inoculated with variolous lymph. The inflammation subsided, the crust formed and dropped off, leaving a permanent eschar, and six weeks later, on the 1st of July, Jenner inoculated the boy with variolous matter, making numerous punctures and slight incisions on both arms. No effect was produced other than such a slight and transient inflammation as usually ensues after the inoculation of persons who had already suffered from small-pox. Several months later the inoculation was repeated, but without effect. At this period Jenner did not essay to carry on the vaccination from arm to arm, and the epizootic of cow-pox having died out, he had to wait two years for an opportunity to

continue his observations. On the 16th of March, 1798, he vaccinated his second case, a boy named Summers, with virus from the teat of an infected cow, and the vaccine lymph was transferred from Summers to William Pead, while from William Pead several children and adults were likewise vaccinated, and from one of this third of the series the lymph was transferred to several others. Several of these persons were next inoculated with variolous pus without effect, and Jenner ascertained that the vaccine lymph in passing through a series of five individuals retained the property of rendering the vaccinated insusceptible to the contagion of small-pox.

These were the cases which were published in the Inquiry, which appearing in the latter part of 1798 created immediately a most profound impression. It is unnecessary for me here to state in detail how Cline, Pearson, Woodville and others immediately took up the process, or how, long before Jenner's death, the process of vaccination had spread all over the world, and he had been the recipient of grants of £30,000 from Parliament, and had been given honorary degrees at Oxford and elsewhere. Already, before his death, the diminution in the small-pox mortality in the leading countries of Europe was very remarkable. Dr. Parr, the greatest of English vital statisticians, has made the following calculations as to the London death rate in periods previous to the introduction of the Registration Act, and Dr. McVail has continued the series up to 1882. No words of mine can be more eloquent than these figures.

With the process of time we have become better acquainted with what constitutes satisfactory and successful vaccination. Jenner held, and his own observations upon those who had accidentally taken cow-pox strongly supported the opinion that a single attack of cow-pox, and consequently a single vaccination, conferred immunity for the rest of life. Before his death this had already become seriously doubted, but it was long before re-vaccination was generally adopted; it was long, indeed, before the first serious attempt was made to enforce vaccination of the whole population in Great Britain; up to 1853 vaccination was optional, and only in 1872 was it made obligatory. Even now at the present day re-vaccination is not enforced for the whole population, save in Prussia. But how effective this is is shown by the following table, or better still by the diagram here copied from the report of the German Vaccination Commission of 1884 in the *British Medical Journal* (for diagram see page 89), showing the good effects in a class of population which is efficiently looked after, namely, the army. For comparison the accompanying diagram shows the small-pox cases and deaths per 100,000 in an

army and among a people in which vaccination and re-vaccination are not so rigorously enforced.

Terms of Years for which Data are Given.	Region.	Approximate Average Annual Death Rate from Small-pox per Million of Living.	
		Before Introduction of Vaccination.	After Introduction of Vaccination.
1777-1806 and 1807-1850.	Lower Austria	2,484	340
" "	Upper Austria and Salzburg	1,421	501
" "	Styria	1,052	446
" "	Illyria	518	244
" "	Trieste	14,046	182
" "	Tyrol	911	170
" "	Bohemia	2,174	215
1776-1780 and 1810-1850.	Prussia (East)	321	56
" "	Prussia (West)	2,272	356
" "	Westphalia	2,643	114
" "	Rhine Provinces	908	90
1774-1801 and 1810-1850.	Sweden	2,050	158
1751-1800 and 1801-1850.	Copenhagen	3,128	286

DEATH-RATE PER MILLION IN LONDON AT SUCCESSIVE PERIODS.

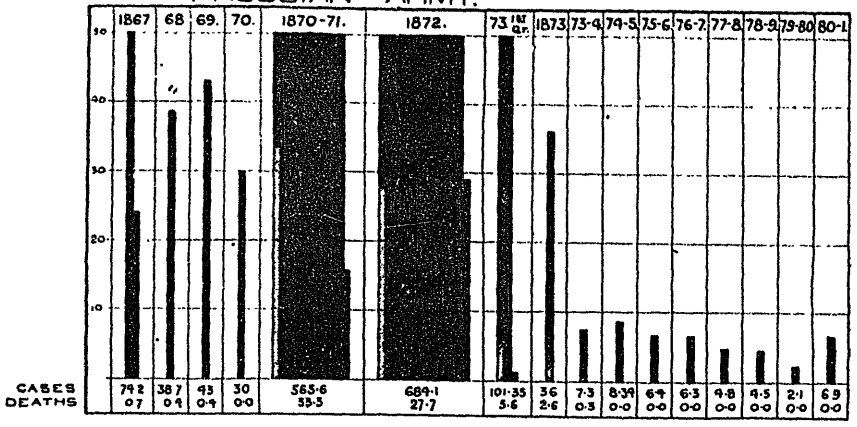
Years.	Average Annual Deaths from all Causes.	Average Annual Deaths from Small-pox.	
1660-79.	80,000	4,170	
1728-57.	52,000	4,260	Optional Variolation.
1771-80.	50,000	5,020	"
1801-10.	29,200	2,040	Optional Vaccination.
1831-35.	32,000	830	"
1838-53.	24,900	513	"
1854-71.	24,200	388	Obligatory; badly enforced.
1872-82.	22,100	262	Obligatory Vaccination; more efficient.

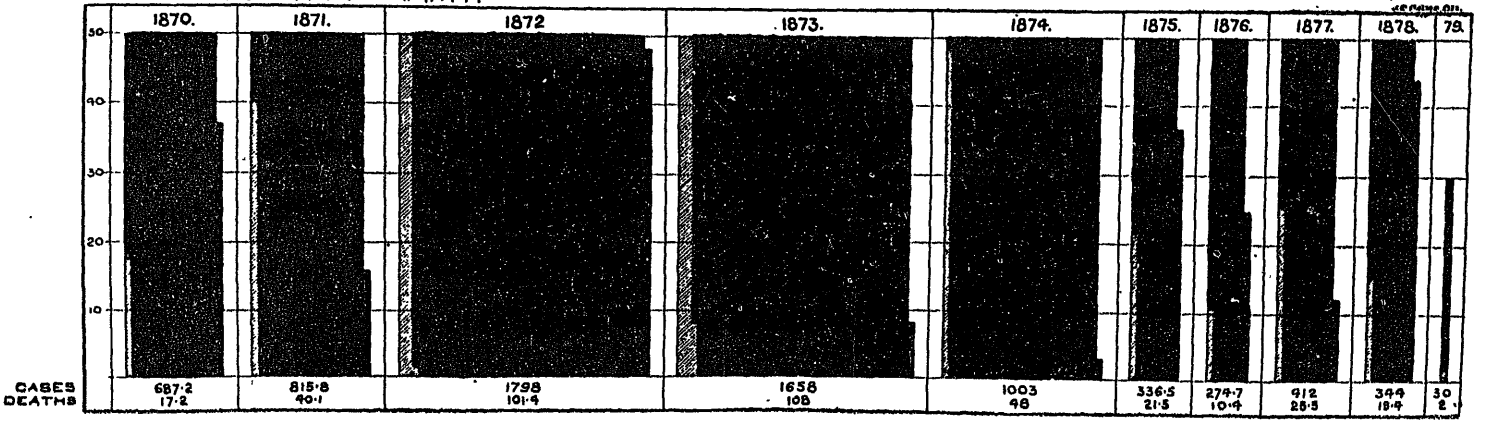
I have not, gentlemen, given you this evening many statistics, but these diagrams, if they were the solitary records we possess concerning the results accruing from proper vaccination, would be sufficient to prove absolutely the enormous benefit to the nation of vaccination and re-vaccination. While upon statistics, I may here, thanks to the great kindness of Dr. Wyatt Johnston in permitting me to use observations and statistics compiled by him and not yet published, say a few words showing the other side of the picture, namely, showing the fatality from small-pox in an imperfectly vaccinated community, to-wit, in this city of Montreal. I might perchance have selected more

DIAGRAM

SHOWING

CASES & DEATHS PER 100,000.





convincing, or rather more satisfactory tables, for it is a matter of notoriety that, thanks to the condition under which we live in this Province of Quebec, it is a matter of peculiar difficulty to arrive at even approximately correct vital statistics. The fact that the records of births and deaths are compiled from returns sent in by religious denominations, and that the duty of recording is in the hands of priests and ministers, who, I believe, receive no adequate remuneration for the work,—this fact alone makes the compilation of vital statistics a matter of peculiar difficulty. I might have chosen fuller statistics from such reports as those of Dr. Barry on the Sheffield epidemic, but the facts here given come close home. I refer to what happened in the epidemic of 1885, which was started by cases which came from Chicago in the beginning of that year; whereas in 1881 there had been five deaths from small-pox, none in 1882, one in 1883, and none again in 1884, in 1885 there were no less than 3,164, the average number of small-pox deaths per 1,000, being 18.9, the percentage of small-pox deaths to deaths from all causes being 40.6. Taking now the analysis by religion and race, we arrive at the following very suggestive table:

MONTREAL.

		French Catholics.	Other Catholics.	Protestants.	Total.
	Population	93,641	29,627	44,223	167,491
1885..	Deaths from all causes..	6,061	877	887	7,825
	Deaths per 1,000.....	64.7	29.6	20.05	46.71
	Deaths from small-pox..	2,887	181	96	3,164
	Deaths per 1,000.....	31.0	6.2	2.1	18.9

We may therefore state that even if now, a century after Jenner's first vaccination, small-pox is not eradicated, the fault does not lie in the incapacity of the process to prevent the disease, but in the incapacity of legislators and peoples to recognize its beneficent effects. It may to enthusiasts appear to be a serious assault upon the liberties of the subject to compel him and his offspring to undergo inoculation with vaccine lymph. But when his neglect to be vaccinated leads surely to the continuance of the disease and to the possibility of disease and death or disfigurement being propagated sooner or later in his neighbourhood, then assuredly the government as representing the nation has a full right to legislate for the safety of the nation as against the personal predilections of the individual. We, here in

Canada, and more especially in this Province of Quebec, cannot but be warned by the grim history that comes to us recently from the county which gave birth to Jenner.

We have learnt other things also during this last century which Jenner at first did not recognise, and first and foremost that there is a possibility, remote it is true, but nevertheless existent, that in inoculating from man to man the diseases to which man is liable may be conveyed and inoculated along with the lymph. We now know that as a precaution against such an untoward event there should be constant return of the virus to the cow, and that calf lymph, and calf lymph only, should be employed. And only within this last year or two the researches of Copeman and Straus have shown that the admixture of such lymph with glycerine leads to the gradual destruction of the microbes in general harmless which constantly contaminate fresh lymph, while at the same time the glycerinated lymph appears not to have decreased but to have increased in activity, thus employing glycerinated lymph that is two months old we can be absolutely sure that we are using a pure and aseptic material.

Despite all efforts a century of vaccination and of study of vaccine lymph has not as yet disclosed to us the specific organism of vaccinia, or, as I have recently shown elsewhere, of the more virulent modification of the disease, namely, variola. We cannot, therefore, state that we have fully mastered, or even that we have begun to master the bacteriology of vaccinia; we cannot cultivate its germ or supply to the public pure attenuated cultures for purposes of inoculation. But this we can say with certainty, first, that a single vaccination protects against small-pox for at least four years and for a longer period in the majority of individuals; secondly, that re-vaccination reduces the likelihood of infection with small-pox almost to nil; thirdly, that the vaccinated and *à fortiori* the re-vaccinated individual, if attacked by small-pox, suffers from a mild and modified form of the disease; fourthly, that the employment of matured glycerinated calf lymph is a means whereby the uncontaminated virus is introduced into the system, so that erysipelatoid and other disturbances can be reduced to a minimum, and when present are due to want of cleanliness on the part of the individual and not to the lymph inoculated.

But, now, what is the essential nature of the process of vaccination and of the immunity conferred thereby?

To answer this question adequately in the few minues remaining is practically impossible; to deal with the subject as it deserves would require a series of lectures. It would imply showing how nearly a century after Jenner made his first vaccination the principles which

he laid down were applied to other diseases. It would involve, too, a description of much of the life-work of that French chemist, Pasteur, who with his earliest experiments was to enlighten the world by creating a new science, the science of bacteriology, and through whose influence a new era was to begin in the treatment of disease; for it was Pasteur who first showed in this century that from a study of bacteriology we could learn to combat infectious disease in the most rational manner. His earliest experiments were made on a disease of fowls called chicken cholera, whose germ he discovered and isolated in pure culture. Rapidly following upon this discovery it was found that such cultures when kept for a long time in the laboratory lost their pathogenic power and that fowl inoculated therewith, not only survived the injections, but were apparently thereby rendered immune to the action of his most virulent cultures of the same kind of germ. Here, then, was the beginning for experiments of all kinds in the various infectious diseases. Just so soon as the germ of any disease was discovered the same efforts were made as in chicken cholera to produce immunity along the same lines. It was thus that Pasteur saved millions upon millions of francs to his country by producing immunity in cattle and sheep against that dread and fatal disease of anthrax which had up to that time proved a veritable scourge to farmers in the richest and most fertile territories of the land. The story, however, is doubtless familiar to you all, as are probably also the general features of similar experiments performed on other diseases. It need merely be said here that subsequent to the discovery by Pasteur that cultures of germs might be attenuated with age, other means were soon found of producing the same results and more rapidly. And thus by artificial heat, by compressed air, by exposure to light, by chemical re-agents, etc., the necessary attenuation of germs was easily produced and the subsequent immunity. It was but a step from this to the discovery of the toxines, that is to say, of the fact that bacteria in their growth develop chemical poisons which by a process of careful filtration may be separated in solution from the bacteria whence they have been derived. When later it was found that not only could immunity be induced by inoculation of attenuated germs or of their toxines similarly treated, but that the blood serum of animals so immunised could likewise act both as a preventative and a curative agent, the climax of rational therapeutics was reached. These facts which concern the subject of serumtherapy are too much of the nature of current events to require details of description here to-night. What is, however, of some interest concerns the mode of action of these vital therapeutic agents, and I will conclude with but the briefest reference to this most interesting topic.

Formerly it was thought that an attack of most infectious diseases created an immunity against subsequent invasion of the same germs, by reason of the fact that all the pabulum necessary for these germs had been consumed already ; or that perhaps the germs when once they gained a foothold in the body, produced self-destructive chemical poisons, thus preventing a further development at a subsequent exposure.

The experiments which have proved these theories in all respects untenable, and which have shown that other factors come into play, represent some of the most spirited and prolonged discussions which the medical world has ever been called upon to witness. With characteristic animosity the German and French schools upholding diverse opinions, have found it difficult to agree, though their combined theories have given to most observers all the essential explanations of this acquired immunity. Through the researches of Metchnikoff, of Massart and Bordet, of Nuttall, Pfeiffer and a host of others, we now know that the invasion of the body by micro-organisms is followed by a chemical attraction of certain cells of the host, inducing thus a battle royal between the invaders and the invaded. That not only can the cells destroy bacteria by intracellular digestion, but that where the leucocytes themselves break down or are destroyed, they may give off to the bodily humors in which they lie, certain secretions or excretions which render these humors bactericidal.

It is impossible here in these few moments to make more than a passing reference to this interesting topic ; though as a valuable sign of the times and as an indication of the valuable work which has been done within recent years it cannot be omitted ; and it is but a fitting tribute to the great originator of this valuable means of curing disease, namely Edward Jenner, that this day, the 14th day of May, 1896, 100 years from his celebrated inoculation, should be duly noted in the medical world.

CHRONIC POLY-ARTHRITIS IN A CHILD.

BY

F. G. FINLEY, M.D.,

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Whilst acute or sub-acute articular rheumatism is extremely common in children, it is universally admitted that both chronic rheumatism and osteo-arthritis are extremely rare conditions. Cases of rheumatoid arthritis are recorded or referred to by several of the systematic writers on children s diseases.

Henoch (Lectures on diseases of Children), and West (Diseases of Children), each refer to two cases.

Garrod (Gout and Rheumatic Gout) figures the hand and foot of a child of three in which the proximal phalangeal joints are affected.

Osler speaks of having seen three or four cases in children, whilst Howard (Pepper's System of Medicine) and Fagge both refer to its occasional occurrence in early life.

Lloyd Davies (*Lancet*, 1893, II., 928) records a case in a child of six following an attack of acute rheumatism a year previously. The joints affected were some of the smaller articulations of the hands and feet, and also the wrists, elbows and knees.

The following case is still under treatment by Dr. Kirkpatrick at the Montreal General Hospital. I am indebted to Dr. P. C. Leslie for the clinical history.

The patient, a girl of 11 years, was admitted to the hospital March 1st, 1896, for pain and stiffness of the joints.

The mother attributes the onset of the illness to a kick on the right ankle in May, 1892. There was no ill effect at the time, but two months later she began to limp and the ankle became swollen.

The disease was then regarded as of a tubercular nature and a plaster of paris bandage was applied for several weeks in August and again in March, 1893, but without very much benefit.

In the autumn of 1893 the right knee became swollen, followed by the metacarpo phalangeal articulations and a little later by the wrist, left ankle and left knee. After Christmas the child was unable to walk. She has since then been confined to bed and the legs have gradually become drawn up and contracted. The neck became painful and the head twisted to the left in December. The swelling passed away from the joints in 1894, leaving them stiff and useless.

Early in 1894 she had an attack in which there was loss of power and sensation in the right arm for three months, but not accompanied by pain.

