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## EDITORIAL.

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### THE CANADIAN MEDICAL ASSOCIATION.

The meeting of this Association is in Winnipeg this year. An effort should be put forth by a large number to attend the meeting. There will be a good programme, both of papers and entertainments. The date is fixed for the 23rd, 24th, and 25th of August. Everyone should go prepared to contribute something to the meeting. This he can do by his presence alone, but better still by adding to the programme by way of a paper or by taking part in the discussions. Many from the East should find their way to that growing city of the West.

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### THE MILK SITUATION.

It takes a vast amount of education to secure any great reform. For many years the people of this country thought that milk might be treated in any old way. There was no real attempt made to ensure cleanliness and proper care over this important article of widespread consumption.

In the large city centre, where the milk mainly comes in from a distance, the means of caring for the milk supply was very poor in far too many instances. Dirty utensils and poor housing facilities tended to contaminate the milk handled by these dealers, and render it much less desirable as an article of food than it should be, and in not a few instances really dangerous.

But improvement is taking place all along the line. The educational work of a number, who are interesting themselves in this work, is raising the standard of the care milk is receiving from many dealers. It is now being learned that milk is a product that requires the most careful handling and treatment.

Several medical societies have taken up this subject and given to it the weight of their authority. This is a very proper direction in which to turn their attention. Many lives of children are lost through bad milk. Preventive medicine has here a real work.

One of the hopeful signs of the times is that municipalities are beginning to wake up and take steps to better the situation. The appointment of a Milk Commission by the Ontario Government was a very proper act. Following the report of the Commission we may hope for some legislation that will do much good by bringing the milk traffic more under control.

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### MEDICAL INSPECTION OF SCHOOLS.

Much good work has been done on this very important matter, but there remains much yet to do. If we return to this subject again, it is because its importance demands that it often be put in evidence.

Boston was perhaps the first city on this continent to adopt medical inspection of school children. The plan there has been that the teacher sends down a slip of paper with the name and leading symptoms. The medical inspector only sees these children. This has its weak points, as many cases of sickness are overlooked, through the inattention or ignorance of the teacher, or the fact that they may not believe in the principle of medical inspection. Nevertheless, much good has been done in Boston.

The introduction of the nurse into this work has added much to its efficiency. These women are much more capable of detecting disease than the teacher, and they are on the alert, which is not always the case with the teacher. Then, further, they are anxious to reveal the presence of illness of every sort, while the teacher has been found sometimes showing a desire to conceal the sickness of the pupil. In Boston the school nurse has been the means of doing much good.

In this work of inspection there should be as much co-operation between the teacher, the nurse and the physician as possible. The inspection should go much further than the mere exclusion of contagious diseases. There are many states of ill health that call for the pupil being sent home for a time for proper rest and treatment. Among such we might mention chorea, hip disease, spinal curvature, certain refractive errors, etc.

On thing is clear, enough has been done in many countries to show that much more must be done.

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### THE HOSPITALS OF TORONTO.

For a long time the condition of the hospitals of Toronto were not what they should have been; but for this there were many reasons. Lack of money, however, was the root of most of the trouble.

Mr. John Ross Robertson took it upon himself to see that a special hospital for sick children should be forthcoming for Toronto. All know of his work.

Others gradually became interested in other hospitals, and gave of their time and money to an extent that the public know but little. Within a comparatively few years much has been done of a very substantial character.

The new general is on the way, and ere long the public eye will see the commencement of what will, no doubt, be a splendid hospital, "a thing of beauty and a joy forever."

St. Michael's, a few years ago, added a very fine new wing, and, with the \$50,000 recently voted by the city, will still further improve its accommodation.

The Toronto Western Hospital began a little over ten years ago in a small rented house. To-day it has a site of four and a half acres of land with five buildings, and money enough to immediately erect another handsome fire-proof pavilion for at least 70 patients. The story of this institution reads like a romance.

Grace Hospital has done excellent work for the city, but the site is not large, and we think the feeling is growing that it would be well for Grace and the Western to unite their efforts. They are near each other and the Western has ample land. The work they are doing is practically the same, and there is a perfectly friendly feeling between them. Much could be saved in running expenses by a union. This should be kept in the minds of all interested in these two hospitals. Should this union be consummated there would very soon be in the western portion of the city, a hospital second to none in Canada.

On the whole the situation looks bright all round.

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## HOSPITALS AND ASYLUMS IN THE MARITIME PROVINCES.

A casual perusal of the reports on the hospitals and asylums in the Maritime Provinces show the evidences of much improvement. There is a steady increase in the number of hospitals, and those formerly in existence are improving their buildings.

The governments down by the sea are becoming more liberal minded, and those with money are giving some of it away. By these means the hospitals of the Maritime Provinces are being greatly improved. Opinion is changing, and it is now coming to be recognized that the proper care of the sick is a good way to invest some of the people's money. It pays well to get them back to life's duties.

## THE HOUSE FLY.

We have on former occasions referred to the house fly as a carrier of disease. This was made very clear during the South African War. The following rules have been prepared for guidance in New York: "Keep the flies away from the sick, especially those ill with contagious diseases. Kill every fly that strays into the sick room. His body is covered with disease germs. Do not allow decaying material of any sort to accumulate on or near your premises. All refuse which tends in any way to fermentation, such as bedding straw, paper waste and vegetable matter should be disposed of or covered with lime or kerosene oil. Screen all food. Keep all receptacles for garbage carefully covered and the cans cleaned or sprinkled with oil or lime. Keep all stable manure in vault or pit, screened or sprinkled with lime, oil or other cheap preparation. See that your sewage system is in good order, that it does not leak, is up to date and not exposed to flies. Pour kerosene into the drains. Cover food after a meal; burn or bury all table refuse. Screen all food exposed for sale. Screen all windows and doors, especially the kitchen and dining room. Burn pyrethrum powder in the house to kill the flies. Don't forget if you have flies, their breeding place is in nearby filth. It may be behind the door, under the table or in the cuspidor. If there is no dirt and filth there will be no flies."

These rules are simple and may be made effective in any home in the land. If they were we are sure many cases of disease would be prevented.

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DOMINION REGISTRATION.

We have never lost hope that this would yet come about. The Province of Quebec has so far not been able to see its way clear to fall into line along the plan laid down in the Roddick Bill. We feel that this will, however, in time come.