There is a history of frequent exposure to cold and starvation. There is no rheumatic or tubercular history in the family.

Present Condition—The child is well nourished and of good colour; pulse 108; temperature 99°; respiration 24. The head is turned downwards and to the left side; there is marked diminution in the rotatory movements of the head with rigidity of the left sterno-mastoid and trapezius muscles; flexion and extension are free. The joints affected are the wrists, elbows, ankles and a few of the small phalangeal joints of the fingers and toes. Many of the joints are painful and tender. The wrists are slightly flexed and swollen There is much rigidity and stiffness and the movements are greatly limited, flexion and extension being performed through a few degrees only. The right elbow is stiff, it cannot be extended beyond a right angle and there is a slight crepitating sensation on movement. In the left elbow there is also diminished movement, but to a much less extent.

In the lower extremities the hips and knees are contracted. Both ankles are thickened and rigid and the right foot much everted and flat.

The proximal phalangeal joints of the first, second and third fingers on the right side and the corresponding joints of the first and second fingers of the left hand are swollen, thickened and give the impression that the bones are enlarged. The Roentgen photograph, however, shows that the bones are normal and that the thickening is therefore confined to the soft parts. The left thumb as shown by the photograph presents a forward dislocation of the two terminal phalanges. To the touch the dislocations give the impression that there is a bony outgrowth in the neighbourhood of the joints. Some of the fingers have a slight deflection to the radial side, and the terminal phalanx of the right middle finger is freely movable from side to side. There are no Heberden's nodes. The skin over the backs of the wrists and hands and on the front of the ankles is glossy and tense.

The heart, lungs and other organs are normal. The urine contains neither albumen nor sugar.

The patient has now been in the hospital for three months, being treated with iron, cod-liver oil and gentle extension of the lower extremities. There has been marked improvement in the movements of the hand and head and she can now use the fingers for sewing or rolling bandages.

The pain and tenderness have almost entirely disappeared. The course of the disease has been a febrile throughout.

The presence of nodular bony elevations about some of the small joints of the hands at first led to this case being regarded as one of osteo-arthritis, but by the help of the Roentgen photograph it would appear that the bones are not altered, and that an osseous enlargement is simulated by dislocation of certain bones and thickening of the tissues. Owing to the absence of any changes in the bones it is perhaps more correct to regard this case as one of chronic rheumatism rather than rheumatoid arthritis.

In the absence of any definite known etiological factor it is not easy to draw a sharp line between chronic rheumatism and rheumatoid arthritis. It is indeed an open question whether these diseases are distinct or merely different manifestations of the same cause.

Osler defines osteo-arthritis as a "chronic disease of the joints characterized by changes in the cartilages and synovial membranes with *peri-articular formation of bone* and great deformity." On the other hand, Hutchison states that bony outgrowths are rare in young people and if present usually of small size.

In its clinical features this case corresponds closely to the description of chronic ulcerative rheumatic arthritis or crippling rheumatism given by Jonathan Hutchison *(Illustrations of Clin. Surgery)*. In this condition a large number of joints are affected at the same time. the onset is sub-acute at its outset, attended by a good deal of swelling, and it affects more especially the small joints of the hands and feet. Whilst true arthritis deformans shows a marked preference for the senile period, this form may be found at any age, and often before middle life. Very often partial dislocation of the joints involved is produced and the consequent deformity mistaken for bony enlargements.

Anatomically the changes consist of fringes and velvety thickening and blood staining of the synovial membrane, thinning and absorption with patches of erosion on the cartilages.

In conclusion I must express my indebtedness to Dr. Kirkpatrick for this case and to Professor Cox for the Roentgen photograph.

CHRONIC POLY-ARTHRITIS IN A CHILD.

TWO CASES

OF

CHRONIC ARTHRITIS DEFORMANS IN YOUNG CHILDREN.

BY

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Cases of arthritis deformans in children under ten years of age appear to be very rare. Strümpell in his Text-book of Medicine mentions that he has only met with a few cases between the ages of 10 and 15. Osler mentions having seen only four cases in childen under 12 in five years experience. Recently, in the March number of the *Archives of Pediatrics*, Koplik has reported a typical case in a child of seven. The cases here reported were both in the Royal Victoria Hospital in Dr. Stewart's wards. The second case, a child aged 6, is very striking as the joint involvement began at the early age of two years.

CASE I. Mary C., æt. 9 years. Always healthy with the exception of an attack of whooping-cough three years previously. No history of any similar affection or chronic disease in the family. The child entered the Royal Victoria Hospital on May 30th, 1894.

The history obtained was that the child first began to suffer about one year previously. The first thing noticed was a scaly eruption upon the chest, limbs and back (psoriasis). Almost at the same time the child complained of cold extremities, with stiffness of the fingers. On attempting to walk she complained that her ankle was painful. Later on she felt severe pain and stiffness in both shoulders. The pain was not constant, but was exacerbated during change of weather. The stiffness of the joints, however, persisted and gradually got worse. The child also lost flesh. On admission the physical examination was as follows :

Patient slightly emaciated, not specially anæmic. Temperature, 97.2° ; pulse, 90 ; respiration, 24. Complained of slight fleeting pains in the limbs when she walked. Cardiac dullness reached on the left to a point one-half an inch outside the nipple line in the 5th space. First sound at apex was accompanied by a soft blowing systolic murmur, which was transmitted towards the sternum. Pulmonary second somewhat accentuated. The hands were claw-like owing to the inability of the patient to extend the terminal phalanges of the

fingers. All the joints of the fingers were prominent and enlarged, being of a pearly white colour. The second metacarpal bones of each hand were enlarged and prominent. There was wasting of the interossei. On the tendons of the flexor carpo radialis and palmaris longus of the left arm were about a dozen nodes about the size of a hemp-seed. On the lower extremities both internal malleoli were considerably enlarged and the tarsi thickened. Slight enlargement of the proximal end of the first phalanx of the left third toe. There was slight stiffness about the shoulders, but no obvious deformity. There was no redness or heat about the affected joints, but they were painful on movement. There was an eruption of psoriasis about the extensor surfaces of the knees and elbows, also about the ears and nose.

During the time she was under observation the temperature was, on the whole, slightly above the normal, and the pulse averaged about 90. The case was unaffected by treatment.

CASE II. Christina H., æt. 6 ; admitted on March 3rd, 1896. In this case there was a strong tubercular family history. One aunt died of phthisis. The mother was in the hospital at the same time as the child with a tubercular knee (?) One brother had psoas abscess.

The history was that when the child was two years old she began to suffer with pain in the left knee, which gradually became enlarged. A little later the joints of the fingers became painful and swollen. One year later the right knee became enlarged, the other joints remaining as before. The pain and swelling varied in intensity from time to time. When five and a half years old, swelling and pain in both ankles were noticed, and a little later still the child began to complain of pain in the wrist and in the left shoulder.

On admission the patient was found to be a small, poorly-nourished child. Moderately anæmic. Lungs normal, heart normal. Very marked rheumatoid lesions were present. All the articulations in the middle and ring fingers of both hands were considerably enlarged. In the terminal phalanges especially there was distinct bony overgrowth, giving an appearance as of nodes. The metacarpo-phalangeal joints of the first and second fingers of both hands were similarly enlarged. There was marked interosseal wasting. Distinct impairment of the power of extension of the left elbow-joint was noted, but there was no obvious deformity

The left knee was much enlarged in every direction, there being evidence of effusion into the joint. The joint could be flexed and extended completely without crepitus or causing pain. The right knee was similarly affected, but to a much less extent. The muscles about the knee-joints were somewhat atrophied. There was also

distinct prominence of the lower end of the left fibula, giving the ankle a full appearance. No pigmentation was anywhere noticed. While under observation she complained of no pain. Temperature was usually between 98° and 99°. Pulse averaged 100. There was considered to be a possibility of this being a case of tubercular arthritis when first seen, but the onset of the trouble, with the slow involvement of one joint after another, the symmetrical distribution of the lesions, the multiplicity of the joints affected, and the muscular atrophy, all rendered it certain that the case was to be placed in the category of chronic arthritis deformans. The character of the lesions themselves was perfectly typical of this disease.

NOTES UPON A CASE OF MULTIPLE ABSCESSES OF THE LIVER, ASSOCIATED WITH PURULENT BRONCHITIS AND INTERSTITIAL PNEUMONIA; ABSCESSES IN THE SPLEEN AND PANCREAS.

BY

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The case about to be recorded is in the main of interest because of the relationship between the morbid conditions noted in the title of this article. For the clinical report I am indebted to Dr. W. G Reilly, Resident Physician to Dr. Stewart at the Royal Victoria Hospital.

The patient, a man aged 38, had been a labourer and exposed to all sorts of weather. He gave an alcoholic history. Six years ago he suffered from a left-sided pneumonia and pleurisy. From this attack he never completely recovered; he managed to perform his daily duties, although unable to do heavy work, and he was troubled with a cough. Two years ago he practically gave up work altogether, but kept up and about, although his condition was steadily becoming worse. In November last he took to bed, the cough had been very troublesome and the expectoration profuse, while there was progressive weakness and loss of flesh. In the last few months the patient had repeated chills, followed by sweats, especially at night.

Upon admission to the hospital (March 10th, 1896,) the patient was emaciated and haggard, sleeping poorly on account of the cough, with difficult respiration and a horrible fetor of the breath. There was well marked clubbing of the fingers. He complained of no pain. The left side of the chest was found much flattened, with very little movement, and there was a dull note upon percussion. On the right side the breath sounds were harsh, but otherwise normal; on the left side the breathing was feebler than normal at the apex, blowing in the axilla, while all kinds of moist râles accompanied respiration. The sputum was profuse, purulent and fetid, containing no recognisable tubercle bacilli. The odor of the breath was so foul that prolongued examination of the patient was a severe task; even when he was placed in an isolation ward the odour from him spread over a wide neighbourhood. Nothing very definite was discovered in connection with the digestive system; examination of the abdomen gave negative results; the bowels were regular.

There was progressive failure until death ensued upon the ninth day after admission ; the temperature had continued febrile with slight remissions, the respirations remained about 34, the pulse varied between 112 and 130.

At the autopsy performed 28 hours after death, the body was found to be that of a very gaunt, emaciated male adult. The fingers were clubbed ; the left side of the chest was flattened above the 4th rib. The *right lung* was firmly adherent along the line of the 3rd and 4th ribs, but the apex was free. The upper lobe presented multiple lobular abscesses, with gangrene. The middle lobe was less involved, the lower lobe was crepitant, congested, but free from foci of pus so far as could be seen by the naked eye ; there was some bronchiectasis, and foul grey fluid poured out of the cut bronchi. Weight of lung 880 grammes.

The *left lung* was much heavier (weighing 1345 grms,) with extensive and firm adhesions from the fifth rib upwards all along the posterior aspect, up to and including the apex. The upper lobe was greatly disorganized, with numerous cavities and areas of breaking down. Close to the apex, in fact right above it, was a fairly large smooth-walled cavity which was evidently extra-pulmonary, its walls being formed by the pleura, both visceral and parietal, with the adhesions between the two ; this communicated with the underlying intrapulmonary cavities. The *heart* presented little worthy of note, beyond brown atrophy. The right bronchus, near its origin, presented a well marked linear ulceration eroding to the cartilage, the peribronchial and pericœsoaphageal glands were greatly enlarged, dark and moderately firm ; there was no sign of caseation or other evidence of tuberculosis in them. Upon opening the *abdomen* there was evidence of old general adhesive peritonitis, with a displacement of the colon, stomach and liver. Between the spleen and the stomach there was necrotic tissue with abscess formation and adhesions. On separating these adhesions while removing the *spleen*, pus exuded from this area, and there was further seen a small perforation of the size of a quill, in the stomach, around which were some moderately firm adhesions, preventing the escape of the gastric contents. Another area of perforation, about 3 cm. in diameter, was present where the spleen impinged upon the diaphragm. This extended into the substance of the spleen, and superficially into the diaphragm, but not through it. The spleen was soft and flabby, its upper extremity presented a large subcapsular abscess, the size of a walnut, and from this there were a few branching tracts of suppuration, leading a few centimetres into the spleen tissue. Thus smaller foci of pus were ranged about the main

abscess. This subcapsular abscess communicated with the suppurating area between the spleen and diaphragm, and the arrangement of the various parts was such that evidently the abscess had started within the spleen substance, and secondarily had burst through or extended through the capsule, the affection of the diaphragm being relatively recent. The spleen gave the amyloid reaction (sago spleen). The *pancreas* was large, somewhat reddened and contained within its substance a large abscess, 1.5 cm. in diameter, situated near to the tail of the organ and close to the splenic vessels; a soft clot existed in the splenic vein alongside of which was situated the abscess. The *liver* was large, weighing 2340 grm., the upper aspect of the right lobe presented two slight fluctuating nodules situated towards the left side of the lobe. A similar but larger bulging mass was present at the lower extremity of the enlarged right lobe. From the lower aspect of the lobus spigelii was a similar discoloured patch with fluctuation On section the organ in the main was moderately pale, and presented very numerous large and small abscesses filled with glairy pus, in some the colour was grayish, in others bright yellowish-green. The largest mass of these abscesses was an aggregation beneath the upper surface of the right lobe, forming in some parts cavities the size of a walnut; in others, characteristic aggregations of smaller cavities, surrounded by very deeply congested liver tissue, and having an oval outline. On further dissection, many of these larger cavities could be seen to be arranged along definite tracts and in close proximity to the bile ducts.

Fresh preparations of the pus showed only a moderate number of pus cells present, with fat globules and crystals. A large number of various kinds of cocci and bacilli were present. The other organs of the body presented little calling for remark; the portal vein was free; the *kidneys* showed a condition of parenchymatous nephritis, with but slight amyloid reaction in the cortex.

A *microscopical examination* of the various organs showed that the lungs were the seat of well marked interstitial pneumonia, with numerous foci of necrosis. There was no sign of tuberculosis in any of the numerous portions examined; the spleen presented a very advanced condition of amyloid change. Sections through the *pancreas* in the neighbourhood of the abscess showed a very interesting condition. There was a lateral thrombus in the splenic vein of a suppurative nature; while the wall of the vessel immediately beneath this showed extensive infiltration, with small round cells. Whether this thrombosis is sufficient to explain the production of an abscess in the pancreas immediately outside the vessel, or not, I feel a little hesita-

tion in stating positively. Such is possible, but I should have expected to have found the thrombus presenting a more extreme pyæmic condition than was noticeable in this case. The pancreatic tissue itself, beyond showing a richly nucleated condition of the alveoli, presented two or three foci of adenomatous change—small and limited areas presenting the appearance of a medullary carcinoma, with singularly small amount of interstitial stroma. I speak of these as being adenomatous, inasmuch as I have met with somewhat similar little foci in other cases in which, as in this, there has been no evidence of malignant disease in other organs.

The liver showed in parts great congestion of the capillaries with atrophy of the cells and further evidences of retention of bile pigment. Scattered through the substance were moderately small abscesses, whose centres showed complete necrosis of the cell elements; while at the periphery of each was a thick zone of small cells with fragmenting nuclei. The paucity of cells in the pus from these abscesses, to which reference has already been made, was evidently due, not to the fact that there had been little migration of leucocytes, but to the ensuing necrosis.

Remarks.—It would appear that all the conditions here described are closely connected, and that we have in this case a chain of conditions following one after the other from a condition of delayed resolution with acute lobar pneumonia. The condition of the lungs, instead of being as suspected, one of tuberculosis (although it must be acknowledged that the failure to discover the tubercle bacilli had rendered this a doubtful diagnosis) was one of interstitial pneumonia and bronchiectasis, passing on to fœtid bronchitis, gangrene and gangrenous cavitation. Sections of the lung tissue showed no evidences of tubercles. Following upon the destruction of the lung tissue there had finally been developed not only the amyloid degeneration of spleen and kidney, due to the chronic purulent bronchial discharge, but also a condition of general sepsis, with, it would appear, septic embolism in the spleen and development of the splenic abscess which eventually extended so as to become subdiaphragmatic also; from this abscess the suppurative micro-organisms found their way along the splenic vessels, setting up, it may be by the lymph channels, abscess formation in the tail of the pancreas, and by the vein leading to septic embolism in numerous branches of the portal vein. It is difficult to state, indeed impossible to state positively, what was the organism associated with these abscesses, the autopsy having been performed too long after death. Not improbably the pyogenic cocci were the cause

SEPTIC INFECTION IN TYPHOID FEVER. WITH REPORT OF A CASE.

BY

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The subject of septic infection, not only in typhoid fever, but in other specific infectious diseases, is one which has attracted much attention in the last five years, and a great deal of work, experimental and otherwise, has been done upon it, chiefly at the Pasteur Institute in Paris. Cases of septic infection in typhoid are sufficiently rare in ordinary experience to warrant record, the more so as many cases already recorded have been very inadequately described and are comparatively valueless.

The rarity of such cases may be inferred from the fact that in Osler's statistics of 229 cases (*Johns Hopkins Hospital Reports*, Vol. IV., No. 1) there is no case of general sepsis reported, and in the records of the Royal Victoria Hospital for the last twenty-seven months, comprising 185 cases, the case here reported is the only one that was definitely proved to come under this class.

Under the head Typhoid Fever three main types of cases must be recognised. The first class consists of the ordinary typhoid fever as it is known to the text-book. Under certain circumstances the bacillus of Eberth gets into the circulation in such quantities as to give rise to a general septicæmia or septico-pyæmia, and sometimes to certain local effects. In persons recently dead from typhoid it is usually possible to cultivate the specific germ from the ulcers, mesenteric glands, spleen, liver, kidneys and bone marrow. It is a well-known fact that the B. typhosus remains in the body for a long time after the symptoms have subsided. As late as the seventh week Quincke found it in the bone marrow, and Welch found it the bile of a rabbit that had been inoculated four months before. It has also been found in pus in a case of periostitis as late as a year after the original infection. It seems probable, then, that the bacillus must attain its wide distribution in the organism through the blood-stream. Yet it is not invariable to find the bacillus in the blood; on the contrary the discovery is peculiarly rare.

Flexner explains this fact by the germicidal action of the blood. While no doubt the serum of blood removed from the body possesses such powers, it by no means follows that the plasma during

life possesses the same properties. It seems more probable that the bacilli in the blood are killed by the changes induced in the blood by its removal, or else the large majority of them are, as it were, strained out of the blood by the various organs and do not multiply in it where actively circulating. If from any cause the bacilli should enter the circulation in large numbers we get the clinical picture of general septicæmia, great prostration, delirium, sweating, rigors and irregular pyrexia, just as in a case of general infection with the ordinary pyogenic organisms. Besides this certain local manifestations are met with.

In typhoid fever the brunt of the disease falls upon the lymphoid tissue, with the greater intensity the nearer to the focus of infection, that is to say, the intestinal glands. There is then a tendency to the proliferation of lymphoid tissue everywhere, and small collections of round cells are found, notably in the liver of typhoid cases, recognizable microscopically and even by the naked eye.

Reed, in a recent paper in the *Johns Hopkins Hospital Reports*, points out that these collections of cells are associated with cell necrosis, and in some cases he has found evidence of the formation of fibrous tissue. These observations have also been confirmed by experimental inoculations. These areas of necrosis do not seem invariably to be associated with the presence of bacilli. Liebermeister long ago noted the tendency in typhoid fever to the production of parenchymatous degeneration, and mentions that this may be followed by rupture of the muscles, muscular abscesses, parotitis, liver abscess, and the hæmorrhagic diathesis. It seems not unlikely, then, that in a prolonged case, when the original infection has been intense and the resisting power of the patient impaired by mal-assimilation, diarrhœa and so on, that the cell degeneration may become so great as to cause extensive inflammation ending in suppuration. That the typhoid bacillus can cause suppuration is amply proved.

In 1887 Ebermaier obtained pure cultures of the typhoid bacillus in two cases of suppurative periostitis; in 1889 Orloff found it in a periosteal abscess. Achaline also reports a case. Flexner and two others found it in a splenic abscess. Chiari, and Gilbert and Girode have seen it causing purulent cholecystitis. Carbone, Vincent and Girode have found it causing ulcerative endocarditis. Lesage has found it in pure culture in suppurative adenitis. A few cases are recorded where the B. typhosus caused suppurative arthritis. Martin and Robertson have recently described a case of suppurative arthritis of the wrist occurring in a case at the Royal Victoria Hospital.

Flexner has recently reported a case of a general typhoid septi-

æmia associated with suppurative parotitis. He obtained the typhoid bacillus from the blood, lungs, mesenteric glands, spleen, bone marrow and kidneys. Streptococci were found in the parotid gland and in the lungs. Multiple abscesses were found in the kidneys.

A third and very interesting class of cases come under the head of "secondary" or mixed infections. The co-existing development of several pathogenic germs in the same patient is a well known phenomenon in other diseases besides typhoid, as for example, in tuberculosis (Koch), scarlatina (Raskina), tetanus (Vincent and Vaillard), cholera (Metchnikoff), and variola. The whole subject of these mixed infections is a very interesting and important one, inasmuch as these secondary germs play an important rôle in the development and course of the original malady. Such secondary infections often mask the symptoms of typhoid and always render the prognosis very grave.

These cases naturally fall into two groups, the first, where the organism is simultaneously attacked by the bacillus of Eberth and some other germ, and the second, when the secondary infection is an incident in the course of an attack of typhoid fever. The latter is more often the case. Such cases run an atypical course and clinically are marked by the following signs: Intense prostration, stupor, at times low delirium, subsultus, lividity, high temperature, chills and local manifestations of the septic process. Most of these signs may of course be found in a severe attack of ordinary typhoid, but are certainly very exceptional in those cases treated early by the bath method.

As a rule secondary infection is more apt to take place in the ambulatory form and in those cases which are complicated with diarrhœa and great prostration, and protracted convalescence. The germs most usually found are the streptococcus and staphylococcus albus and aureus, pneumococcus, bacillus coli communis, and bacillus tuberculosis. It would seem, and this is confirmed experimentally, that the blood of a typhoid patient is a specially good culture medium for the growth of the germs just mentioned. The most usual point of entrance is the intestinal ulcers, but absorption may take place from the mouth and pharynx, skin abrasions and possibly from the bladder and urethra. This is quite possible when we remember the number of bacteria that can be found in the gastro-intestinal tract even in health. Von Besser found the streptococcus seven times in the saliva of eighty-one persons, and in cases of mixed infection. Vincent found it in the fæces three times out of seven. When these germs gain an entrance the manifestations of their action may remain purely local or again may cause a generalised septico-pyæmia.

Vincent, in a communication to the *Bulletin de la Société Médicale des Hôpitaux*, Nov. 13th, 1891, referred to the relative frequency in man of mixed infection with B. typhosus and streptococci, and pointed out that the prognosis in such cases was more grave than those in which the staphylococcus was present. In pus of abscesses in 41 cases of typhoid, Vincent found the staphylococcus pyogenes aureus alone or with staphlycoccus albus in 32. All recovered. In eight cases he found the streptococcus either alone or with the typhoid bacillus. Five cases died.

According to Vincent in 31 autopsies on typhoid cases the streptococcus and B. typhosus were found six times. The following is an abstract of the cases:

CASE I. Death on 23rd day. Otitis media purulent. Streptococci and B. typhi in large quantities in blood and viscera.

CASE II. Death on 25th day. Angina on 20th. B. typhi and streptococci in spleen, liver and mesenteric glands. Streptococci in pharnyx, cervical glands on left side and in blood.

CASE III. Death on 23rd day. Erysipelas of face on 17th day. Foci of suppuration in kidney. Streptococci in erysipelatous patch, glands of neck and all viscera. B. typhi in spleen.

CASE V. Death on 22nd day. Angina on 20th day, with superficial slough on uvula. Abundant streptococci in pharynx, glands of the neck, spleen, liver and blood.

CASE V. Two areas of suppuration in the spleen. B. typhi and streptocci in all viscera and in meningeal exudate.

CASE VI. General purpura, lasted 12 days till death. Peyer's patches normal. Streptococci in blood. All viscera gave B. typhi and streptococci.

This last case is specially important as it shows that, like B. tuberculosis, which can produce septicæmia without characteristic tubercles (experimental tuberculosis of Yersin's type), the bacillus of typhoid can produce general septicæmia and death without the characteristic intestinal lesions.

Vincent describes an interesting series of experiments which he made on the subject of mixed infections. Five rabbits which he inoculated with pure cultures of B. typhosus all recovered. Of five inoculated with streptococcus alone one died. Of five inoculated with both B. typhosus and the streptococcus one recovered and four died in from 56 hours to 39 days. Three presented hæmorrhagic swelling of the Peyer's patches with swelling of the mesenteric glands and spleen In all cultures of both germs were obtained from the organs. In the rabbit which lived 39 days none of the above signs were present and no cultures were obtained.

Vincent has also shown experimentally that in the rabbit after inoculation with the B. typhosus alone we get in seven hours a great increase in the polynuclear leucocytes, reaching a maximum at the end of 20 hours. In case of inoculation with the B. typhosus and

streptococci the opposite occurs, and at the end of 24 hours the leucocytes are almost absent and there is nothing but cellular debris to be seen. This seems to prove that the ordinary means of defence which the body possesses are almost powerless to protect against these mixed infections. Besides this systematic infection many local lesions have been described either due to the B. typhosus alone or to a mixture of organisms. The following have been reported: Skin abscesses, abscess of the liver, pancreas, spleen, kidneys, parotid gland, thyroid, muscles and mesenteric glands, suppurative orchitis and epididymitis, suppurative meningitis, suppurative proctitis, purulent pericarditis, pyothorax, malignant endocarditis, purulent cholecystitis, perinephritic abscess, suppurative otitis media, facial erysipelas, suppurative arthritis, osteitis and periostitis, membranous pharyngitis, pyuria.

The following case of typhoid with general mixed infection is of interest on account of its rarity:

CASE.—William B., æt. 30, entered the Royal Victoria Hospital on December 5th, 1895. I am indebted to Dr. A. A. Robertson for the clinical history of the case.

The patient first began to feel ill about six weeks before admission. Once or twice a week he felt feverish and out of sorts, with headache and poor appetite. On one occasion his nose bled. This condition lasted for about three weeks, until November 18th, when he was compelled to go to bed. The symptoms at that time were headache, feeling of heat, anorexia and constipation. These symptoms persisted after admission, except that diarrhœa replaced constipation. On admission he was found to be a fairly well-nourished man, apparently very ill and drowsy. Temp. 104·8°, pulse 120, resp. 24. The skin was slightly livid.

Digestive System—Tongue swollen, rough and heavily coated in the centre, with red edges. Bowels loose and the stools were yellowish and liquid. Abdomen considerably distended generally. Slight tenderness in right iliac fossa. A few doubtful rose-spots were present. Liver palpable; spleen easily palpable.

Circulatory System—Pulse rapid, dicrotic, and capillary pulsation in fingers.

Heart—Apex beat in fifth space just inside nipple line. First sound at apex rather muffled. Both second sounds accentuated.

Urine—Clear, acid, high-coloured, sp. gr. 1020. Considerable albumen. No sugar.

The clinical course was as follows:

Dec. 12.—Patient up till this day has been in the same condition as on admission. Forty-three baths have been given. Cyanosis has

deepened. Tongue very dry and saliva very tenacious. The right half of tongue is distinctly swollen. On the left side of the soft palate is a greyish membranous patch which peels off readily and does not leave a raw surface. A culture was made. Uvula and pharynx red and swollen and show some whitish spots.

Dec. 13.—Growths from the patch yielded micrococcus tetragonus, and a few short, straight bacilli, not resembling B. Lœffleri. The patch on the left side is as before. On the right side of the uvula is a grey patch about one-quarter of an inch in diameter. A portion was removed and proved to be membranous, about 5 mm. thick. On the under surface was the appearance of hæmorrhage; cultures were made from this. The right half of the tongue was much more swollen than before, red and glazed. Friction sounds were heard in both axilla, also there were signs of broncho-pneumonia.

Midnight.—Respirations 60, pulse 152, temperature 104·2°. Grey patch in the throat has disappeared. Culture made from blood.

Dec. 14—The patient died suddenly at 7.10 a.m. When seen a few moments after, the dependent parts of the body were already deeply blood-tinged and bluish.

Cultures from the throat gave the same germs as before. The blood yielded an abundant mixed growth of streptococci, staphylococci and two bacilli, one about the size of, and conforming to, the tests of B. typhosus; the other was a very large, thick bacillus, of which the character was not absolutely determined.

Autopsy—(Performed by Prof. Adami seven hours after death)—Post-mortem rigidity complete.

Lungs—Acute dry pleurisy, with areas of broncho-pneumonia. These areas were more frequent towards the apices than at the bases. Bronchi injected. Peribronchial glands normal.

Heart—Slight degree of brown atrophy.

Liver—Of moderately pale carmine colour, with darker mottlings. Lobules not recognisable. No necrotic areas. Slightly friable. Considerably enlarged.

Spleen—Enlarged. Capsule tense. Spleen substance soft.

Pancreas—Nothing noticeable.

Kidneys—Cortex swollen and calices reddened.

Mesenteric and Retro-peritoneal Glands—Enlarged and moderately soft.

Tonsils—Suppurative follicular tonsillitis.

Tongue—Right half swollen, red and glazed. On section, showed hæmorrhages and small abscesses. The disease was more marked anteriorly, but there was disturbance even to the extreme posterior part.

Larynx—Mucosa reddened.

Ileum—Walls peculiarly thin, pale and atrophied. Peyer's patches in the upper part showed no change. Lower down, while not injected, they presented occasional pale (healing) ulcers with smooth bases and thin edges. Lower down still there was slight injection; 75 cm. above the ileo-cæcal valve was a much injected patch 5 cm. long, still, however, thin and flat. Below this the injection continued and the flat ulcers were fairly frequent. In every case the ulcers were healing.

Colon—As far as the sigmoid flexure rare ulcerated solitary follicles occurred with overhanging edges and sloughy bases.

MICROSCOPICAL EXAMINATION—*Tongue*—Papillæ show hæmorrhage in their substance; considerable superficial necrosis with early abscess formation at their bases. At the apex of some of the papillæ hordes of bacteria are seen; in deeper structures of the tongue are multiple embolic abscesses. Muscular tissue infiltrated with small round cells and showing fœcal necrosis. Streptococci and staphylococci noted.

Spleen—Marked congestion. A few isolated bacilli. Some hæmorrhages with old blood pigment. Considerable increase in splenic corpuscles.

Liver—Atrophy of the liver cells and infiltration of small round cells in parts. A few scattered bacilli which stain rather better at the ends than in the middle.

Pancreas—Areas of necrosis.

Kidneys—Parencymatous degeneration affecting chiefly the convoluted tubules. Congestion. Here and there areas of small round celled infiltration.

Lungs—Septic embolic broncho-pneumonia. Streptococci and staphylococci present.

Testicle—Parenchymatous orchitis. Great congestion. Some blood pigment in interstitial tissue.

Tonsil—Crypts lined with cellular exudate, some of which is breaking down; great congestion. Crowds of bacteria superficially situated.

Recti—Striæ hazy. Muscle cells irregularly swollen. Multiplication of nuclei.

Cultures were taken from all the viscera, from the tongue abscesses, and from the blood. All the cultures gave mixed growths of streptococci and staphylococci. The cultures from the spleen, in addition, showed a short thick bacillus with rounded ends, actively motile, which corresponded to the B. typhi in every respect, except that it turned litmus agar red, although it did this but very slowly. The colonies were characteristic.

From the tongue, in addition to streptococci and staphylococci, was obtained the colon bacillus.

A CASE
OF
INFECTIVE ENDOCARDITIS IN TYPHOID FEVER.

BY

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A case of typhoid fever, with the fatal complication of ulcerative endocarditis is, I think, sufficiently uncommon to merit being placed on record. Osler, in his Text-book on Medicine, quotes the Munich records of two thousand post-mortems on typhoid fever, in which eleven presented this complication, while in his own experience he had met with it but twice.

The history of this case, as nearly as can now be obtained (most of the records were in the hands of the late Dr. Saunders and are not now attainable), is as follows:

I. DeW., male, aged 21, was admitted to Sampson ward, Kingston General Hospital, under the care of Dr. H. J. Saunders, on September 26th, 1895. He had been ill for about ten days previously, and on admission was quite weak, and had a temperature of 104$\frac{1}{5}$° F., and pulse 108. There was marked abdominal tenderness, and a few scattered rose coloured spots were detected over the abdomen and on the back. There was slight diarrhœa with watery stools. The case ran the usual course for the following two weeks, presenting no peculiar features. The temperature always ranged below 102$\frac{3}{5}$° F., and pulse 96. The diarrhœa ceased under treatment. On October 8th the evening temperature reached 99° F. Next day there was a slight chill with rise of temperature to 103° F. and pulse to 112. From this to the termination of the disease the temperature was markedly remittent (between 99° and 103$\frac{3}{5}$° F.) On the 16th of October the patient became delirious and remained so till death on the 25th. During this period he passed fæces involuntarily and had retention of urine, requiring catheterization. He died comatose on the evening of 25th of October. No murmurs were detected over the heart area till four days before death, when a soft systolic murmur was detected and was best heard at bottom of sternum. The urine contained a small amount of albumen and a few pus corpuscles.

The necropsy, held twelve hours after death, presented the following general features; Typical typhoid ulcers of the small intestine

in various stages; the mucous membrane of the ileum over a space of two by one and a half inches, just above the ileo-cæcal valve, was dark and commencing to slough; there were infective vegetations on the tricuspid and mitral valves; a few scattered pyæmic infarcts in the lung; numerous pyæmic infarcts in spleen, and many miliary abscesses in both kidneys.

In Detail.—The body was much emaciated and of a distinctly sallow hue. Rigor mortis had begun in the upper extremities. No other points of interest were found on external examination. Permission was obtained to examine the heart and abdomen only.

Abdomen flat; no fluid in peritoneal cavity. Stomach and intestines moderately distended. Blood vessels of the great omentum and of mesentery injected; those of the mesentery of lower eighteen inches of the ileum were markedly congested. On examination of these vessels no signs of thrombosis were present in arteries or veins.

Nothing abnormal in large bowel. Appendix normal. In the small intestine there were found numerous ulcerated patches in the lower part of the bowel. These patches corresponded to the situation of Peyer's glands. The ulcers were generally circular or oval in outline, and as a rule reached through to the muscularis. Most of the ulcers in this situation were freely suppurating. The last two or three inches of the mucous membrane of the ileum was very dark and in places could readily be pulled away from the sub-mucosa. Higher up the bowel were scattered ulcers, usually single, and ranging from $\frac{3}{4}$ to $\frac{1}{4}$ inch in diameter. The remaining solitary follicles were enlarged nearly to the duodenum. Many of the ulcers higher up in the bowel had commenced to cicatrize.