In the Province of Quebec the University degrees carry the right to practice. In this way those institutions have stood aloof from the idea of Dominion Registration, as it might interfere somewhat with what these universities regard as vested rights. We do not think this would prove the case in actual practice.

Quebec has now adopted a five years' course of study. This is a step in the direction of ultimately securing Dominion Registration. Let us aim at this rather reciprocity between some of the provinces.

## ORIGINAL CONTRIBUTIONS.

OUR PROFESSION AND THE LAITY IN PREVENTIVE  
MEDICINE.\*

By H. J. HAMILTON, M.D., Toronto.

I HAVE a deep sense of appreciation of the honor you have done me in electing me to the Presidency of the foremost Medical Association in Canada. I am conscious of the fact that the profession in Ontario has no greater honor to confer upon one of its members. The status of this Association, however, is such that the honor carries with it grave responsibilities which I have endeavored to discharge, as well as I am able to your satisfaction, and in the interests of the Association. If I have failed in this, I crave your indulgence.

On reviewing our history from the date of our organization in 1881, I entered upon the duties of office with a great deal of temerity. The list of past Presidents, the part they have had in the development of the Association since its inception, and the high point of excellence which it has attained, not only inspired me with awe, but stimulated and encouraged me to try to make this meeting an unqualified success. I cannot speak too highly of the support which has been rendered by the committees and the membership of the Association. It is with pardonable pride that I present to you the results of the combined labor of all, viz. : the best programme ever provided for our annual meeting. In passing I would thank the Secretary for his untiring efforts during the past year.

In addressing the audience before me, it is superfluous to refer to the benefits derived by the profession from our meetings. Those who attend know all about this. For those who never come to such gatherings, I would quote from *Hamilton Mabie* :—

“The development of one’s personality cannot be accomplished in isolation or solitude; the process involves close and enduring association with one’s fellows. If work were merely a matter of mechanical skill, each worker might have his cell and perform his task, as in a prison. But work involves the entire personality, and the personality finds its complete unfolding, not in detachment, but in association.”

Surely the education and development of a member of our profession should not cease when he graduates. Both constitute a life-long process, and true success in the individual will depend upon the consideration which he gives these essentials. I use the words education and development in their widest meaning. Professional education alone to the exclusion of that development which conduces to make a man broad, to give him a mature knowledge of human nature, and a soul full of sym-

\*Presidential Address, Ontario Medical Association, June, 1909.

pathy for his patients, and the general public will not place us where every member of our profession should stand.

In meetings such as this much has been said about our conduct towards each other, and it is sometimes not what it should be. Conscientious work combined with abnegation of self in the interests of suffering mankind would ultimately result in such a general application of the Golden Rule, that we would credit each other with such honesty of purpose, that we would be less inclined to misunderstand each other. Conditions in our profession have so materially improved during the life of this Association that only a passing reference may be made to this subject. To quote from our code—"Diversity of opinion and opposition of interest may in the medical, as in other professions, sometimes occasion controversy and even contention. Whenever such cases unfortunately occur, and cannot be immediately terminated, they should be referred to the arbitration of a sufficient number of physicians or a Court-Medical." My interpretation of that article is, that if Dr. A. is of the opinion that Dr. B. has used him unprofessionally, Dr. A. should endeavor to have that misunderstanding "immediately terminated" by conferring with Dr. B., and only refer the matter to the Court-Medical after such effort to arrive at a proper understanding has proven futile. Furthermore, if Dr. A., smarting from a supposed "injustice at the hands of Dr. B." resorts to the Court-Medical without trying by conference with Dr. B. to amicably settle the difference of opinion, he, himself, is the aggressor.

Although conditions in our profession are much better than they were at one time, there is still room for improvement. Let us become better acquainted with each other, meet each other more frequently, reach a higher level, and avoid making careless remarks when speaking of each other; remember the good and ignore the evil, if we know or suspect that such exists. Regular attendance upon this and similar Associations would do much to keep down petty jealousy and strife. By attaining the ideal in this and combining our energies in work for the benefit of humanity, even much more would be accomplished than has been up to the present time. Let us forget all disturbing elements in our profession and keep before us the motto of this Association:—"Concordia Crescimus."

What are we doing for the public?

The following quotation from MacFie's "Romance of Medicine" gives some examples of what modern science has spared the public from:—

To cure dropsy. "Take a good quantity of black snails, stamp them well with bay salt, and lay to the hollow of the feet, putting fresh twice a day."

To cure ill eyes. "Take two or three lice, and put them alive into the eye that is grieved, then shut it close. The lice will certainly suck the web out and afterwards, without any damage to the patient, come out."

For dysentery. "Take the bone of the thigh of a hanged man (perhaps another will serve, but this was made use of). Calcine it to whiteness. Dose: a doze of white powder in some red cordial."

Earthworms, woodlice, human skull, and other loathsome things were favorite prescriptions of the time.

The same writer tells us that according to Sir Thomas Browne's discourse upon this subject, Haly confirmed the fact that prepared mummy was frequently used by the ancients as a medicine. We are told that it was prescribed for epileptics and gouty subjects. Francis the First of France always carried mummies with him as a panacea against all disorders.

"But the common opinion of the virtues of mummy, bred great consumption thereof, and princes and great men contended for this strange panacea, wherein Jews dealt largely, manufacturing mummies from dead carcasses and giving them the names of kings, while species were compounded from crosses and gibbet-leavings. There wanted not a set of Arabians who counterfeited mummies so accurately that it needed great skill to distinguish the false from the true. Queasy stomachs would hardly fancy the doubtful potion wherein one might so easily swallow a cloud for his Juno and defraud the fowls of the air while in conceit enjoying the conserves of Canopus."

We, as a profession, are making honest efforts to help the public. Progress in medicine has for its aim not only the cure, but the prevention of disease. Reforms in this latter particular are not always met kindly by the laity, nor in fact accepted without proof by the profession. It is at least safe to be cautious but let us hope that never again will any movement in preventive medicine meet with such bitter opposition from the profession as did vaccination when introduced by Jenner.