The *stomach* and *duodenum* presented nothing abnormal.

The *liver* weighed 62 ounces, was pale and rather soft, and was in a condition of cloudy swelling. The portal vein was filled with dark fluid blood.

Cultures were made on agar-agar jelly from the liver pulp, and colonies of staphylococcus pyogenes aureus developed freely, along with a few colonies of a bacillus which from its morphological and cultural characters I considered a variety of the B. coli communis.

Gall-bladder empty. Bile ducts patent.

The *spleen* weighed $7\frac{3}{4}$ ounces, was closely adherent to the surrounding peritoneum, was dark in colour, pulp soft, almost diffluent. On the surface of the organ were from twelve to fifteen infarcts ranging in size from a walnut to a pea. Some were broken down into a purulent debris, and were surrounded by a marked inflammatory zone; others were more recent. Cultures on agar-agar made

from the spleen pulp grew numerous colonies of staphylococcus pyogenes aureus and three colonies of undoubted bacillus typhosus. Cultures from the infarcts gave pure growths of the staphylococcus.

The *mesenteric glands* were enlarged and quite soft, but showed no pus formation. The *suprarenals* and *pancreas* were natural. The kidneys weighed each 4¼ ounces. Their capsules were slightly adherent over numerous scattered, pin-head sized, whitish spots—miliary abscesses—exuding a minute bead of pus on section. No cultures were made from these. The cortex of both kidneys was rather pale and slightly swollen (cloudy swelling), the medulla dark red. The renal pelves, ureters and bladder were normal.

The thorax was examined through the diaphragm. The pleural cavities contained no fluid. Here and there on the surface were flakes of recent lymph covering infarcted lung. The lungs presented about six or eight walnut-sized pyæmic infarcts. Two or three of these infarcts were completely broken down into a purulent debris, otherwise the lungs were normal. The right lung weighed 19 ounces, the left 17½ ounces. The pericardium contained only a trace of serous fluid.

The heart weighed 8¼ ounces. Right heart flaccid, the left contracted. Muscle, pale, soft and flabby. Right auricle contained soft post-mortem clot.

Tricuspid valve was markedly diseased. One cusp was destroyed by an ulcerative process, leaving only the ragged attached edge, presenting at one spot a rough pea-sized vegetation which crumbled under the finger; a second cusp presented a bean-sized vegetation, and the edge of the valve was slightly eroded. The other cusp was normal.

The right ventricle and pulmonary artery were normal. Left auricle normal.

Mitral valve.—The aortic cusp presented several small pea-sized vegetations and was slightly eroded at one point.

The left ventricle, aortic valve and aorta were normal.

A culture from the clot in the right auricle remained sterile. A microscopical preparation of one of the vegetations showed numerous micrococci masses.

Although this post-mortem examination was not a complete one, yet I think one could have no hesitation in stating that the source of infection was from the ulceration in the bowels. Further, the infective vegetations and the arterial pyæmia were due undoubtedly to infection by the common staphylococcus pyogenes aureus, in all probability via the portal system.

The bacillus typhosus is capable itself of exciting infective vegeta-

tions on the valves, but this case follows in causation the type of the vast majority of cases of infective endocarditis in being due to the staphylococcus aureus.

The question might readily arise in such cases: Would not early treatment by intestinal antiseptics have greatly lessened the tendency to infection and perhaps have been the means of preventing the fatal infection? I would say, in all probability such treatment would have such a tendency, but pyæmia as a cause of death in typhoid fever is too uncommon to make a routine treatment by intestinal antiseptics a necessity on this account.

UPON A CASE OF FOAMING LIVER (SCHAUMLEBER) WITH THE DEVELOPMENT OF GASEOUS BULLÆ IN VARIOUS ORGANS, DUE TO THE PRESENCE OF THE BACILLUS AEROGENES CAPSULATUS.[1]

BY

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While I have to confess that I have nothing new to add with regard to this interesting form, the bacillus aerogenes capsulatus, about which Professor Welch and Dr. Flexner are issuing a full study in the new *Journal of Experimental Medicine*, and while I have to confess further that I have been so much occupied with other work that I have not been able to make a full study of the case, nevertheless, inasmuch as I believe I am recording the first in which this form of anœrobic microbe has been recognised in Canada, I may possibly obtain forgiveness if I publish a brief note upon the case.

A. C., aged 45, a strongly built lumberman, had for the past five or six years suffered from dull aching pains in the loins. He was a temperate man and had no other complaint.

While drawing wood four weeks previous to admission he felt a soreness over the whole body, but continued at work. Upon the following day, the soreness gave place to actual pain, localised in the abdomen and loins. The pain was so severe that at noon he ceased work and took to his bed. The pain became at times agonizing, but never became localised to any spot in the abdomen. He suffered from recurrent chills, his urine became very red (? bilirubin) and a week before entering he became jaundiced. Upon April 9th he was admitted to the Royal Victoria Hospital, under Dr. Bell, to whose house surgeon, Dr. Anderson, I am indebted for these notes.

Upon admission the patient complained of no pain, but only of extreme weakness. Despite the fact that he had been ill for four weeks, he still preserved a well nourished and muscular appearance. There was the anxious abdominal facies, with moist perspiring icteric skin. The temperature was 102°, the pulse 120, the respiration 28.

The abdomen was pendulous, and there was tenderness over the whole, particularly over a small area, 3 inches to the left and 5 inches above the umbilicus, where percussion was dull and an indistinct mass

[1] Read before the Montreal Medico-Chirurgical Society, April 17, 1896.

could be felt. There was some tenderness also in the left groin. The urine contained albumen and bilirubin, the fæces were liquid and dark, containing blood and pus cells.

Shortly after admission the patient vomited coffee ground vomit, and continued to vomit thus until his death, 5 days later. The patient continued so weak that it appeared hopeless to attempt any operative interference. Upon the 14th he was coughing constantly, and was in great pain. The pulse was weak and rapid. The abdomen was distinctly enlarged and tympanitic, and the enlargement appeared to be progressive. The tympany extended for about 1½ inches above the edge of the liver, which could at this time be distinctly palpated. The blood upon the 14th exhibited great leucocytosis, the red corpuscles did not form into rouleaux and there was marked poikilocytosis. On the 15th the patient died.

The body was placed in the cold chamber, and the necropsy performed 28 hours after death. The necropsy revealed that there had been a perforative appendicitis. Below the cæcum in the pelvis, between it and the rectum, was an abscess of the size of a large tangerine orange. Into this abscess passed the appendix, which had ruptured at the junction of the 1st and 2nd fourths. The gangrenous distal portion of the appendix lay in the abscess cavity. The abscess was sharply defined. The mesentery of the small intestine was very thick and fat, and upon cutting through it in removing the intestines occasional small foci of pus were cut across. Upon further examination these foci were found to be linear, and the pus to be in and around the branches of the superior mesenteric vein. Deeper down in the mesentery was an extensive sloughing abscess cavity, its branching corresponding to the mesenteric vein. The superior mesenteric appeared to open into this abscess cavity, its terminal and upper portion alone being clearly recognisable. The abscess cavity extended up to the head of the pancreas and the duodenum, and in the third part of the latter was a fine perforation leading into the abscess cavity.

Evidently, therefore, we had here to deal in the first case with a case of appendicitis, which possibly taking into account the history of long continued soreness and pains in the lower abdomen, may have been of the recurrent type. Eventually there had been perforation and localised suppurative peritonitis and abscess formation, with suppurative thrombosis of the branches of the superior mesenteric vein, and this thrombosis had grown along other branches of the vein, and had led eventually to a condition of retroperitoneal abscess.

But there had been further changes. Bubbles of air or gas were

noticed in the veins of sundry of the abdominal viscera. Unfortunately there exists no note as to whether also the presence of air was noticed in the coronary veins. My impression is that I distinctly noticed this condition, but in the absence of any definite note I can affirm nothing surely. When, however, the liver was removed it was found to float high out of the water, and the same was noticed with regard to the kidneys and to a somewhat less extent, in connection with the spleen. It should also be added that the abdomen was found greatly swollen, even more so that it had been at the time of death, and upon opening it there was an abundant exit of gas. The liver was not much above the normal size, and presented rounded edges. Its surface was smooth with a dark slaty background, mottled over thickly with pale yellowish circular patches, 2 to 5 mm, across. On section it was extremely emphysæmatous, and crackled on pressure, and when a lighted match was brought close to the cut surface and pressure was exerted upon the organ, the expelled gas caused a series of minute explosions. The cut surface had a reddish-brown colour on the whole, but varied from bright red to even a greenish tinge. It exhibited numerous small whitish areas of necrosis, with softened centres, and also numerous sharply defined bullæ (where the gas had been); these averaged 3 to 5 mm. across. It was noted that although the mesenteric exhibited so extreme a condition of suppurative thrombosis, no thrombi were to be seen in the large vessels of the liver.

The spleen was large, soft and almost diffluent. It had a slightly emphysæmatous feel, but presented no clearly marked bullæ. The kidney also showed no large bullæ although it floated so easily; there were, however, numerous whitish areas of necrosis or abscess formation level with the surface, and resembling those seen on the surface of and in the liver. On section, the cortex was plainly swollen, with similar areas both in the cortex and in the medulla. Bacteriologically the surface growths gave in the main, colonies of a minute diplococcus. A deep agar lactose tube showed in 24 hours a slight growth along the needle track away from the surface. In 48 hours the deep growth was more distinct and one bubble of gas was well developed. In 72 hours there was abundant development of gas bubbles, but now in the upper part of the needle track there was a development of the same minute diplococci which had been seen in the previous cultures. Preparations made by breaking the tube and taking material only from the lower portion of the growth gave large bacilli corresponding in every respect with those described by Welch as the B. aerogenes capsulatus.

Sections of the liver and other organs showed large colonies of this same large bacillus corresponding to the areas of necrosis recognised by the naked eye ; but there was very faint evidence of the presence of the capsule, even when preparations were made by Welch's method of demonstrating the capsules. At most where the bacilli were crowded together, a faint delicate halo could be seen surrounding each individual. Welch and Flexner have, however, called attention to the fact that the capsule is not constantly recognisable.

That the bacillus in this case had commenced to grow in the tissues ante-mortem is shown in the first place by the development of tympanites on the day preceding death. In the second, I take it, by the localised growths in the liver and kidney, these growths corresponding to the localised necroses in these organs. At the same time it is clear that in this as, if I mistake not, in all cases, the presence of this gas-producing germ was of the nature of a secondary infection, and indeed I am inclined to doubt whether under ordinary conditions the bacillus can grow in the human organism without the simultaneous presence of aerobic microbes. This, perhaps, would seem to be contrary to the experience gained by inoculating pure cultures of the germ into the lower animals ; yet it must be remembered that the conditions of such inoculations, the number of microbes and also the amount of products of growth injected form, taken together, a very different process to that which must occur in natural infection.

A CASE
OF
INFECTION BY THE BACILLUS AËROGENES CAPSULATUS.[1]

BY

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It is just a few weeks ago since Professor Adami presented before this Society the liver removed from the body of a man who died at the Royal Victoria Hospital from a general infection, following on an attack of appendicitis, the bacillus aërogenes capsulatus having been found post-mortem in the various organs. This, I believe, is the first case of the kind recorded in Canada. Scarcely a fortnight later, at an autopsy on a case of pyelonephroses at the Montreal General Hospital, an almost identical condition of the organs to that described by Dr. Adami was found.

I was enabled at the time to make anaërobic cultures from the various organs, but succeeded in obtaining a growth from the liver blood only. Inasmuch as the bacilli have never yet been exhibited before the Society, I thought it would be of interest to show them here to-night and to describe briefly the conditions under which the organism was found.

The history of the case (for which I am indebted to Drs. Finley and Cowie) is briefly as follows: A. L., a French Canadian, aged 23 years, was admitted to the wards of the Montreal General Hospital April 22nd, 1896, having ten days previously injured his side by falling over a wash-tub and immediately losing consciousness; later vomiting supervened and persisted intermittently for some days. Two days before admission swelling was observed in the left side and on the same date he had a severe chill.

The *condition on entering* showed the patient to be a well-nourished muscular man with a moderate degree of anæmia; he complained of no pain. Pulse 84, respiration 24, and temperature 98⅘°.

Physical examination showed the lower thoracic and upper abdominal regions on left side to be large and somewhat bulging, this bulging extending across to the nipple line on the right side and downward on the left to the level of the umbilicus.

Palpation revealed a firm, smooth mass extending beneath the ribs

[1] Read before the Montreal Medico-Chirurgical Society, June 12, 1896.

on the left side, backwards to the left loin and downwards to about 3 inches below the umbilicus, passing beneath the ribs on the right side about 1 inch inside the nipple. This mass had an indistinct rounded edge directed downward and to the right. There was no pulsation but distinct fluctuation. Auscultation revealed no bruit. The percussion note was dull over the area described, this dulness extending up into the left middle axilla. The mass was aspirated April 23rd, and a few minims of a chocolate coloured fluid withdrawn, which on microscopic examination was found to consist chiefly of blood cells. The diagnosis of hæmatoma with probably some pre-existing kidney disease, was made.

The urine contained blood till May 3rd, when it became clear with a trace of albumen. On this date the patient had a chill and his temperature rose to 101⅘°, pulse 130, and respiration 36. On the following day he complained of pain in the back on the left side, extending round to the front and across the abdomen to the right side. Vomiting set in and the tumour, which had diminished considerably in size, now became again enlarged and tympanitic.

On May 6th the patient's condition was very grave, and it was decided that an operation held out the only chance. He was, therefore, sent to the operating theatre, placed under ether, and an incision made in the left lumbar region, evacuating an immense cavity of gas and fluid of a dark red colour, and of very putrid odour. Manual examination revealed a large cavity with rough, shaggy walls. Unfortunately the patient succumbed before the completion of the operation.

The autopsy was performed by Dr. Johnston and myself 24 hours after death, and the following notes have been abstracted from the report :

Body fairly well nourished ; sub-icteroid tint of skin ; above right Poupart's ligament is an oblique scar ; abdomen slightly distended and tympanitic ; whitish froth about nostrils. On the left flank a recent sutured incision ; on opening this a brownish-bloody pulp exudes, which microscopically is found to consist of red and white blood cells and some granule cells.

Abdomen.—Old amputation of appendix ; chronic adhesive peritonitis with slaty pigmentation. The left kidney converted into a large sac, the size of a head, filled with gas and grumous, fœtid and bloody contents. Colon stretches in front of this but is not in any way involved. Sac extends somewhat to right of the middle line. Spleen in about normal position. Subsequent examination of the sac shows it to be over one foot in vertical diameter, the inner surface

rough, greyish and shreddy, and in places greenish, with areas of necrosis. The wall presents at intervals rounded orifices communicating with diverticula from the main sac, evidently altered and dilated calyces. Thickness of wall averages ¼ inch, and at lower extremity kidney structure is recognized. Kidney in a condition of putrid pyelonephrosis and perinephritis. At upper extremity, embedded in connective tissue, is the left supra-renal, which is firm, but showing no new growth and is easily detached from the sac. The left renal artery is adherent to the wall of the sac. Left ureter obliterated and shows fibroid infiltration, and below the sac is an irregular space with greyish necrotic and very fœtid walls.

Right Kidney much enlarged, pelvis dilated, roughened and reddened; ureter dilated as far as the bladder; evidences of acute parenchymatous nephritis.

Spleen enlarged, foaming and with acute cloudy swelling.

Liver.—On surface numerous greyish brown circular areas the size of pin points; these are sharply defined and the centres in many appear to contain a minute gas bubble; these rapidly increase in number and size when exposed to the air. On squeezing, a brownish frothy blood abundantly exudes. (Liver floated in preserving fluid, and after a few hours was much distended, with abundant froth about it.)

Gall Bladder—Contains about ʒi frothy bile. Frothing in splenic, portal and other veins examined.

Heart—Contains a little froth mixed with blood clots, healthy except for slight thickening of valves. Both lungs filled up pleural cavity and seemed more voluminous than normal.

Anatomical Diagnosis—Old amputation of appendix; chronic adhesive peritonitis with slaty pigmentation; left pyelonephrosis and perinephritis with obliteration of left ureter; right hydronephrosis and acute parenchymatous nephritis; submucous emphysema of the stomach; foaming and acute cloudy swelling of spleen; foaming liver ("Schaumleber"); frothing bile; calcification of mesenteric glands.

Microscopical Examination of liver blood showed on cover slips in each field from 1 to 5 large bacilli 3 to 5μ in length, mostly with square ends, a few with rounded; occurring for the most part in pairs and surrounded by a clear space. These were the only bacilli present.

A guinea pig inoculated intraperitoneally with 1 cc. of liver blood died in about 36 hours, with rapid formation of gas after death, the body at the end of 24 hours being blown up to nearly twice its original size. Examination revealed an emphysematous condition of the tissues and organs, and gas was demonstrated in the blood vessels.

On microscopic examination bacilli resembling those found in the

liver blood were seen, though not in pure culture, due probably to the entrance of other bacteria after death.

From anaërobic cultures taken from the human body on 2 per cent. glucose agar I succeeded in obtaining a growth from the liver blood after 36 hours with formation of gas. The colonies were more numerous towards the bottom of the medium, and appeared as rounded and oval whitish, flattened masses, varying from a pin head, to a little more than 2 mm. in diameter; opaque in the centre with irregular outline, while in their immediate vicinity were bubbles of gas. No growth on the surface nor for 2 to 3 mm. beneath it. On microscopic examination, bacilli in pure culture, answering to the description of the bacillus aërogenes capsulatus, were seen. I was unable to obtain subsequent cultures, but there can be little doubt as to the identity of the bacillus. A slide showing the bacillus is placed under the microscope, and attention must be drawn to the fact that Welch and Nuttall, who discovered and isolated the bacillus in 1892, have pointed out that the name bacillus aërogenes capsulatus appears at times to be a misnomer, inasmuch as the capsule does not seem to be always constant. However in this specimen stained by Welch's method, the capsules can be made out in a considerable number.

In view of the very full account of this bacillus given in the Johns Hopkins Hospital Bulletin, July-August, No. 24, 1892, it is needless for me to more than mention some of the chief points about its microscopic appearance. It is non-motile, varies somewhat in size, but its average length is from 3 to 6 mkm., thickness a little greater than the anthrax bacillus. Unsual forms are straight, but slightly curved or bent forms are seen; end rounded or square, or nearly so where the ends are adjacent. They occur singly in clumps or short chains, but have no tendency to form long chains, this being a distinguishing point between them and the anthrax bacilli. They stain with the ordinary aniline dyes and also by Gram's method. Capsules may often be demonstrated around the bacilli, varying from one-half to twice the width of the bacillus. They grow on ordinary media in the absence of oxygen. An interesting clinical feature in this case is the strong probability of their presence in the body during life, as was evidenced by the previously dull tumour becoming tympanitic, and the escape of gas on making the incision into it on the operating table.

Since presenting the above report to the Medico-Chirurgical Society our attention has been called to a case admitted under Dr. Hutchison, where a man sustained a compound fracture of both bones of the forearm.

The arm was dressed as usual in splints, and on the following day so great was the swelling that the bandages had to be removed.

During the next twenty-four hours the swelling still increased and marked emphysema ensued, the temperature rapidly rose to 106°, and the emphysema extended up as far as the scapula.

Operation was refused and the patient left the hospital and died on the following day, all the customary symptoms of septicæmia having developed,

It is more than likely that this case was but another example of a septicæmia following infection by the bacillus aërogenes capsulatus, and this short note is added without further comment than to suggest the possibility of a general septicæmia arising in this way from an external wound.

RETROSPECT

OF

CURRENT LITERATURE.

Medicine.

Relapse in Scarlatina.

GRIFFTH. "On relapse in scarlatina."—*Quarterly Medical Journal*, October, 1895.

COMBY. "De la scarlatine à rechute."—*Semaine Méd.*, 1896, No. 30.

The question of relapse in infectious fevers, although universally admitted in typhoid, has not been the subject of much attention in scarlatina. Griffith found, in 2,000 cases admitted for scarlatina to the Bagthorpe Fever Hospital, that 14 suffered from second attacks whilst actually under observation. In these cases, the second attack was marked by a rash, lasting from one to four days, sore throat and fever.

Comby relates briefly two cases of relapse in children of four and six years. In the first case a scarlatinal rash appeared during the period of desquamation; in the second, on the fourteenth day of a normal case, fever and rash appeared.

In estimating the frequency of relapse several sources of error are present.

An erythematous rash is common in such complications as nephritis or tonsilitis. Rendu interprets the rash as a streptococcus manifestation, and states that a pultaceous angina is always present, proving a source of secondary infection. Such erythemas, however, pass off rapidly, and may be excluded in the cases observed by Griffith.

The question as to whether the second attack is an auto-infection or due to a second infection from neighbouring cases is referred to by Griffith. If the latter supposition is correct, it would be an argument against placing large numbers of cases in a ward. Griffith's supposition that a mild case of scarlatina may contract a second attack from contact with a virulent type of the disease hardly seems to be war-

ranted, and it would seem an unnecessary refinement to classify different types of the disease in different wards as suggested by this writer.

Arsenical Paralysis.

COMBY. "Arsenical Paralysis,"—*La Sem. Méd.*, 1896, 33.

So many cases of arsenical paralysis have been reported in the last few years that its symptomatology is well established. Paralysis resulting from peripheral neuritis has now been repeatedly observed from the medicinal use of the drug, and occasionally following the ingestion of a single large dose, provided the patient recover from the immediate gastro-intestinal symptoms. Accidental poisoning by contaminated wall papers has also produced paralysis.

In addition to neuritis the large cells of the anterior cornua have been found atrophied in both man and lower animals.

The interest of Comby's case lies in the fact that there was incontinence of urine and fæces in addition to paraplegia and abolition of the reflexes. Incontinence is certainly very unusual in cases of this kind, and points strongly, as pointed out by M. Rendu in the discussion of the case, to a co-existing affection of the cord. In its symptoms arsenical paralysis bears a much closer resemblance to alcoholic than to lead neuritis. Affecting chiefly the lower extremities, involving the sensory as well as the motor fibres and frequently causing ataxia or so-called pseudo-tabes, these affections can only be distinguished by the history of the case and by a chemical examination of the urine for arsenic. Considering the great frequency with which arsenic is given to choreic children in large doses, arsenical neuritis is fortunately a rare disease, and the administration of the drug is seldom accompanied by any further discomfort than temporary gastric derangement.

Tabes and Syphilis.

STORBECK. "Tabes and syphilis."—*Zeits. f. Klin. Med.*, XXIX., 12.

Storbeck has re-opened the question of the etiology of tabes and its relationship to syphilis. Statistics on this point still present great variations. Gowers considers that syphilis precedes the disease in 70 or 80 per cent. of cases in the lower classes. He further states that syphilis may be excluded with confidence in perhaps 10 per cent.

Fournier regards 93 per cent. of tabetics as subjects of syphilis whilst Westphal places the number at 33 per cent.

Storbeck has studied the question carefully in 108 tabetics. Of

these 22 had certainly had syphilis ; in 63 syphilis could be excluded and in 23 the question was doubtful. Admitting that half of the last named were syphilitic, a ratio of 30.5 per cent. would represent the proportion of tabetics who had suffered from syphilis. Storbeck thinks this number is not higher than might be expected from the frequency of syphilis and therefore regards the relationship between these diseases as unproved.

It is obvious that it is often impossible to prove an old attack of syphilis, owing to defective memory or wilful deception on the part of the patient. It is only in cases where a clear history or undoubted stigmata of the disease persists that a positive opinion can be expressed. In all statistics of this nature considerable latitude must be allowed in the personal equation of the observer.

F. G. Finley

Surgery.

The Treatment of Loss of Nerve Substance in Peripheral Nerves.

G. Carl Huber. "A study of the operative treatment for loss of nerve substance in peripheral nerves."—*Journal of Morphology*, Vol. XI., No. 3.

The importance of restoring the physiological functions of peripheral nerves, which have been subjected to loss of continuity, and the frequency of injuries which cause this condition, have led the author of the above paper to carry out an extensive series of investigations as to the best methods available to this end. The various operations employed in the treatment of nerve injuries of this nature are briefly as follows:

(*a*) Nerve stretching. This method, advocated by Schüller, does not mean that the nerve itself should be actually stretched, but that it may be drawn out from the loose connective tissue surrounding it, and the limb being placed in proper position, the separated ends can then be united. This has been done even when a distance of 4 or 5 cm. separated the divided ends.

(*b*) Implantation of a nerve segment removed from a recently amputated limb or from one of the lower animals.

(*c*) Tubular sutures; these consist in inserting the two ends of the divided nerve into a decalcified bone tube.

(*d*) Union of ends with catgut threads, or a bundle of catgut threads (*suture à distance*, Assaky). By the use of catgut threads it is believed that it is easier for the down-growing central fibres to reach the peripheral end.

(*e*) Nerve flap from the central stump, or a flap from both peripheral and central stumps.

(*f*) Grafting of the central end of the peripheral stump of a divided nerve to an accompanying nerve trunk.

(*g*) Cross suturing the long central and peripheral stumps, in cases where two accompanying nerves are cut obliquely, and grafting the central short stump to the central long one, and the peripheral short stump to the peripheral long one.

(*h*) Resecting the bone or bones in the extremity and suturing the nerve.

The author, in his experiments, employed the method of implantation, tubular suture, the use of a bundle of catgut threads, the flap operation, grafting injured nerve into accompanying sound nerve, and

finally cross suturing and grafting. The animals used were dogs. As a rule the ulnar nerve was selected for operation; in a few cases the median or sciatic was used. When a nerve was implanted it was usually taken from the sciatic of a cat. The author, in his investigations, experimented upon fifty of these animals, and the operations were conducted as aseptically as possible. The wound was closed, as a rule, with a double set of sutures, the deeper ones embracing the connective tissue overlying the nerve, the other the skin and muscles. By this method any exposure of the nerve operated upon was prevented, not even did the skin wound subsequently open from any cause.

From the experimental work of other workers, as well as of the author, the following conclusions may be drawn:

1. That it is possible to restore the functional activity to the peripheral part of a divided nerve with loss of nerve substance if the resected ends are united with a segment taken from some other nerve trunk, with catgut threads or with a bone drain.

2. Implantation of a nerve segment, the two ends of which have been sutured with one or several catgut sutures to the resected ends of the injured nerve, gives the most favourable result.

3. The regeneration of the peripheral end is the result of an outgrowth of new axis cylinders from the central stump, which eventually reaches the peripheral part of the resected nerve wherein their growth continues.

4. Implanted substances, whether they be catgut threads, bone drain or an implanted nerve segment (which soon degenerates, the collapsed sheaths remaining), are to be regarded merely as guides to the down-growing axis cylinders.

5. The fact that the new nerve fibres have a much straighter course and more regular arrangement following upon the implantation of a nerve segment than after the use of catgut threads or a bone drain, shows that the degenerated fibres of an implanted nerve segment offer much more favourable mechanical conditions for the down-growing axis cylinders.

6. The above methods may be used immediately after the injury to the nerve, or at a later period. In the latter case the return of function takes place more slowly.

7. The operation of making a nerve flap is not to be recommended, as the flap from the central end usually degenerates, nor does it supply so favourable a union as when a segment is carefully inserted.

8. In cross suturing the long ends of two divided nerves and engrafting the short ends to the accompanying long stumps, regeneration of but one of the peripheral segments (the long one) of the two injured nerves can be hoped for; the other peripheral segment remains degenerated; hence implantation of a nerve segment would be preferable in dealing with the latter. *E. J. Semple.*

Pharmacology and Therapeutics.

The Etiology and Treatment of Exophthalmic Goitre.

PUTNAM, JAMES J. "Modern views of the nature and treatment of exophthalmic goitre."—*Boston Medical and Surgical Journal*, Vol. CXXXIII., No. 6.

KINNICUTT, F. "The theory of the thyroid origin of Graves' disease, with its bearing on the surgical treatment of the disease."—*New York Medical Record*, April 18, 1896.

STARR, M. ALLEN. "On the nature and treatment of exophthalmic goitre, with special reference to the thyroid theory of the disease and to the treatment by thyroidectomy."—*The Medical News* April 18, 1896.

BALDWIN, W. W. "Some cases of Graves' disease, succeeded by thyroid atrophy."—*The Lancet*, January 19, 1895.

OWEN, DAVID. "Further notes on the treatment of a case of exophthalmic goitre."—*The British Medical Journal*, Feb. 16, 1895.

MAUDE, ARTHUR. "Notes on the treatment of Graves' disease by thymus gland."—*The Lancet*, July 18, 1896.

One of the most interesting stories in connection with recent progress in medical knowledge is the gradual clearing up of the misty views previously held in connection with the etiology of exophthalmic goitre and with it the steadying of the therapeutic indications for its treatment.

The frequency with which this affection was met with, its peculiar grouping of symptoms, its obscure relationship to many other diseases of the nervous system, and its resistance to ordinary methods of treatment, have made it a fascinating object of speculation and research to both physician and pathologist. Many theories have been offered and temporarily accepted as its explanation, but one by one have they been discarded as each in turn has been found to fail in explaining all the symptoms. The theory of cardiac disease, organic or functional, was the first to be rejected and was supplanted by one, ascribing the symptoms to changes in the cervical lymphatic glands. Pathologists, however, failed to find sufficient evidence to

support either this supposition, or that referring the symptoms to a lesion of the vasomotor centre in the medulla.

Mobius, of Leipsic in 1886, first suggested that the symptoms were due to a toxæmia, the result of hyperactivity of the thyroid gland. This opinion has gradually gained ground, especially since Greenfield, in the Bradshaw lectures of 1893, showed that well defined structural lesions, evidently a true hypertrophy of the glandular elements, and indicating an exaggerated, and probably perverted function are met with in this gland in severe cases of exophthalmic goitre. These observations have been confirmed by many pathologists both in England and on the Continent.

Evidencing the truth of this theory is the striking contrast exhibited between the symptoms in Graves' disease and in myxœdema, which latter is now generally regarded as due to a defective functional activity in the thyroid. This antithesis of clinical phenomena is stated by Kinnicutt as follows: "In Graves' disease enlargement of the thyroid gland is present, in myxœdema an atrophy of the gland. In the one case the skin is fine, soft, moist, and warm; in the other coarse, hard, dry with a tendency to desquamate, and cold; in the one perspirations, often profuse in character and easily excited, are conspicuously present; in the other their absence even in the warmest weather is equally noticeable. In Graves' disease the temperature is never subnormal and pyrexia of greater or less degree occurs on slight causes; in myxœdema the reverse holds good. In the former an excitable, mobile pulse, tachycardia, and palpitation prevail; in the latter a sluggish heart action and slow pulse. In Graves' disease irritability and excitability, in myxœdema apathy and dulness of apprehension and perception attract the attention. In the former tremor is one of the cardinal symptoms, in the latter it is absent, except in its rare occurrence in the form of tetany. In Graves' disease the nutrition of the hair, nails, and skin is, as a rule, well maintained; in myxœdema the reverse obtains." In exophthalmic goitre the eyes are abnormally widely open, and generally von Graefe's and Stellwag's symptoms are present, while in myxœdema there is a marked tendency to heaviness of the eyelids, so that the upper lid falls, and there is distinct narrowing of the palpebral fissure. Furthermore the large number of cases of Graves' disease occur between the ages of twenty and thirty, during the period of the greatest activity of the generative functions. The interval between forty and forty-five, the period of decline of these functions, furnishes the most numerous instances of myxœdema.

Again, the development of myxœdema in some instances, subsequent

to recovery from typical Graves' disease is another argument in favour of this theory. With alterations in the parenchyma, an over-growth of interstitial tissue, Dr. Greenfield states, is developed which gradually invades the glandular structure, and more or less interferes with its function. Cases of this kind have been reported by several observers, among others by Gowers and Ord. Dr. Baldwin in his paper reports four such cases.

And lastly, both Starr and Kinnicutt draw attention to the similarity between the symptoms of exophthalmic goitre, and those produced by an excessive dose of thyroid extract. These may be stated to be: (1) a rise of temperature above normal; (2) increased rapidity of the pulse, and palpitation; (3) a burning sensation with some flushing of the skin, which may become moist; (4) rapid emaciation; (5) a condition of mental excitement; (6) exophthalmus. If the dose be still further pushed insomnia, polyuria, diarrhœa, and fine tremor may develop.

These arguments appear almost unanswerable. Kinnicutt points out, however, that although in many cases the pathological conditions found represent a true hyperplasia of the gland, in some cases, changes attended by a considerable loss of secretory tissue have been associated with the symptoms of exophthalmic goitre. Such cases undoubtedly militate against the thyroidal theory of Graves' disease in so far as hypersecretion alone is regarded as the causative agent, but not if a perverted function, with qualitative changes in the secretion is accepted in explanation. In addition to these actual pathological conditions, it would appear necessary for the full development of the symptom complex of this affection that we shall have in addition an inherited or acquired neuropathic tendency. The spontaneous and rapid disappearance of the symptoms in occasional cases, and complete recovery under treatment in others, indicate that extensive structural changes are not always present, and it would appear that sometimes peripheral irritations elsewhere in the body are sufficient to maintain functional activity of the gland which ceases on the removal of the irritation.

If the conclusion above reached is valid, that exophthalmic goitre is due to an excessive or perverted secretion of the thyroid gland, associated with an irritable or neurasthenic condition of the nerve centre, that treatment will prove most successful which in one way or another effects a diminution in the activity of the thyroid.

Starr thinks it not improbable that the good results following treatment with belladonna, pushed to its physiological limit, are due to a specific action of the drug, arresting the secretion of the gland.

The rest cure is probably one of the most successful methods employed in the treatment of Graves' disease, and associated with the use of iron and tonics acts probably by quieting general nervous irritability. The mental condition has a very marked influence upon the symptoms of this disease. From every-day experience we recognize the distinct action which the mind has upon the various glands of the body. The secretion of tears is almost entirely produced by mental impressions; the secretion of saliva is markedly stimulated by sensory impressions; the secretion of gastric juice and the whole process of digestion are decidedly affected by mental conditions. It is probable, therefore, that the secretion of the thyroid gland is affected by mental conditions; and there is an overwhelming amount of testimony to the effect that the onset of exophthalmic goitre can be traced to mental conditions, especially of the nature of fright, dread, and anxiety. It is impossible, therefore, to ignore the mental relation between a restful state of the mind without anxiety and a diminution or more natural secretion in the glands of the body, and it seems probable that the success of the rest cure in these cases is due to the little understood but powerful effects of the mental state upon bodily functions.