Vaccination, providing immunity against smallpox, is so firmly believed in, that at this late date one should apologize for referring to it. The subject is no longer one for debate. Life is too short to enter into controversy upon that which is just as true as the fact that 2 and 2 make 4. Japan, not more than 30 years of age in medical progress, recognizes the necessity of adopting compulsory vaccination with the result that smallpox, once a scourge, has become easily manageable in that country. I refer to Japan as an example of a nation where compulsory vaccination is insisted upon when a child enters school. Medical inspection of schools is also carried out. The same may be said of Honolulu and other places which we have believed to be not as far advanced in

medical science as we in Canada are. At the present time compulsory vaccination is a dead letter in the public schools of Toronto.

Our profession and this Association have frequently with no uncertain sound voiced their opinion in reference to this state of affairs. The public for whom we are working are either indifferent as to ultimate results or ignorant upon the subject. The awakening will be extremely rude when it comes, as it certainly will come.

Pasteur in more recent times conferred a boon upon mankind by providing a serum which rendered one bitten by a rabid dog immune to hydrophobia.

Mark the difference in the reception given by the public to his discovery and that accorded to Jenner's theory of vaccination. This may in part be due to the fact that vaccination against smallpox was given to the world when the laity, and even our own profession were less able to grasp the meaning of it than at the present time. It may also in part be due to the fact that Pasteur's serum is used only when there has been exposure to rabies. The public can see then the wisdom of protecting themselves against hydrophobia, the disease most terrible to the popular imagination. They know that the bite of a rabid dog is fully expected to result in hydrophobia, and they will resort to the remedy at once and without question. I doubt very much whether there is a solitary member of our Board of Education who would decline to undergo treatment immediately, if bitten by a mad dog. No, not even for the sake of appealing to popular prejudice, if such existed, would he do such a foolish thing. It is safe to say that there is no prejudice against the use of Pasteur's serum. Must men be infected with a disease which is necessarily and rapidly fatal before they will consent to use the remedy? Rabies—horrible and terrorizing to contemplate, but comparatively rare in occurrence—fatal. Yes, the argument is convincing—Pasteur's serum prevents—we will be advised by our physician, and even consider him a fool if he does not send us to New York at once.

Smallpox—vile, loathsome, extremely contagious, large numbers attacked when there has been no immunity previously provided, wiping out the population of large cities by thousands but recovery possible in a proportion of cases—no, we may not be infected, and if we are infected, we may recover. We will not be vaccinated, nor have our children vaccinated, nor will we require children attending school to be vaccinated. It would lose some votes for us on January 1st, we are afraid. Thus in this disease the health of the public is allowed to be a political football. Nothing short of a frightful epidemic of smallpox which decimates our population will prove to these men the efficacy and wisdom of vaccination.



One hundred years ago or a little more one anti-vaccinationist asserted "smallpox as a visitation from God, but the cowpox is produced by presumptuous man; the former was what Heaven ordained, the latter is perhaps a daring violation of our Holy Religion." Of the two v's in that quotation, all I have to say is, neglect the violation, and you will sooner or later get the visitation.

Vallery-Radot says, "One day Pasteur, having wished to collect a little saliva from the jaws of a rabid dog, so as to obtain it directly, two of Bourrel's assistants undertook to drag a mad bull-dog, foaming at the mouth, from its cage. They seized it by means of a lasso and stretched it on a table. These two men, thus associated with Pasteur in the same danger with the same calm heroism, held the struggling ferocious animal down with their powerful hands, whilst the scientist drew, by means of a glass tube held between his lips, a few drops of the deadly saliva."

This was heroism to be sure, but what of Jenner who inoculated his own child of 16 months with swinepox? What of the heroism of Pasteur's second patient, a boy of 14 who was bitten while protecting his comrades? "Armed only with a whip he confronted the infuriated animal, who flew at him and seized his left hand. After a tremendous struggle, during which his hand was badly bitten, the boy succeeded in overpowering the dog, bound its jaws together with the whip, battered in its head with his wooden sabot, and finally dragged it to a stream and held its head under water till it was undoubtedly dead." This boy recovered as did the first. Our profession has given men who in these two diseases have accomplished untold good for the public, but the Jenners and Pasteurs of to-day are working just as faithfully for mankind as even they did.

In tuberculosis the laity are now the faithful allies of the profession, and while much has been accomplished in this disease, it remains for the powers that be to make more universal use of the educational campaign which has been going on now for some years and supplement the efforts of the profession and public. They are doing this as rapidly as seems to them wise. It is expected that the municipalities will take an active hand in this.

I would enlist for our profession the unbounded confidence and sympathy of the laity in our efforts to secure for all pure air, pure food and pure water. During the immediate past we have been making rapid advance in that respect. The Local Legislature is co-operating with our profession with commendable zeal in reference to the milk supply of the Province. As a result of Mr. W. K. McNaught's most excellent resolution passed by the House, a Provincial Milk Commission has been appointed. This subject has occupied Mr. McNaught's attention for

some time and has had the hearty support of the Minister of Agriculture and others in the Cabinet. With such an able Commission and equally able and enthusiastic Department, we may be satisfied that before this Association meets again, much will be accomplished.

During the past year the Milk Commission of the Canadian Medical Association has been doing good work. Locally the Milk Commission of the Academy of Medicine has been successful in doing more than we could have reasonably expected from a body of men busy with the routine of medical practise. These men have given of their time and energy most generously, with the result that it is now possible in the City of Toronto to purchase certified milk which must reach the standard of purity required by that Commission.

From the daily press we learn that Mr. John Ross Robertson that good old protector of sick and helpless children, has recently been most active in securing for Toronto the establishment of infant milk stations which will provide pasteurized milk for 1,000 children daily during the coming summer. With a well selected delegation of physicians Mr. Robertson recently visited New York and consulted Mr. Nathan Strauss at his laboratory with the result that a pasturizing plant has been ordered and will soon be installed by Dr. Arthur Randolph Green of New York. Recently the Medical Society of the City of Hamilton appointed a Milk Commission to look after the supply there. These are examples of what is being done in other places throughout the Province, and we point with pride to the fact that our own profession is leading in the movement.

In reference to the water supply of the City of Toronto, last January the electorate passed a by-law authorizing the expenditure of a large sum of money in a system of disposal of sewage by septic tanks and for a filtration plant for our water supply. At the time of writing some members of the council are opposing the scheme, but we can confidently hope that this opposition and delay result from some misunderstanding, which will soon be cleared up. When the people know and say what they want, they will certainly get it. They have said it—and the medical profession have helped them to learn the necessity of having pure drinking water.

The public were never so well informed in sanitary matters as they are to-day and were never so eager to learn more from us in these things. The time is coming when they will not ask what it costs to secure pure food and pure water, but they will ask how to get it at any cost.

Life Insurance Companies should be foremost in the campaign against preventable diseases. Prof. Irving Fisher, of Yale University, said:—"It is sound business for the Life Insurance Companies to work

for the prevention of disease, just as it is sound business for Fire Insurance Companies to work for the prevention of fires. By this method the Insurance Companies will increase the duration of life of their policy-holders and thus be financial gainers." Can they be induced to help in the fight against tuberculosis and typhoid fever?

To Sir A. E. Wright belongs the credit of applying vaccination as a means of preventing typhoid fever.

Statistics available in 1907 were based upon inoculation on British troops in India and South Africa. Sir A. E. Wright quotes figures as follows:—Among 19,069 inoculated soldiers there were 226 cases of typhoid fever—a proportion of 1 in 84.4; among 150,231 uninoculated soldiers there were 3,739 cases, that is 1 in 40 took the disease. In the inoculated the mortality was 17%. In the uninoculated the death rate was 25%. The immunity seemed to persist for about two years. Chantemesse reports a death rate of 17% in 5,621 cases of typhoid treated in Paris Hospitals from 1901 to 1907 without inoculation, and since that time 1,000 cases treated in his wards with cold baths and anti-typhoid serum with a death rate of 4.3%. Not one fatal result occurred when the serum had been used within the first seven days of the disease. Convalescence was very rapid in patients treated early. This practice has also been adopted in the German Army with good results.

Up to the present the evidence would go to prove that the use of anti-typhoid serum is advisable among soldiers and other large bodies of men who are surrounded by unknown or suspicious sanitary conditions. An effort has been made in this address to refer to some things our professions are trying to accomplish for the public in preventive medicine. If to this aim on our part we can add the confidence and co-operation of the public the results will be more satisfactory in the future than they have been in the past. To this combination of profession and laity we can safely add the support of the Legislature, a body elected by the people, and willing to grant what the majority of the electorate desire of them.

The confidence and co-operation of the public can only be secured when they understand the necessity of the work. The surest way of educating the public is to start with the rising generation. The Legislature of this Province now empowers school trustees to provide and pay for medical inspection of schools. To this add the teaching of hygiene in the schools.

The primary object of medical inspection of schools is to prevent children from contracting or giving to others communicable diseases. In the second place the object is to detect mental and physical defects,

that they may be properly cared for, and not allowed to interfere with the child's progress in school.

This, followed by teaching in public health as far as their age and education will permit would do much to relieve a great deal of distress and diminish our death rate. If a child could tell his parents what could be done for the prevention of tuberculosis by proper disposal of sputum, and the adoption of proper hygienic measures, the time and money expended in teaching them these things would be well spent. The same would be true if every child could explain to his parents why it was better to boil the drinking water and why certified milk is cheaper in the end than milk of doubtful quality. If the children were able to demonstrate to their parents that tuberculosis and typhoid fever are preventable diseases, much more would be done towards educating the masses. The homes must be reached, and that can be done more readily, if we have a good system of medical inspection of schools and instruction in hygiene.

Sir Victor Horsley in addressing the British Medical Association refers to medical inspection of school children as one of the primary questions of the day, and says, "Here is a department of national work for which alone the medical profession can be and is responsible."

Our Department of Agriculture each year spends a great deal of money on animal and plant life because they as representatives of the people carry out the wishes of the people. If the Local Government do not spend as much money in caring for the health of the children of this province as they might it is because the people are not ready to permit it. In the matter of medical inspection of school children the Government has given school trustees the power to spend money for this purpose—it is now for the people to allow it to be done. It is to be hoped that the Department of Education will at an early date devise some workable scheme by which medical inspection will be carried on in a most effective manner.

Locally through the Academy of Medicine of Toronto our profession have been endeavoring to accomplish something in the matter. There has just been published in the *Lancet* the report of a committee appointed by the Academy upon medical inspection of schools. The Secretary, Dr. Helen McMurchy, has been most untiring in her efforts to secure information regarding what has been accomplished by medical inspection in the United States and Europe. I would recommend the careful perusal and consideration of this report. It is our duty to not only help in this work but to direct it. It certainly opens up a very wide field in the realm of preventive medicine.

## UMBILICAL HERNIA AND ITS OPERATIVE TREATMENT, WITH SPECIAL REFERENCE TO THE MAYO OPERATION\*

By HERMAN E. HAYD, M.D., M.R.C.S. (Eng.), Buffalo, N.Y.

THE radical cure of umbilical hernia up to ten years ago was a very unsatisfactory surgical procedure, not only because it was attended by a very high mortality, but because it so frequently failed; the united muscles and fascia separated in a short time from the great intra-abdominal pressure to which they were subjected, and the hernial protrusion recurred. The operation was also attended by such great physical difficulties that most surgeons abandoned radical interference, except in a few selected cases, unless some acute complication arose—such as obstruction and strangulation of the contained gut or suppuration of the sac contents—and when the operation was performed simply to meet these dangerous conditions, and not with the hope of radically and permanently closing the breach in the abdominal wall. These herniæ are often very large and contain not only the omentum and small bowels, but even the ascending and transverse colon, as well as a large part of the stomach. They are seen in women who have borne many children and whose abdominal muscles are so stretched and thinned out that their bellies become huge and pendulous and fall over the pubes, as a loose fold of fat; and the divarication of the recti muscles is so great that it is an utter impossibility to approximate them to the median line, and, strange and anomalous as it may seem, this diastasis of the recti muscles and the flaccidity of the abdominal wall makes the Mayo operation anatomically possible, as well as mechanically ideal. In the old operations for large umbilical hernia, when the incision was made in the median line, it was found impossible to reduce all the hernia into the abdominal cavity; first of all because the cavity was too small to receive it, and secondly, the intra-abdominal pressure was so great that re-position and retention of all of the sac contents was a physical impossibility. But with the transverse or Mayo incision, the lower loose abdominal wall, by being lifted up and opposed to the upper flap, makes a bigger and roomier peritoneal cavity, because the transverse circumference of the belly at the navel is increased, and therefore the sac contents—no matter how large—can always be accommodated. This point can be easily demonstrated by following a suggestion of Mayo in the examination of these women before operation. You will find that when the woman lies on her back, the loose pendulous fold is often so great as to completely cover and conceal the flat hand when placed on the abdomen above the pubes, or the lower fold can often be lifted up so as to nearly cover the hernial protrusion. In the old operation for ventral and umbilical herniæ, and especially when of large size and where the ordinary up and