Electricity is an agent which has had a high repute in the treatment of this affection. Allen Starr says of it, "Inasmuch as various methods of its application have met with success in certain hands, and the same methods have utterly failed with others, it is difficult to determine its real value as a therapeutic agent. It is possible that it may act through the mind by suggestion. It is also possible that it may have a distinct influence upon the secretions of the gland."

Rockwell has obtained the greatest success by the use of very strong galvanic currents (60 mille-ampères), applied through a clay electrode directly to the gland, and such a current would undoubtedly result in chemical changes within the gland, modifying its secretion. Dr. Putnam, of Boston, favours strong faradic currents, causing contraction of the muscles of the neck and compression of the gland.

The testimony in favour of the action of aconite and veratrum viride in the treatment of exophthalmic goitre is too definite to be ignored. It may be attributed possibly to their depressant influence upon the heart, in this way reducing materially the flow of blood through the gland. Ergot also by contracting the medium-sized arteries may exert its beneficial action in the same way.

A remedy which Dr. Starr thinks has been of much service is glycero-phosphate of sodium in 20-grain doses three or four times a day. This drug was first employed by Trachewsky in Kocher's

clinic, and was found to have the effect of diminishing the size of enlarged thyroid glands.

Very recently attempts have been made in a purely experimental way to treat patients suffering from exophthalmic goitre by means of the administration of thyroid extract. The consensus of opinion, however, seems to be that not only is this treatment of no service, but that it is actually harmful. In one unfortunate case a fatal result appears to have shortly followed the use of the thyroid. If the above theory of the disease is correct there is every reason why the administration of thyroid in this affection should be avoided, and Dr. Starr is of the opinion that in the few cases where an improvement has been noted the patients were not suffering from true exophthalmic goitre.

There are, however, several cases recorded which would apparently indicate a favourable influence upon this disease from the administra- of thymus extract. The origin of this treatment is as follows: David Owen, of Manchester, reported a case of exophthalmic goitre as cured by the use of thyroid glands given in bulk. Some months after he published a correction of this statement, having ascertained that owing to ignorance on the part of the butcher his patient had been supplied with thymus glands exclusively. He ascribed the improvement therefore to the thymus. And Dr. Maude very recently reports four cases under which all the symptoms were improved by its use. On the other hand, a case is reported by Dr. Williams in which this treatment, like that with thyroid extract, was of positive harm to the patient. With our imperfect knowledge in regard to the functions of this gland and to its clinical action in this affection, we are not in a position to say anything definite as to its use.

The question of the surgical removal of the gland while appearing at first sight to be the most rational form of treatment, is one which demands careful consideration owing to its high rate of mortality. It is to be remembered that there is in many cases a very decided tendency to recovery either spontaneously or under the influence of treatment. There are numerous cases, however, in which after a longer or shorter period serious symptoms develop, or in which other treatment has proved of so little avail that the question of operation has to be faced. Dr. Starr has collected 190 cases from medical literature in which operative treatment has been undertaken. Of this number 23 cases died immediately after the operation; 74 are reported as improved; 3 are reported as unimproved. In regard to the remainder, no final results are reported. The occurrence of sudden death immediately after the operation, or within two or three days of

it, is a fact of very serious import. Death after these operations is not owing to hæmorrhage, nor to any want of aseptic precautions. In all the cases reported there have been a sudden rise of temperature to 105°, 106° or 107°, a very rapid pulse (180 to 200); extreme nervous excitability and restlessness, with great anxiety and distress; profuse sweating and finally collapse and death from heart failure. Dr Starr thinks that the most reasonable explanation for this series of symptoms, would appear to be an intense poisoning of the entire system by an excessive absorption of thyroid juice taking place suddenly during the operation.

In the 74 cases reported as cured, there was as a rule no marked immediate result, but a steady progressive improvement extending over several months, until finally the cure was reached. The first symptom to improve, according to Dr. Starr, is the tachycardia. In the majority of cases, the pulse has been notably slowed within twenty-four hours of the operation. Afterwards there is a gradual subsidence of the nervous excitability and restlessness and tremor. The exophthalmus persists longer than any other symptom.

Dr. Starr says, in conclusion, that in severe and intractable cases of exophthalmic goitre in which the rest cure and medicinal treatment have failed to relieve, the operation of extirpation of the thyroid must be considered as justifiable. and should be advocated by physicians. It should, however, not be undertaken hastily, nor by surgeons without previous experience in the extirpation of goitres, and it is always to be remembered that a small portion of the gland must be allowed to remain, else the patient will develop symptoms of myxœdema.

A. D Blackader.

Ophthalmology.

Transient Myopia in Diabetes Mellitus.

APPENZELLER. "Vorübergehende Myopie bei Diabetes Mellitus."—*Centralblatt für Augenheilkunde*, May, 1896.

This is the record of a very interesting and typical case. It was a recent case and under careful observation. The refractive variation was seen to run a parallel course with the exacerbations and improvements of the constitutional trouble. Evidently this was caused by an increase in the refractive index of the aqueous tumour and disappeared with the return of the same to the normal.

Few cases of this nature have been mentioned, but yet if looked for they cannot be uncommon.

Hirschberg, of Berlin, is the authority most frequently mentioned in this connection, and he even goes so far as to say that late myopia coming on without cataract between the fortieth and fiftieth year is a certain sign of diabetes.

Ocular Hereditary Syphilis in the Second Generation.

GALEZOWSKI. "De l'hérédité syphilitique oculaire a la deuxieme generation."—*Recueil d'Ophthalmologie*, Janvier, 1896.

After observing several cases of keratitis diffusa and choriodo-retinitis in adults and children, in which neither they nor their parents had suffered from acquired syphilis, Dr. Galezowski was led to make further investigations as to the cause. From these he discovered that the grandparents had had acquired syphilis.

In such cases, which Fournier has termed para-syphilitic, the continued mercurial treatment was invariably followed by either marked improvement or cure.

Sub-conjunctival Injections of Corrosive Sublimate.

BOURGON. *Annal d'oculistique*, CXIV., 1895.

STUELP. *Archiv. für Augenheilkunde*, XXXI., 1895.

SEGGEL. *Klin. Monatsblatter für Augenh.*, XXXIII., 1895.

Bourgon's cases are a strong plea against the use of these injections. He injected it in six cases. Three had opacities of the vitreous, and the result was by no means encouraging, as only one of the three said

that he thought he did not see so mistily. The other three did not even show a subjective improvement.

Stuelp, in a series of preparations and studies on eyes, in which sub-conjunctival injections had been made, says that it is impossible to discover a trace of mercury in the interior of the eye. Hence any effect must be simply due to the irritation set up by the injection, and accordingly injections of sodium chloride would exert quite as good an effect as the sublimate.

Seggel has four cases with favourable results to report. One case was a suppurating wound after cataract extraction; one, an infected wound of the cornea and iris; one an orbital cellulitis from infection from periostitis of the metatarsal bones, characterized by sudden exophthalmus and chemosis and lastly, a case of plastic irido choroiditis.

Seggel makes the injection as far from the limbus as possible and uses no fixation forceps. Daily injections only are indicated when suppuration is threatening.

From what we may gather from these reports favourable results, it would seem, may only be expected when suppuration is threatening or already exists, it appears not to be of much use in lesions of the deeper parts of the globe.

The Relation of Tuberculosis of the Eye to Tubercular Disease in Other Organs.

DENIG. *Archiv. f. Augenheilkunde*, Bd. XXXI., 1895.

This interesting article is really a valuable collation of material which Dr. Denig made in order to ascertain the proportion of cases of eye tuberculosis in which evidences of general tuberculosis existed. He was led to do this as the existence of a true local tuberculosis of the eye is denied by many ophthalmologists.

From the examination of four hundred patients he draws the result that true ocular tuberculosis is just as possibly a local disease as tuberculosis of a joint or lung is local, in the sense of a primary affection. This type he distinguishes from the metastatic variety, which latter seldom occurs.

The variety of the disease decides the prognosis. If in the eye it be not of the form known as a granulation growth it is favourable as regards life, for the granuloma tends to metastasis and soon threatens life.

Etiology of Strumous Ophthalmia.

GORDON NORRIE. *Centralbatt f. Praktische Augenheilk.*, Oct., 1895.

Norrie, in 1889, mentions "pediculi capitis" as a frequent cause

of strumous ophthalmia, and now again advances it more decidedly as the result of further experience. The form of the ophthalmia may vary, being a blepharitis or a phlyctenular conjunctivitis or keratitis.

Norrie's observations in his hospital clinic in Copenhagen showed that many children having these diseases of the eye were also infested with lice, most frequently the "pediculus capitis." He also found that so soon as these parasites were got rid of the eye trouble rapidly improved.

Herz considered the eye trouble as reflex from the irritation of the scalp; this Norrie denies, as does also Goldzieher, who says the children scratch their heads and get some of the secretion of the louse into their eyes by rubbing them afterwards.

Norrie holds that scratching the head sets up ulceration of the scalp, which becomes infected by streptococci, etc. Through repeated scratching the fingers become covered with bacteria, and these by rubbing the eyes afterwards are introduced into the eye—inoculated into the cornea or lids. What part the irritating secretion of the louse plays is uncertain. *J. W. Stirling*

Canadian Medical Literature.

[The editors will be glad to receive any reprints, monographs, etc., by Canadian writers, on medical or allied subjects (including Canadian work published in other countries) for notice in this department of the JOURNAL. Such reprints should preferably be addressed to Dr. Kenneth Cameron 903 Dorchester street, Montreal.]

PERIODICALS.

APRIL, 1896.

BRITISH MEDICAL JOURNAL (APRIL 11TH.)

Successful cases of trephining for meningeal hæmorrhage; ligature of the carotid—Francis J. Shepherd, Montreal, p. 905.

THE MEDICAL RECORD (NEW YORK) (MARCH 14TH AND 21ST, APRIL 4TH AND 11TH).

On the relationship between inflammation and sundry forms of fibrosis. (The Middleton-Goldsmith lecture for the year 1896)—J. George Adami, Montreal.

THE CANADIAN PRACTITIONER.

Roentgen skiagraphy—E. E. King, Toronto, p. 241.

Epilepsies of the insane—E. H. Stafford, Toronto, p. 247.

A case of cholecystduodenostomy for lithiasis, with the aid of a Murphy button—F. Winnett, Toronto, p. 258.

THE CANADA LANCET.

Two cases of movable bodies in the knee-joint—George A. Bingham, Toronto, p. 259.

Five years' experience with the cold bath treatment of typhoid fever—William Osler, Baltimore, p. 261.

THE CANADIAN MEDICAL REVIEW.

Notes on an epidemic of herpetic tonsillitis—John R. Hamilton, Port Dover, p. 119.

Foreign bodies in the intestines simulating gall-stones—D. McKenna, Toronto, p. 122.

THE DOMINION MEDICAL MONTHLY AND ONTARIO MEDICAL JOURNAL.

The non-instrumental treatment of the diseases of women—J. D. Albright, Akron, Pa., p. 369.

Hygiene of Canadian railways (concluded)—p. 371.

THE MARITIME MEDICAL NEWS.

Report of cases of diphtheria treated by antitoxin—E. J. Elderkin, Weymouth Bridge, N.S.

Complications of scarlet fever—A. J. Mader.

LA CLINIQUE.

De l'examen des urines, comme aide du pronostic et au diagnostic—Eug. St-Jacques, p. 381.

De l'examen bacteriologique dans la phthisie pulmonaire, la diphterie, et la blennorhagie—Pierre Bedard, p. 396.

Du mal de tête d'habitude, cephalée ou cephalagie—Philippe Ste. Marie, p. 407.

De l'abus du tabac—J. Lamberet, p. 417.

De la syphilis aquise—J. Eug. Provost, p. 424.

L'UNION MÉDICALE DU CANADA.

Etude Médico-Légale. Les aliénés devant la loi (suite)—Georges Villeneuve, Montréal, p. 193.

Note sur la curabilité en aliénation mentale—E. P. Chagnon, Longue Pointe, p. 212.

Six années d'expérience en chirurgie abdominale avec résultats ultimes et immédiats (suite et fin)—A. Lapthorn Smith, Montréal, p. 213.

MAY, 1896.

THE CANADIAN PRACTITIONER.

The drainage tube in abdominal surgery—J. F. W. Ross, Toronto, p. 313.

Gynæcology among the insane—Dr. Hobbs, London, Ont., p. 321.

Optico-ciliary neurectomy—G. H. Burnham, Toronto, p. 327.

Cycling for women—R. E. Doolittle, Toronto, p. 329.

THE CANADA LANCET.

What shall we do with our alcoholic inebriates ?—J. W. Grosvenor, Buffalo, N.Y., p. 299.

Acute broncho-pneumonia—P. D. Goldsmith, Peterboro', p. 304.

CANADA MEDICAL RECORD.

Comparative pathology—J. A. Macphail, Montreal, p. 357.

The pathology and complications of hydrocele—Thos. H. Manley, New York, p. 361.

Pure milk—J. Bradford McConnell, Montreal, p. 371.

THE CANADIAN MEDICAL REVIEW.

Hereditary syphilis—Allan Baynes, Toronto, p. 149.

DOMINION MEDICAL MONTHLY AND ONTARIO MEDICAL JOURNAL.

The criminal insane—A change in the law required—W. J. McGuigan, Vancouver, B.C., p. 481.

Case of laryngeal diphtheria treated by intubation and antitoxin alone—Dr. Horsey, Ottawa, p. 485.

What is a fatal dose of carbolic acid ?—J. J. Cassidy, Toronto, p. 488.

THE MARITIME MEDICAL NEWS.

Treatment of insomnia—W. H. Hattie, Halifax, p. 141.

Prophylaxis of tuberculosis—J. F. Macdonald, Halifax, p. 149.

L'UNION MÉDICALE DU CANADA.

Eclampsie puerpérale—Albert Laurendeau, St. Gabriel de Brandon, Que. p. 257.

Note sur un epithélioma hétéradénique de la région rétro-anale—M. Legueu et A. Marien, Montréal, p. 269.

Causerie Médicale—E. Merrill Desaulniers, p. 273.

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Une observation—Paul Prévost, Montréal, p. 441.

Le système métrique (poid et mesures)—J. E. W. Lecours, Montréal, p. 452.

De la cocaine et de ses accidents—E. Delbosc, Paris, p. 454.

JUNE, 1896.

THE CANADIAN PRACTITIONER.

Address of the President of the Ontario Medical Association—F. LeM Grasett, Toronto, p. 394.

Tongue-like accessory lobes of the liver—A. McPhedran, Toronto, p. 401.

THE CANADA LANCET.

Sub-acute and chronic cystitis treated by vesical balloon—J. G. Clarke Baltimore, p. 339.

The exploratory incision in abdominal surgery; its indications and technique —J. H. Carstens, Detroit, p. 345.

CANADA MEDICAL RECORD.

Massage in skin diseases—J. Leslie Foley, Montreal, p. 413.

Two Cases of Movable Body in the Knee-Joint—G. A. Bingham.

From the first case, a body measuring three-quarters of an inch long, half an inch broad, and half an inch thick, and held by a narrow pedicle, was removed under cocaine anæsthesia, with a good result. Both the patient's father and mother had suffered from rheumatism as long as he could remember. His only sister had also been a sufferer and he had himself had occasional slight attacks during the last ten years. The second case, a woman, who denied any tubercular or syphilitic history, had removed from her knee-joint a body the size of a large bean. Suppuration followed, and continued in spite of every effort to check it. It was thought that some syphilitic cachexia existed and under large doses of iodide of potash she improved considerably in health, though the local condition had not appreciably improved. The writer, after quoting Barwell's description of the origin of these bodies, expresses his opinion that they occur most frequently in persons with some cachexia, and that he would hesitate

to operate in cases where a gouty, rheumatic, tubercular or syphilitic tendency was discovered, at all events before submitting the patient to a thorough course of constitutional treatment.

Hygiene of Canadian Railways.

The Ontario Board of Health, with a view of ascertaining the actual status of hygiene on the Canadian railways traversing that Province, sent a series of questions to the two large trunk lines, as well as to the Wagner and Pullman Companies running cars over those lines. The answers received were, in many respects, satisfactory and should convince the public that the interests of health are not only not neglected, but safe-guarded. The first question dealt with the ventilation of the carriages, and the replies showed that all the Companies used natural ventilation, fresh air entering the open door or windows of the carriage and escaping principally through the clear-story windows in the roof. The lavatories and closets were provided with specially designed ventilators. The replies regarding the cleansing of the cars were most satisfactory. The cars, as a rule, were washed out daily, or on long runs, swept out and dusted daily, and washed at the end of the run. Special attention was paid to the closets and urinals. After reading the replies given to this question one is obliged to draw inferences laudatory of the cleanliness of the carriages as compared with the of schools, court house and other public buildings.

The cars were, about once a year, thoroughly renovated and painted and upholstered, if necessary. The stuffy smell noticeable in first-class day cars and sleeping cars is partly due to the woollen and stuffed seats and backs, which in spite of frequent removal and beating still retain the animal odours emanating from the clothing and persons of their occupants. This will continue so long as the public will prefer green or red plush, to leather upholstered seats and backs, even with a wire spring seat beneath. The question, "What action do you take if an invalid occupies a berth?" was intended to ellicit the method adopted in cleaning a sleeping car berth which had been occupied by a tuberculous patient, and it was found that such patients could occupy berths without hindrance. Patients with the other infectious diseases were not allowed to travel by day coach or sleeping car, but if such should occur, the cleansing and disinfection of the car followed as a matter of routine.