\* Read at the meeting of the Ontario Medical Association, June, 1909.

down incision is employed and the lateral edges of the wound are brought together, the union will not remain permanent, even if the sac contents can be replaced in the abdominal cavity, because mechanically this plan of closure is defective. Intra-abdominal pressure, as you all know, is exerted especially against the longitudinal axis of the belly, and this always tends to separate the recti muscles, and no matter how carefully they are brought together and approximated—which is often impossible in large hernia—they will gradually separate again because the same forces continue which originally caused the production of the hernia.

Murphy noticed that the patients upon whom the Mayo operation had been performed did not suffer from the vomiting and straining after the anæsthetic, as did the patients on whom the up and down operation had been employed. In the Mayo class the straining, instead of separating the recti muscles, tended to bring them closer together and solidify more thoroughly the point of contact. Moreover, he found that pulmonary oedema which came on so frequently a few hours after the old operation, and from which so many cases died, did not in the Mayo operation, and this he attributed to pressure on the diaphragm due to the sudden, forcible return into the belly cavity of so much hernial contents.

Umbilical herniæ usually first make their appearance in the upper one-third of the navel ring, or close to it, because it is here where the more yielding umbilical vein is situated, while the lower two-thirds is occupied by the umbilical arteries and urachus, whose tissues are denser and less elastic. Moreover, below the navel the recti are in perfect contact; in fact, so close is the union that the *linæ alba* exists merely as a thin line, while above the umbilicus the recti separate from a half to three-quarters of an inch, making a weak spot in the abdominal parietes—as these muscles go up to be inserted into the front of the ensiform and the seventh, sixth and fifth costal cartilages.

Umbilical herniæ on account of their prominent and very superficial position are easily irritated and injured, and as a result they are usually irreducible. Dense adhesions are present, and numerous bands are found, making possible all kinds of sacculations and diverticula, so that obstruction and strangulation is a very frequent complication in these ruptures, and an adherent omentum is almost invariably present. Consequently, these herniæ should be operated upon early when they are small and reducible and when the technical difficulties are easily overcome. When the hernia has reached a huge size, as is often the case, the omentum is everywhere adherent to the neck and sac, and the bowels are sometimes bound together so that the operation is extremely difficult, and the greatest care must be exercised in separating the parts.

It requires a long time for its performance, as well as a number of skilled assistants, and therefore should only be done in a well-appointed hospital. With our modern technic and dexterity in operating, the mortality has been reduced to a minimum, and the percentage of failures is practically nil. The description of the operation and the plates I am taking from an article by Dr. William J. Mayo, published in the July 25th, 1903, journal of the American Medical Association.

*First.* Transverse elliptical incisions are made surrounding the umbilicus and hernia. This is deepened to the base of the hernial protrusion.

*Second.* The surfaces of the aponeurotic structures are carefully cleaned two and a half to three inches in all directions, from the neck of the sac.

*Third.* The fibrous and peritoneal coverings of the hernia are divided in a circular manner at the neck, exposing its contents. If intestinal viscera are present, the adhesions are separated and restitution made. The contained omentum is ligated and removed with the entire sac of the hernia, and without tedious dissection of the adherent portion of omenta.

*Fourth.* An incision is made through the aponeurotic and peritoneal structures of the ring, extending one inch or less transversely to each side, and the peritoneum is separated from the under surface of the upper of the two flaps thus formed.

*Fifth.* Beginning from two to two and one-half inches above the margin of the upper flap, three to four mattress sutures of silk or other permanent material are introduced, the loop firmly grasping the upper margin of the lower flap; sufficient traction is made on these sutures to make peritoneal approximation with running suture of catgut. The mattress sutures are then drawn into position, sliding the entire lower flap into the pocket previously formed between the aponeurosis and the peritoneum above.

*Sixth.* The free margin of the upper flap is fixed by catgut sutures to the surface of the aponeurosis below, and the superficial incision closed in the usual manner.

In the larger herniæ the incision through the fibrous coverings of the sac may be made somewhat above the base, thereby increasing the amount of tissue to be used in the overlapping process.

In my eleven cases, four were suffering from strangulation and had been vomiting from twenty-four to thirty-six hours previous to operation. Only one died, and she on the fifth day, of pneumonia and toxemia. She was referred to me by Dr. Smith of Angola. She was sixty-four years of age; mother of three children, and a large, stout, fleshy woman, with a strangulated hernia about the size of the closed

fist. She was vomiting a brownish, stinking fluid. The stomach was washed out before she was placed upon the table, and a large amount of foul fluid was siphoned off. On opening the sac, which contained considerable fluid, a large piece of omentum was adherent in the sac, and about four inches of the jejunum, which was very dark and threateningly dangerous. However, upon exposure, color began to return, so it was dropped into the peritoneal cavity and the wound closed according to Mayo. The woman did well. The bowels moved on the following day, and gas passed freely, and the temperature remained normal, but the pulse kept up above 100. On the third day, she looked sick, complained of pain in the left side and had some cough and temperature. On the following day it was evident she had a pneumonia of the lower left lung. She began to vomit a suspicious-looking fluid, making us fearful of peritonitis, and she died on the fifth day, apparently of heart failure due to toxemia or entero-sepsis, as she was not ill long enough to have died from the pneumonia. Post mortem, four hours after death, showed the wound nicely adherent and the bowels everywhere of good color, even the small piece which was strangulated had regained a normal hue and there were no evidences anywhere of peritonitis. The chest was not opened, as the family objected.

A number of the other cases had very large hernia, and had been irreducible for years. One—a Mrs. Mary E., referred to me by Dr. Whiting of Medina, N. Y., æt fifty-four; one child thirty-six years old—had the largest umbilical rupture I ever saw. She was a short, fat woman; five feet two inches in height, and weighed 210 lbs. The adhesions were very dense, and the sac was divided up into a great many compartments and the contents consisted of the small bowels, ascending colon with appendix, transverse colon with the omentum—a part of which was much hypertrophied—and a portion of the greater curvature of the stomach. However, upon pulling up the huge pendulous belly wall the abdominal cavity was ample, and with little difficulty the lower flap was which laps over, so as to bring together in apposition fascial surfaces I shall pass around a photograph which shows the patient two years after the operation.

Mayo in his writings has always favored pulling the upper flap over the lower and suturing it in this position, but I have found occasionally that it was easier to pull the lower flap over the upper, and in a personal communication from him to me, he writes that he didn't think it made much difference whether the upper flap was in front or behind the lower, so long as it was generously lapped over.

However, there is one point that I have always insisted on in my work, and that is to thoroughly peel back the peritoneum from the flap which laps over, so as to bring together in opposition fascial surfaces



and thus insure a firm and solid union. Some operators seem to think that this is not an important matter, but I am satisfied a better union takes place when raw denuded fascia is sewed upon fascia, than when a smooth, peritoneal surface is sewed upon a fascial surface.

Another interesting case, whom I saw in consultation with Dr. Gaertner and the photo of which I shall pass around, was a large, double adeno-cystoma, complicated with a huge umbilical hernia and abdominal dropsy. Mrs. B., æt fifty; mother of eight children, youngest sixteen. For a number of years had noticed a large swelling in the lower abdomen, but for the past year the abdomen had increased in size very rapidly. She was pale and very thin in her body and extremities, and breathed with great difficulty. The legs were not swollen and the heart sounds were normal, and the urinary examination was negative. She had not been able to lie down in bed for six months and slept usually propped up in a chair or on the lounge. She walked about and carried her tumor in a sling made from a piece of sheet, swung around her neck. She weighed 210 lbs. A diagnosis was made of ovarian cyst, and she was sent to the German Hospital, and I tapped her upon admission and removed seventeen quarts of a blood-stained fluid, which at once made me suspicious of malignancy. The posterior wall of the vagina was pushed down by the great intra-abdominal pressure and hung between the legs like a proscidentia uteri, but the uterus was high up behind the pubes. Three days after the tapping she could lie in bed, while previously any attempt to assume the prone posture brought on the most intense dyspnoæ and stridor, and on the seventh day, under chloroform anæsthesia, the abdomen was opened. I made a large circular incision around the navel, and removed the hernial sac and its adherent omentum, and released a piece of small bowel which was in the mass, and dropped it back into the peritoneal cavity. A large-sized trocar was then pushed into the cyst and thirteen quarts of a bloody mucilaginous fluid was removed. The pedicle was tied off close to the uterus, when another cystic tumor about the size of a turnip was found growing from the right side. It was punctured, delivered and tied off. The incision was closed by the Mayo overlapping method, and the patient put to bed. She re-acted beautifully and left the hospital on the twenty-seventh day much increased in flesh and in fine physical condition. She now weighs 147 lbs. The tumors proved to be of the cyst-adenomatous variety, with carcinomatous degeneration. Upon the uterus were two little papilomatous tufts. When the patient was tapped, the trocar was introduced several inches above the umbilical hernia, and the fluid which was evacuated was peritoneal exudate, as the cyst wall had not been penetrated and was due, no doubt, to the papilomatous growth which existed freely on the outer surface of the tumor.

In three of my very large umbilical herniæ, the subcutaneous fat was pushed away for a great distance from pressure absorption, so that the skin edges—even after a very generous amputation—did not come together nicely, and I therefore closed the incision so that the resulting scar was T-shaped and where the two lines met I left a small drain of gauze so as to empty the deep space and thus permit the wound to close up by granulation. This piece of gauze was removed on the fourth day, when half an ounce or more of serum and liquid fat ran out of the drain opening. The cosmetic effect was most satisfactory because where the drain existed, a resulting dimple or depression remained which finally looked like the original navel. Kangaroo tendon was used for the deep sutures and catgut or silk worm gut for the skin, and the patients were kept in bed from three to four weeks, and then a large abdominal bandage was worn for some months. So far I have had no failures.

I have also operated a number of large post-operative ventral herniæ where this lapping over method of closing the hernial opening was taken advantage of. In conclusion, I wish to add that I know of no surgical operation which so beautifully meets all the anatomical requirements of a surgical case, and is more ideally mechanical than the Mayo operation for the radical cure of umbilical hernia.

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#### STATUS LYMPHATICUS AS A CAUSE OF DEATH UNDER ANÆSTHESIA.\*

By HERBERT A. BRUCE, M.D., F.R.C.S., Associate Professor of Clinical Surgery, University of Toronto, Surgeon to Toronto General Hospital.

WHILE a boy, aged 17, who was suffering from very large goitre affecting both lobes of the thyroid, was being put under anæsthesia, he showed marked respiratory difficulty. He was at first given a mixture of chloroform in ether—1 in 3—and after a couple of drachms of this solution had been given, pure ether was given by the open method. The cyanosis continued under the ether and the respiratory difficulty increased. Tubes were put down the nose but no obstruction was found here to account for the condition. The respirations became very shallow and tracheotomy was at once done. By the time the tracheotomy tube was in position he had ceased to breathe. Artificial respiration was undertaken and in about a minute and a half he took three or four breaths. Again respirations failed, but the heart beat continued for

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about ten minutes. Artificial respiration was gone on with for half an hour, but without avail. The post mortem was done by Dr. Maybee and the pathological entity known as the status lymphaticus or status thymacus found.