The question relative to heating showed that steam from the locomotive was now used, though the system of hot water heating still prevailed. The methods of lighting were unsatisfactory, for with a very

few exceptions where the Pintsch gas was used, oil was the luminant employed. To the last, though by no means the least, important question asked, the replies showed that all precautions were taken to secure a supply of pure ice and pure drinking water.

Several valuable suggestions are offered in this report as to certain improvements that should be made, and if these are carried out travellers in Canada will enjoy better hygiene in railway carriages than in many public or even private buildings.

Tongue-like Accessory Lobes of the Liver---A. McPhedran.

Accessory lobes of the liver are found in a great variety of shapes and positions, and may lead to error in the diagnosis of abdominal tumours. From the interesting series of cases observed by him, the writer concludes, that their formation seems to be developmental, and not due to pressure, such as tight-lacing, nor to traction of an enlarged gall-bladder. The first case was a woman, aged 42, with well-marked symptoms of neurasthenia, with nervous dyspepsia, and constipation. The abdomen was full and tender in all parts, but especially to the right, below the costal margin, where a tumour-like mass could be felt, and which extended to an inch below the line of the umbilicus. The mass was smooth, semi-elastic and movable, and very tender on manipulation. From behind its lower border, near the inner margin, a secondary rounded mass projected, the whole descending with inspiration. Exploratory incision revealed a broad thin process of liver extending down to the umbilicus, and behind it and adherent to it, lay the right kidney, forming the rounded mass felt projecting from the lower margin. Two other cases were very similar to the first, except that the processes were long and narrow. Other cases were:

A woman who had a history of miscarriage, followed some time afterwards by discharge of a fairly large abscess into the urinary tract. A well-defined mass in the right lumbar region, extending down nearly to the crest of the ilium, led to the diagnosis of an abscess in connection with the right kidney. Operation revealed the mass to be a tongue-like lobe of the liver, behind which lay the right kidney, to all appearance healthy. The situation of the abscess was not ascertained.

A baby, aged 11 months, presented symptoms of gastro-intestinal irritation, vomiting, restlessness, thirst, passing, with a good deal of straining, of small motions of green mucus. Examination revealed an elongated mass in the region of the ascending colon, which was found to be a finger-like lobe of the liver. The child died next day;

death was found at autopsy to have been due to hæmorrhagic pancreatitis.

A man who, with symptoms of flatulent dyspepsia, vomiting and loss of weight, had a resistant mass in the region of the pylorus. Everything pointed to the existence of carcinoma as a grave possibility. Three months later, however, he had improved in health, when the mass could be more readily examined and was found to be broad and smooth, with a sharply defined liver-like edge and which was undoubtedly an accessory lobe. The man subsequently completely regained his health.

Kenneth Cameron.

Reviews and Notices of Books.

A Manual of Anatomy. By IRVING S. HAYNES, Ph.B., M.D., Adjunct Professor and Demonstrator of Anatomy in the Medical Department of the New York University, etc., with 134 half-tone illustrations and 42 diagrams. Philadelphia: W. B. Saunders. 1896.

The number of dissecting manuals already on the market makes it imperative that any new work on the subject should furnish good evidence for its *raison d'être.*

Dr. Haynes prefaces his volume with the statement that "nothing new is presented in the text except a slight contribution touching the visceral (thoracic and abdominal) relations obtained by means of 'composite" photographs." A distinguishing feature of the work are the illustrations, which are reproductions of photographs of original dissections. With the exception of those of the cerebral convolutions (which are excellent) these illustrations are unfortunately so indistinct as to be utterly useless to the student, and one wonders if they, too, are the result of "composite" photography. The same remarks will not apply to the diagrams which are mainly clever adaptations of well-known anatomical drawings. The directions to the dissector are most meagre, and the information is arranged in that semi-tabular form which reminds one of the "Quiz Compend," while the great number of "cross references" will not facilitate the work of the student. The index is particularly full, and the letter press, of course, excellent; but taking the book as a whole, we cannot see that it will be of any service as a student's manual, and it does not profess to be more.

J. M. E.

Researches into the Anatomy and Pathology of the Eye. By E. TREACHER COLLINS, F.R.C.S., Assistant Surgeon to the Royal London Ophthalmic Hospital, Moorfield; Hunterian Professor, Royal College of Surgeons, England. 1893-1894. With 10 plates and 28 figures in the text. London: H. K. Lewis, 136 Gower Street. 1896.

It is difficult in a work like this of Mr. Treacher Collins' to particularize on any special point distinct from others.

It is pre-eminently the thorough work of a good student.

In his position as pathologist to the Moorfields Ophthalmic Hospital, he has access to a great quantity of material, of which he has made good use.

The great point he lays stress on all through his book is the important factor that a knowledge of embryology is in helping to interpret the changes met with. In his own words: "Not only does embryology help to elucidate morbid processes, but I think I shall be able to show that

very valuable suggestions as to doubtful points in the development of tissues may be obtained from the changes which occur in disease. The way in which these two subjects, Embryology and Pathology, mutually help to explain one another is the keynote of much that is to follow."

It would be superfluous to mention examples as the whole work abounds in them, it suffices to give the above paragraph as an indication of the lines followed in this study. Some points require further investigation, but enough is conveyed to demonstrate the truth of the author's premises.

The book is very clearly written in a plain straightforward way devoid of any haziness.

Mr. Treacher Collins has to be thanked for making a valuable addition to our knowledge of the pathology and anatomy of the eye. J. W. S.

In Sickness and in Health. A Manual of Domestic Medicine and Surgery, Hygiene, Dietetics and Nursing. J. West Roosevelt, Editor. Pp. 991. New York: D. Appleton & Co.

It is a difficult thing to write a book on medicine for the laity, but in this work the editor seems to have included all necessary information without, on the one hand, becoming too technical nor, on the other, encouraging people to become "every one his own doctor." The advice given will indeed have the opposite effect, that of preventing unskilled persons meddling with serious conditions. As an example we may quote the following sentences: "There is no application which will take the place of a free opening for the escape of wound discharge." Again, in speaking of poultices, "The action of a poultice is to spread the poison and to render the tissues less liable to resist the bacteria."

These two extracts from the chapter on the treatment of inflamed wounds indicate the manner in which the book is compiled. There are plenty of plates to illustrate the text, and as all conditions likely to arise in the family are dealt with, the work may prove a most useful one.

R. C. K.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

Stated Meeting, May 16th, 1896.

A. D. BLACKADER, M.D., PRESIDENT, IN THE CHAIR.

Discussion on Albuminuria.

Dr. R. F. RUTTAN and Dr. H. A. LAFLEUR introduced the subject.

Dr. F. W. CAMPBELL said he would confine the few remarks which he would make to a form of albuminuria, of which he had had a great many cases, in fact was meeting with very frequently—he meant what is termed normal albuminuria. Most medical writers use the term albumen, but the most modern authorities call it albumin. The word albumen is simply the Latin word, meaning "white of the egg," though as a matter of fact it is applied to every form of albumin, the latter representing the proximate principle. In Watt's Dictionary of chemistry, one of the most important works of its kind in the English language, the termination *in* is exclusively used. That the mere presence of albumin in the urine or its absence does not indicate that nephritis exists or does not exist, is not generally recognized. The former is, however, often a phenomenon of such grave import that its recognition and meaning is a matter which demands serious consideration. It is now fully admitted that albumin may be met with in the urine as a physiological event, sometimes small, sometimes in fairly large quantity; sometimes transient, sometimes remaining for weeks, and be perfectly compatible with perfect health. In this category he did not include the albuminuria following deranged digestion, great mental or physical exertion, excesses in eating or drinking, or exposure to low temperature, because although it is sometimes found in the urine during all these conditions, its discovery under such circumstances is extremely difficult, even with the most delicate tests. The cases to which he referred were those where with the ordinary tests albumin is readily found in the urine of persons enjoying perfect health, and we cannot find any assignable cause. It was during his work as a life insurance examiner that he met with the great majority of these cases. He referred only to renal albumin and not to cases which accompany blenorrhœa, vaginitis or cystitis. The first suggestion of its existence was made by Gabler in 1865. In

1870 Ultzmann recognized albumin in the urine of eight perfectly healthy persons. From that time onward the number of cases largely increased, this discovery in the majority of instances being due to life insurance examinations. He said how this came about would be readily understood when he stated that a few years ago the urine of a life insurance candidate was only examined under special conditions and therefore rarely, whereas now it is examined in every case Such an important fact has attracted a great deal of attention, and some writers have attempted to explain that its presence was due to some pathological cause, which in many instances is of so slight a nature as to be overlooked. Chateauburg found that the urine of 46 out of 50 pupils at one of the government schools, who were busy preparing for examinations, contained albumin. The same authority after numerous experiments came to the following conclusions:

1. Albumin is found in the urine of the majority of persons, more or less abundantly, and transient in its character.

2. Rest in bed has a clearly marked influence in diminishing the amount of albumin excreted.

3. Bodily fatigue greatly influences the production of physiological and transient albuminuria.

4. Intellectual labour augments with most people the quantity of albumin existing in the urine.

5. Cold bathing exerts considerable influence in increasing physiological albuminuria.

6. Sexual excitement and menstruation manifestly affects albuminuria in the healthy.

7. Albuminuria is as frequent in children as in adults, but the quantity of albumin excreted is less.

8. Digestion if accompanied by rest does not exert much influence upon physiological albumin.

Dr. Campbell, in conclusion, said that these investigations were of practical importance, as the discovery of albumin is calculated, unless its significance be understood, to create undue anxiety. With its real meaning understood, and with a microscopic examination, the physician is in a position to reassure his patient and to avoid the errors of unnecessarily energetic measures of relief from dangers which do not exist. The microscope is the only reliable test as to whether or not renal disease does or does not exist.

Dr. J. B. McCONNELL thought that the subject had been very fully covered by both the papers, and that it was one of the greatest importance from a life insurance point of view. He drew attention to the point that in testing with nitric acid and heat, acid albumen,

which is soluble in water, may be formed and lead to an error. He noted that both speakers had rejected the pressure theory, but thought that the fact that albuminuria occurred after violent exercise in athletes and soldiers rendered the theory probable.

Dr. J. G. ADAMI was glad to see, from what had been said by the readers of the papers, how fully it was accepted now-a-days that Heidenhain was right, and that the presence of albumen in the urine must be regarded as due to a disturbance of the secretory mechanism of the glomerular epithelium.

At the same time he had to confess that since he wrote his first paper on this subject in 1886, his views had undergone some slight modification. Then he had held that all the albumen appearing in the urine must have passed through the glomeruli. He would not say that he felt convinced even now that this is not the case, and he certainly believed that the main bulk of the escaping albumen passed through the glomeruli; but there were certain cases of extensive and acute congestion of the kidneys, as in acute parenchymatous nephritis, in which there is a most pronounced breaking down of the protoplasm of the convoluted tubules; and with such breaking down he considered that there must be a certain amount of albumen passing into the urine, originating thus from the disintegration of the cells. In the mammary gland the secretion is largely the result of active cellular destruction, and milk is rich in proteids. This breaking up of the cells in the kidney tubules is, as is well known, associated with the development of curious vacuoles, which eventually are to be recognized free in the lumen of the tubules. As to the exact composition of these delicate vacuoles, nothing is known, but certainly they can be and are associated with cell destruction and approaching dissolution.

Dr. N. D. GUNN referred to several classes of albuminuria of interest to the general practitioner. The albuminuria of pregnancy was of interest because of the liability of serious trouble later on. If the case is seen early enough, the condition can be controlled, but if the patient is allowed to follow her daily avocations, it goes on to uræmia too often. This is really a physiological albuminuria passing off with the birth of the child. The amount of albumen present is no index of the conditions present; it was not the amount of albumen secreted, but the amount of toxic products in the blood not excreted, which did harm.

Another class of cases was that in which there were nervous symptoms, the commonest being occipital headache, and where this was associated with a high tension pulse, a diastolic valvular action,

coupled with hereditary taint, even though no albuminuria was present, a pre-albuminic stage might be pronounced. Spasms of the calf muscles of the legs during sleep ; electric shocks experienced by persons falling to sleep, auditory symptoms and itchiness of the skin which singly may mean nothing, combined would lead one to suspect toxic products circulating in the blood.

Dr. C. F. MARTIN drew attention to the absence of albuminuria occasionally where most extensive lesions of the kidneys might be found. This occurred not only in conditions of chronic interstitial nephritis of the ordinary type, and in senile renal changes, but in other conditions as well. He had for some time made examination of the urine of moribund patients at the Royal Victoria Hospital, and subsequently observed the renal changes detected at the autopsies. In a number of instances there had been apparently normal urine as examined carefully in the usual manner, and yet the kidneys had often presented distinct evidence of parenchymatous change, with degeneration of the tubular epithelium and the presence of detritus in the lumina of the tubules. In a large number of cases, too, there was apparently a recent productive change as well, and yet the urine was free from albumen.

Examination of fresh sections under these conditions had showed, too, considerable fatty degeneration of the epithelium, and yet the urine had been normal. A few cases are on record where extensive fatty change and necrosis in the parenchyma had been present with unaltered urine.

Rosenstein has recorded one such instance. These facts would seem to render it all the more probable that the glomerulus is, after all, mainly responsible for the incidence of albuminuria

That the epithelium is, however, to some extent capable of influencing the presence of albumen may be argued from the theory generally recognized that hyaline casts *i.e.*, an altered form of albumen, seem at times to originate from the epithelial cells of the tubules ; yet in these instances the circulatory system must be undoubtedly altered, too, in order to induce an albuminuria which responds to the usual tests. To say that the so-called physiological albuminuria is really a misnomer, and that the presence of discernible albumen in the urine implies some lesion of the renal structures would seem quite rational on an analogy with the conditions usually found in ordinary parenchymatous nephritis. Under those circumstances it is only local areas of the kidney that are affected, while adjacent parts appear quite normal. In the same way when only a trace of albumen is present, it is more

than probable that some minute local lesion of the parenchyma is present as a cause of the abnormal urine.

An interesting condition, too, in which sometimes the kidneys are extensively diseased without albumen being found in the urine, is manifested sometimes in the case of neoplasms. Two such samples, which were passed around, showed in the one case sarcomatous nodules involving nearly all of both kidneys, while in the other a metastatic cancer had affected more than two-thirds of both organs, and yet the urine in each case had been normal within a few days of the respective patient's death.

Dr. W. F. HAMILTON referred to two cases of albuminuria in connection with angina.

In one seen in Vienna there was no evidence of infectious disease and it was looked upon as a case of general infection from streptococcus. In the other, under Dr. Buller's care, there was mild angina, a little later severe nervous symptoms, and later again albumen casts were demonstrated in the urine.

He emphasized the importance of determining the presence of peptone as already referred to by the leader in the discussion.

In the occurrence of casts without albumen, he thought it was possible that the albumen was so minute in quantity as to escape detection by the tests ordinarily employed.

Stated Meeting, May 29th, 1896.

F. G. FINLEY, M.D., FIRST VICE-PRESIDENT, IN THE CHAIR.

Myxo-Sarcoma of the Femur.

Dr. JAS. BELL reported this case, a report of which will be published later.

Excision of the Rectum by Heinecke's Method.

Dr. G. E. ARMSTRONG reported the following case and showed the patient:

M. M., æt. 58, was admitted into the Montreal General Hospital suffering from carcinoma of the rectum. The growth involved the upper part of the external sphincter and the whole circumference of the rectum as high as the finger could reach. It was quite evident that the whole growth could not be removed from the perineum and that the sphincter was so much involved that it could not be saved. The lumen of the rectum was so much encroached upon that only liquid fæces could be passed.

On the 5th of March I performed a left inguinal colotomy after the

method of Maydl. and on the 27th of March proceeded to remove the growth according to Heinecke's method.

First, I placed the man in the lithotomy position, and after introducing a sound through the urethra into the bladder to act as a guide, I made a curved incision in front of the anus and carefully separated the rectum and all infiltrated tissue from the urethra, prostate, and posterior surface of the bladder. This being accomplished, and all bleeding points controlled, I turned him on to his side and made a median incision down over the centre of the sacrum and coccyx. I then with a saw divided the sacrum and coccyx in the line of the superficial incision, and the sacrum transversely below the level of the third sacral foramen. I could then out-fold my two flaps. This gave me perfect access to the pelvis. I then deliberately opened the peritoneal cavity and separated the rectum and meso-rectum from the anterior surface of the sacrum until I was well above the limits of disease. I could catch the large vessels in the meso-rectum before dividing them, thus reducing the hæmorrhage to a minimum.

After all bleeding points were secured, and when I was ready to close the opening in the sacrum and soft parts, the rectum was divided at a point well outside the body, thus insuring against infection. The upper end of the rectum was attached externally.

The patient has made a perfect recovery, has gained in weight and is now, as you see, in comparatively good health. He walks well, can sit down with comfort, and does not seem in any way to suffer from the division of the sacrum or coccyx.

This method gives good access, enables the operator to reduce the loss of blood to a minimum, and if the lower end of the rectum and sphincter are free from disease, permits of the union of the upper to the lower end, with subsequent closure of the colotomy wound and the removal of enlarged lymphatic glands.