Dr. Maybee's report is as follows:—

Although we know a good deal of the mechanism of death under anæsthesia, the influence of the general condition of the patient on the course of anæsthesia is still rather obscure. Nearly three centuries ago Plater called attention to the fact that the thymus gland was enlarged in certain cases of sudden death. Later, in 1723 Bichat made the same observation, and Kopp, in 1829, associated enlarged thymus with laryngo-spasm. The credit, however, for having directed the investigation into the right path in many of these unexplained cases of sudden death is due to Paltauf. Paltauf in 1889 and 1890 collected a large number of sudden deaths in adults in which post mortem examinations had shown similar conditions. There was found an enlargement of the tonsils, of the lymphatic gland system, of the follicles at the base of the tongue, of the spleen, and lastly, an enlarged thymus gland; and in many cases also there was a narrowing of the aorta. This combination of conditions he called the "lymphatico-chlorotic constitution," and referred the sudden deaths of certain patients of this type to cardiac paralysis and acute heart dilatation, putting aside a theory advanced as to the possibility of mechanical interference by pressure of the enlarged thymus on the circulatory and respiratory organs. His first case was that of a girl, aged 9, who sat up in bed and died suddenly. He also speaks of sudden deaths during bathing, and Recklinghausen and Nordman recorded cases of young people who died suddenly during or after a cold bath and in whom, post mortem, status lymphaticus was found. Pott is recorded as having seen death occur in eight children who suffered from spasm of the glottis after introduction of a tongue spatula and was convinced that they did not die from suffocation but from cardiac paralysis, for artificial respiration after the attack was useless. Kundrat published in 1895, ten cases of death under or immediately after anæsthesia by chloroform, or a mixture containing it, collected from post mortem records in Vienna, all showing a lymphatic diathesis and one case in which ether was the anæsthetic. He pointed out that in some of his cases danger symptoms began with the heart, respiration lasting some time after cessation of the pulse. Kundrat noted also the association of status lymphaticus with Basedow's Disease. He also mentioned other cases of death during anæsthesia in which many of the characteristics of the status lymphaticus were found but no enlargement of thymus. To the writings of Paltauf and Kundrat little of importance can be added to-day except that many sudden deaths of children have been recorded

apart from anæsthesia, in whom post mortem has been found the condition of status lymphaticus, and so constantly has the hypertrophy of thymus gland been noted that the diathesis is often called the status thymicus. Lymphatism is a more modern name for the condition. The subjects of this condition are usually liable to infectious diseases, to death from shock or fright, and to death during anæsthesia. Even comparatively slight lesions may in them end fatally. Perhaps some of those subjects who have been said to show idiosyncrasy to the action of chloroform have been lymphatic.

The condition found after death in the subjects of status lymphaticus are tolerably uniform and very remarkable. They are characterised by the presence of a thymus of a greater or less size by an enlarged spleen with varying degrees of prominence of its follicles, by hypertrophy of the lymphatic glands in various regions (especially of the mesenteric, retro-peritoneal, and cervical) by prominence and multiplication of follicles at the base of the tongue and the pharynx, by enlargement of the tonsils and swelling of solitary follicles and Peyer's patches in the intestine, by a dilated heart (especially is the right ventricle dilated) and extremely flaccid cardiac muscle. In addition there is some times found a small heart with contraction of the aorta and dark fluid blood in the heart cavities. To Kundrats pathological complex may be added less constant features, viz., great pallor of the skin, enlargement of the tongue, enlargement of the thyroid gland, infantilism, œdema of the lungs and brain, fatty changes in the liver, and alterations in the bone marrow.

*Frequency.* Kolisko stated that for many years he performed about six autopsies annually on persons dying from cardiac syncope under chloroform, in whom no previous disease of the heart, lungs or kidneys was known to exist, and always found the signs of status lymphaticus. In the children's clinic at Gratz the records show that during the last twenty years in every chloroform fatality there was present a lymphatic hyperplasia which is the principal feature of status lymphaticus. Blake recorded three anæsthetic and two non-anæsthetic cases of sudden death in hospital, showing post mortem signs of status lymphaticus in a period only a little longer than one year.

*Effects of different anæsthetics.* So frequently is death during chloroform anæsthesia associated with status lymphaticus that the question has been asked, does death under chloroform ever occur apart from this condition? It has been stated by Elser that when status lymphaticus exists the administration of chloroform is nearly always fatal. The first fatal case in Great Britain seems to have been recorded by Wolff in 1905, and was that of an infant, aged 11 months, whose eye had just been needled for cataract, when cyanosis appeared, and respiration and circula-

tion quickly failed. The thymus weighed 1 oz. and the lymphatic glands were everywhere enlarged, but the spleen was quite normal.

In thirty cases of death from this condition during or after anaesthesia, examined by Dr. McCardie, the anaesthetic used was in seventeen chloroform, in six ether, in five a mixture of chloroform and ether; two were doubtful cases, and the anaesthetic was nitrous oxide. In the first nitrous oxide case the patient was an anæmic girl, aged 18, who died at the end of a dental operation after five teeth had been extracted.

Under local anaesthesia two deaths have been recorded, the first by Horoszkiewicz. The patient was a woman, aged 30 who was operated upon for a small cyst in the neck. She was frightened and sure that she would not survive the operation. Altogether .075 gramme tropacocaine was injected locally. At first the patient laughed at her fears then suddenly became pallid and convulsed. The operation was stopped until the patient was better; then the neck was extended and the operation begun again. Respiration then stopped, her pulse became small, and death quickly followed. Post mortem were found typical signs of status lymphaticus. The quantity of tropococaine was not enough to produce poisoning in an ordinary patient, but it was thought that death was due to "physic insult" or to lessened resistance to tropacocaine.

The second case was recorded by Nettle. His patient, aged 31, who suffered from Grave's Disease, died fifteen minutes after the end of an operation for extirpation of the thyroid under Schleich's infiltration anaesthesia. Her breathing had previously stopped during operation. Post mortem was found a very large and thick thymus, associated with enormous hyperplasia of the whole lymphatic apparatus.

The average age in 35 cases was 16, the youngest—six months, the oldest—55. Twenty-four of them were under the age of 20. Blake's seven cases were adults. This is interesting, as diathesia is usually one of early life.

Diagnosis. It is most important that this condition should be diagnosed before hand. Escherich says that the condition can be recognised by the following:—Pale thin skin, pasty complexion, a good deal of subcutaneous fat, frequently signs of rickets or scrofula, enlargement of the superficial glands, especially in the neck and axilla, enlarged tonsils, adenoid growths, and a palpable spleen. In addition to the above, I would add that we often observe enlargement of the thyroid, which is said to exist in more than 50% of the cases, and may get still more help from careful examination of the parts inside the upper air passages. We know that the tongue is very richly supplied with lymphatics; so also is the soft palate and uvula. He regards enlargement of the tongue as a very important aid to diagnosis. With regard

to the presence of enlarged tonsils and adenoid growths, one or both of these conditions have been noticed in practically every case of death during anæsthesia in patients of this diathesis. These are not local manifestations, but indicate a tendency to general lymphatic enlargement. Enlargement of the thyroid is a marked feature of a large proportion of cases. Usually low blood pressure will be also present with heart sounds "thin and flappy."