Dr. JAMES BELL considered the great drawback to excision of the rectum was the almost constant involvement of the pelvic glands. He recommended inguinal colotomy as a preliminary operation in order that a more perfect diagnosis could be reached, and where the glands were not involved a further operation could then be performed.

Volitional Tremor Simulating Disseminated Sclerosis.

Dr. G. GORDON CAMPBELL exhibited the patient and gave the following account of the case:

L. F., a French-Canadian aged 71, came to the Out-patient Department of the Montreal General Hospital two years ago complaining of shortness of breath and swelling of the legs. Physical examination

revealed the presence of valvular disease of the heart. At the same time a tremor of the upper extremities was noted, and enquiry elicited the fact that the patient had suffered from it all his life and it had not interfered with his occupation of carpenter and cabinet-maker. The tremor was distinctly "intentional" in character, being absent while the limbs were at rest and becoming marked on the performance of voluntary movements. It was best brought out in the act of writing or lifting a cup of water to the mouth; was more marked on the left side and was increased by emotion. Fine movements, such as threading a needle, were performed without difficulty. No other symptoms indicative of sclerosis were present, and the personal and family history had no bearing upon the case. After being two years under observation the condition described was unchanged.

Dr. J. B. McConnell referred to an almost identical case in which the legs also were affected. He looked on it as insular sclerosis without other symptoms.

Dr. F. G. Finley had examined the case and thought it was difficult to classify tremors of this sort. He had noticed a report of two cases in Berlin recently. In one which had been diagnosed as hysteria the post-mortem revealed disseminated sclerosis. In the other, thought to be sclerosis, no lesions were found.

Tubercular Ulceration of the Cæcum.

Dr. J. G. Adami exhibited this case, which showed peculiarly extensive tubercular ulceration and loss of tissue. Tubercular ulceration of the cæcum and of the colon is relatively common, but in general the ulcers are not very extensive. Here the ulceration had been so extreme that over the greater part of the cæcum there was one large area of ulceration. A few stray islands of mucosa persisted sharply cut off from the floor of the ulcer, which was granular, but relatively smooth. The ulceration extended into the colon, where the largest ulcer (in the ascending portion) was 10 cm. long and completely surrounded with the narrowed viscus. There was a well marked patch of ulceration in the appendix, and again another ulcer within 1 cm. of the anus. This had perforated and communicated with the skin immediately outside the anus, forming a fistula. The specimen was obtained from a girl of 24, presenting chronic ulcerative tuberculosis of the epiglottis, larynx and trachea, and of the small intestines and peritoneum.

Dr. Wyatt Johnston asked Dr. Adami if he had noticed and could explain the difference in the distribution of tubercular ulceration of the ileum. In one set of cases the lesions were limited mainly to the

typhoid position, namely, the lower part of the ileum; in the other they were more numerous in the duodenum and upper part of the jejunum and scanty or absent in the lower part.

Dr. ADAMI had noted a great number of cases in which there was simulation of the typhoid distribution, but had not noticed so many where the upper end of the intestine was affected.

Wounds from Firearms.

Dr. WYATT JOHNSTON exhibited a series of specimens illustrating the various wounds produced by firearms.

Pure Milk.

Dr. J. B. MCCONNELL read a paper on this subject, in which, after dealing with the composition and impurities often found, he gave in detail the precautions that should be taken to ensure a supply of pure and wholesome milk to the consumer.

Concurrent Diabetes and Exophthalmic Goitre.

Dr. C. F. MARTIN read the following case report: The coincidence of two such maladies as diabetes and exophthalmic goitre in the same patient has already been recorded in not a few cases, and yet each newly added instance is of more than ordinary interest in view of the apparently associated features in their etiology. The subjoined report is therefore very briefly submitted, though without any effort to comment on the nature of such an association.

A French-Canadian aged 28, who was a piano maker by trade, came to the out-patient department of the Royal Victoria Hospital complaining of frequent micturition, excessive appetite, general weakness and persistent sweating. He had been ill about one year, the weakness being an early symptom and progressive, while the micturition, sweating and increased appetite supervened some months later. To these signs were added a gradually developing tremor, great nervousness, palpitation, and dyspnœa on exertion; also gastric disturbances with occasional obstinate vomiting. During the year he had lost about twenty pounds. There was no history of diarrhœa.

He was a man of temperate habits, and except for the usual diseases of childhood he had always enjoyed good health. The family history presented no evidence of hereditary taint.

An examination of the patient showed him to be a remarkably thin young man, with small, soft muscles, and moist skin. His eyeballs were markedly prominent, giving him an expression of terror and anxiety. Von Graefe's and Stellwag's signs were distinct; that of Möbius could not be definitely made out.

The thyroid gland was enlarged bilaterally and rather soft.

His pulse was of low tension, soft and rapid, beating 150 to the minute. The heart sounds were normal. The respirations were increased in number, but the lungs themselves appeared free from disease.

The urine was pale and clear, acid in reaction, sp. gr. 1035; a small quantity of albumen was present and a large amount of sugar.

The nervous system was not abnormal further than is implied in the symptoms just mentioned.

He was admitted to the wards for a few days and further notes of the case were made by Dr. Fry, the house physican. During his sojourn he had slight pyrexia, a constantly rapid pulse, persistent nervousness and excitability. The glycosuria remained unaltered in amount, though there was never marked polyuria. He was discharged after twelve days and for a short time only attended the dispensary. Just one year later he returned to the out-patient department of the hospital, where I again examined him. He had maintained fair health in the interval; the goitre had somewhat increased in size, and there was still a large quantity of sugar in the urine.

The above notes, which though brief, state the main features of the case, are sufficient to render it certain that we were dealing with a case of true diabetes associated with Grave's disease, and not merely a transitory glycosuria. And their concurrence is especially interesting in view of the numerous analogies which may be formulated in their respective etiologies and morbid anatomy. In both diseases, for example, heredity is thought to play a part; both occur in neurotic individuals, and not infrequently are preceded by great mental excitement, worry, fright, etc., sometimes, too, after trauma, and in both we find individuals affected at the same period of life.

Regarding the morbid anatomy, it is recognized that in both of these affections lesions of the sympathetic system are often manifest, or again, injuries of the fourth ventricle, tumours, hæmorrhages, parasites, etc., while experimentally evidence may be adduced to some extent along these same lines.

That some definite analogy exists would further appear evident in view of the experiments recently made by Falkenberg upon dogs. He records that in several instances the extirpation of the thyroid gland has been superseded by diabetes.

Perhaps the most suggestive work upon this subject is that of Laucereaux, who in a clinical lecture published in the *Semaine Médicale* of March, 1895, discusses the subject of trophoneurosis. He

relates several instances in which patients have manifested three different conditions, all of which he regards as very closely related in their etiology, viz., acromegaly, diabetes and exophthalmic goitre. He tends, therefore to group the three conditions together, their pathological significance implying some vaso-trophic neurosis.

Similar suggestions have emanated from other authors, mainly in France, among others from Henrot, of Rheims, and from Valat.

In conclusion it may be said that while the occurrence of transitory glycosuria is a fairly common occurrence perhaps in marked forms of Graves' disease, and that in two cases recently in the hospital we have met with that condition, nevertheless the permanent presence of glycosuria with other definite symptoms of diabetes seems to be very much more infrequent.

Stated Meeting, June 12th, 1896.

F. G. FINLEY, M.D., FIRST VICE-PRESIDENT, IN THE CHAIR.

Lymphangioma of the Tongue.

Dr. G. E. ARMSTRONG exhibited a photograph of the tongue and read the following report:

This photograph represents a lymphangioma of the tongue which I removed from a young woman 22 years of age. She first noticed it fifteen years ago. It occupied the right anterior third and a portion of the left side of the tongue. During the past few years it has been growing rather rapidly, and when she was admitted into the hospital it was so large that she could not bring the upper and lower teeth together for purposes of mastication and it seriously interfered with speech. I removed it by a V-shaped incision and fortunately obtained perfect union by first intention. Dr. Johnston reports it to be a lymphangioma. It is doubtless of the same nature as the enlargement in macro-glossia, but the lymph spaces are very distinct—more so, I think, than is generally the case in the latter condition.

Dr. F. G. FINLEY asked if the glands were affected and if there were lymphatic growths in the other parts of the body as well. Dr. Armstrong replied that they were not affected.

Dr. J. G. ADAMI asked if the vesicles were thin walled and showed any tendency to rupture, and was answered in the negative.

A Case of Bacillus Aerogenes Capsulatus.

Dr. W. H. JAMIESON read a paper on this case. (See page 119.)

Dr. J. G. ADAMI congratulated Dr. Jamieson on getting pure cultures. He also had found that he rarely got the capsule except where

the organisms were present in great masses, as in the kidney when a distinct halo was noticed between the various bacilli. He found them to stain well and some of the best results obtained were from hæmatoxylon.

Dr. G. E. ARMSTRONG referred to the clinical history as given by Dr. Jamieson, and said after the patient was brought into his ward there had been a sudden change for the worse, and the condition seemed to be that of acute anæmia due to a fresh hæmorrhage. The patient had taken ether badly, and before the incision a litre of normal salt solution was injected into a vein and the condition improved. On emptying the cavity another litre of salt solution was given, but the patient died while he was exploring the cavity.

Branchiogenic Cyst.

Dr. J. G. ADAMI reported this case, which will be published later.

Dr. JAS. BELL said the patient had been sent to him with the diagnosis of a suppurating lymphatic gland, which he confirmed. On making his incision he opened the cyst, the contents of which were like *café au lait*, with very little, if any, grumous material. He was struck with the ease with which the mass was dissected out, quite unlike lymphatic glands in general.

Resection of Bowel.

Dr. J. ALEX. HUTCHISON read the following case report:

M. St. J., aged 48 years, was admitted to ward K, Montreal General Hospital on April 14th, 1896, suffering from obstruction of the bowels of six days' duration.

The patient was unintelligent and could give no satisfactory history of her illness.

On examination no signs of abdominal obstruction could be made out, the walls were flaccid. In the right inguinal region a small round tumour was felt, freely movable, with flat percussion note; no impulse on coughing. Friends stated this had been present for nine years.

Temperature 98°, pulse 100, respiration 24. No pain or vomiting.

Large enemata of hot water and of olive oil were given without relief.

On the 15th I opened the abdomen in the median line and finding the small bowel passed through the internal abdominal ring, sutures were applied to the wound and an incision made over the tumour, and the bowel drawn down after cutting the stricture.

A gangrenous patch with a perforation was found. Resection of

about 2½ inches was done, the ends being brought together by Czernay-Lembert sutures and the parts returned.

On the 16th and 17th the patient did fairly, but signs of collapse were present. On the 18th the condition was desperate; some stertoraceous vomiting, but the condition improved; retained nourishment; bowels moved with no pain; tenderness on tympanitis.

This condition continued for some days, when collapse returned, the patient dying of exhaustion on the 27th, or twelve days after operation. Temperature was sub-normal from date of admission, for several days remaining at 96°. Pulse between 100 and 120 per minute.

[Notes from case report of Dr. McDonald, house surgeon]

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THE CANADIAN MEDICAL ASSOCIATION.

Judging by the preliminary programme just received, the coming meeting of the Canadian Medical Association in this city, under the presidentship of Dr. Thorburn, of Toronto, promises extremely well. Many papers of interest and importance are to be read, and at the several city hospitals, the Notre Dame, the Hôtel Dieu, the Montreal General, and the Royal Victoria, clinical cases of much interest, either medical or surgical, will be shown.

On behalf of the profession in Montreal we desire to extend a hearty welcome to all our professional friends in the Dominion who purpose being present, and to assure them that Montreal will endeavour to make the three days pass pleasantly as well as profitably.

The following is a list of the papers already promised for the coming meeting of the Canadian Medical Association:

President's address, Jas. Thorburn, Toronto; Address in surgery, John Stewart, Halifax; Address in medicine, Geo. Wilkins, Montreal; Address in bacteriology, J. G. Adami, Montreal; Address in midwifery, J. F. W. Ross, Toronto; Hæmorrhagic pancreatitis, A. McPhedran, Toronto; One hundred cases of retroversion of the uterus, treated by ventro-fixation and Alexander's operation, with results, A. Lapthorn Smith, Montreal; The influence of mitral lesions on pulmonary tuberculosis, J. E. Graham, Toronto; A note on amputation at the hip joint in tubercular disease, A. Primrose, Toronto; Tetany following scarlatina, J. B. McConnell, Montreal; The foot, its architecture and clothing, B. E. McKenzie, Toronto; Ophthalmia neonatorum, R. Ferguson, London; Observations on the relation between leuchæmia and pseudo-leuchæmia, C. F. Martin and G. H. Matthewson, Montreal; Etiological treatment of acne vulgaris, A. R. Robinson, New York;

Thyroidectomy, D. Marcil, St. Eustace, Que.; Some observations on the heredity of carcinoma, T. T. S. Harrison, Selkirk; Some applications of entomology in legal medicine, Wyatt Johnston and George Villeneuve, Montreal; Electric baths and dyspepsia, A. L. de Martigny, Montreal; Physiological demonstrations of interest to medical men, Wesley Mills, Montreal; The theory of the eliminative treatment of typhoid fever, W. B. Thistle, Toronto; Oral surgery, S. Lenox Curtis, New York; Clergyman's sore-throat (?), J. Price Brown, Toronto; Vaginal fixation of the round ligaments for backward displacements of the uterus, Hiram N. Vineberg, New York; Non-malignant tumours of the tonsil, with report of a case, H. D. Hamilton, Montreal; Sinus thrombosis, associated with acute suppurative otitis media, occurring during scarlet fever, J. W. Stirling, Montreal; *(a)* Exhibition of an artificial nose-bridge, *(b)* Some cases of foreign bodies in the eye, in which the electro-magnet was used successfully, F. Buller, Montreal; Remarks on cold air in the treatment of pulmonary tuberculosis, Edward Playter, Ottawa; Hereditary cerebellar ataxia (with patient), D. Campbell Myers, Toronto; A report on three cases of abdominal section for conditions comparatively rare, H. Meek, London; Early atrophy of muscles in cerebral disease, Frederick G. Finley, Montreal; Militia medical reorganization, W. Tobin, Halifax. Papers have also been promised by Drs. J. D. Thorburn, of Toronto; Wm. Osler, of Baltimore, and F. J. Shepherd and H. S Birkett, of Montreal.

THE BRITISH MEDICAL ASSOCIATION.

The meeting of the British Medical Association just brought to a close has, from all accounts, proved one of the most successful in its history. Carlisle, though a comparatively small city, has outvied many larger cities, not only in the extent of its welcome, but in the perfection with which all the detailed arrangements for the meeting were carried out.

What interests Canadians most, however, in connection with this meeting is that the invitation extended by the Montreal branch of the Association to hold the next annual meeting in this country was enthusiastically received and very courteously accepted.

This action must be considered as a particularly graceful compliment to the whole profession in Canada, as it will unquestionably involve a considerable loss of time and expense to the members of the profession in the mother country. We trust, therefore, that all members of the profession in Canada, and particularly in Montreal, the city chosen for the meeting, will vie with one another in endeavour-

ing not only to make our individual guests heartily welcome, but also to make the meeting of 1897 a complete success.

Much credit is due to our *confrères*, Dr. Armstrong and Dr. Adami, who were present in Carlisle, for their successful urging of the claims of our branch, and also to our Toronto friends, Dr. Cameron, Dr. MacCallum, Dr. Peters and Dr. Doolittle, who, we understand, gave every assistance in their power to our representatives, nor would we forget the names of Sir William Hingston and Professor Osler, who at previous meetings have strongly urged the claims of the colonial branches. We rejoice at the result and feel that with the meeting of the British Association for the Advancement of Science in Toronto next August, followed shortly by the meeting of the British Medical Association in this city, next year will indeed be a red letter year for Canadian science.

It behooves not only the respective Provincial Legislatures and the Parliament at Ottawa, but also liberal-handed citizens throughout the Dominion, to come forward generously with assistance and enable those in charge to make both meetings an unqualified success.

We must acknowledge also the honour which our English *confrères* in this Association, probably the most influential medical body in the world, have conferred upon the profession in Canada. Following close upon the appointment of Sir William Hingston a few years ago to read the surgical address at the meeting in Nottingham, comes the selection of Dr. Roddick, Professor of Surgery in McGill University and President of the Montreal Branch, to fill the high office of President of the General Association. We are confident that no effort will be wanting on his part to elicit the best efforts of the Canadian profession in assuring a successful and enthusiastic meeting.

NEW BOOKS, ETC., RECEIVED AND NOTED.

System of Surgery, Vol. IV. Edited by Fred. S. Dennis and John S. Billings. Lea Brothers, New York and Philadelphia.

Archives of Clinical Skiagraphy. Edited by Sidney Rowland, B.A., London: The Rebman Publishing Co.

Hydro-galvanism of the Urethra. By Robert Newman, M.D. Reprint from the transactions of the Electro-Therapeutic Association, 1896.

Post-nasal Adenoid Hypertrophy. By J. E. Schadle, M.D. Reprint from the Laryngoscope, July, 1896.

The Sanatorium or Closed Treatment of Phthisis. Reprint from the New York Medical Journal, June 15, 1896.

The Value of Respiratory Gymnastics. Reprint from the Boston Medical and Surgical Journal, May 28, 1896. By Edward O. Otis, M.D.

Affections of the Lingual Tonsils. B. W. Scott Renner, M.D.