Blood. Paltauf observed a lessening of the amount of hæmoglobin in the blood. Ewing found lymphocytosis in one of his cases.

Rickets is often associated with this condition.

Thymus. Occasionally it is said that the upper pole of the thymus, when much enlarged, may be seen above the sternum during expiration as a pulsating tumor, and it has been palpated also as a soft elastic swelling above the episternum. Percussion, which must be light, and is best done by direct finger percussion over the chest (Hochsinger), will sometimes show extension of thymus dulness beyond the manubrium. By the use of the right graph enlargement of the thymus has been made out.

Spleen. The spleen has often been found so large post mortem that it could obviously have been palpated in many of the fatal cases.

Glands. The mesenteric, popliteal, axillary, and inguinal glands have in some cases felt to be enlarged.

Several pathological conditions are often associated with status lymphaticus. Of these, perhaps, the most important is exophthalmic goitre. It is well known that in Grave's Disease enlargement of the thymus is common. Gierke found enlargement of the thymus mentioned in records of 42 cases of Grave's Disease. He believed that most deaths after operations for this condition occurred in patients in whom the thymus was persistent, and noted the organ was persistent in 18 out of 35 cases of Grave's Disease ending fatally after operation.

Dernine observes that the heart in Grave's Disease is peculiarly sensitive to the influence of fatigue, that its reserve energy is soon exhausted, and that it enlarges. If exophthalmic goitre be associated with status lymphaticus, there is a double reason for heart failure in operations on the thyroid. It is probable that in a number of cases of exophthalmic goitre examined post mortem, though enlargement of the thymus was noted, status lymphaticus was overlooked, and very likely the diathesis is accountable for more than it is credited with of sudden deaths in Grave's Disease. Thus, both in cases of enlarged thymus and enlarged thyroid, the essential factor in a fatal issue may be not the enlargement of thymus or thyroid, but the lymphatic hyperplasia.

Epilepsy. This has been found to be frequently associated with status lymphaticus. Death in the case of anæsthesia is always sudden.

In many cases the heart action has stopped, respiration became superficial and intermittent and the pulse inpalpable. In other cases cyanosis is due to dyspnœa, the circulation quickly following afterwards.

**Pathological.** There is a peculiar predisposition to œdema. There are two theories to account for sudden death. First, the pressure theory and secondly, that which assumes death to be due to toxæmia. In the second theory lymphatism is regarded as the result of the action of lymphatoxins.

**Choice of anæsthetic.** In view of the large proportion of cases in which death has occurred during or after the administration of chloroform, it is evident that ether should be chosen even for the youngest patients and especially for minor operations—given by the open method.

**Treatment.** In the case of white syncope—cardiac massage by the sub-phrenic route if the abdomen be opened, if not, by direct pressure on the under ribs. For blue syncope, artificial respiration for five or six minutes, and if useless, sub-diaphragmatic massage should be done without delay. Dr. McCardie advises cardiac massage within one or two minutes in these cases.

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### MALIGNANT TUMORS OF THE OVARY.\*

By F. A. L. LOCKHART, M.B. and C.M., M.D., Lecturer in Gynecology, McGill University, Gynecologist to the Montreal General Hospital and Protestant Hospital for the Insane, Verdun.

**O**VARIAN tumors are divided into those which are cystic and those which are solid, either of which may be either benign or malignant, the latter including the carcinomata, endotheliomata, papillomata and sarcomata. These malignant changes may affect the ovary primarily or attack it from some other organ more or less remote. Time does not permit, however, of a consideration of more than one of these varieties so you are asked to confine your attention to sarcoma of the ovary.

Adami<sup>1</sup> defines a sarcoma, as "a richly cellular tumor of the connective tissue type, the cells being of the vegetative or imperfectly differentiated order." These tumors must have the "clinical significance of infiltrative growth and be possessed of malignant characters," malignancy depending not only on the form of the cell but also upon its origin.

Ovarian tumors are not uncommonly met with, and it was thought in the past that they were not often of a malignant nature but, in the light of more recent investigations, this idea may require to be changed. Cohn<sup>2</sup> found malignant disease of the ovary in 16.6% of 600 cases of ovariectomy performed by Schröder. Leopold found a similar condition in 26 out of 116 laparotomies for ovarian tumors. The whole question

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of statistics depends on the care and regularity with which every ovarian tumor is examined, microscopically, no matter how benign it may appear to be to the naked eye.

Of all of the malignant tumors of the ovary, sarcomata are undoubtedly those, which are the least frequently met with, but this statement is a matter of dispute, authorities differing upon the microscopic characteristics of a tumor necessary for one to pronounce it a sarcoma. Bland Sutton<sup>3</sup>, for instance, claims that almost every solid tumor of the ovary is sarcomatous. This is rather an extreme view to take, but undoubtedly a large proportion of such growths are malignant. When the clinical history is considered along with the microscopic appearances, surely it ought not to be difficult to make a differential diagnosis in the vast majority of cases. Given a rapidly growing solid tumor of the ovary where you can exclude carcinoma and endothelioma, you may feel quite safe in making a diagnosis of sarcoma. At Wartzburg's Frauenklinik<sup>4</sup>, twenty cases of sarcomata were found in 295 ovarian tumors. Four of these were seen in children under twenty years of age, and of these four, three were of the round celled variety.

My own experience in ovarian tumors has not been very large, only 65 having been operated on by me during twenty years' practice, but of these, no less than fourteen were of a malignant nature. There were divided as follows:—

Sarcomata :	
Right ovary .....	3
Left ovary .....	2
Double .....	2
Carcinomata .....	5
Mixed sarcoma and carcinoma .....	1
Papilloma malignum .....	1

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This shows an unusually large proportion of sarcomata, but the specimens have been examined and my own diagnosis confirmed by the various pathologists of the Montreal General Hospital, and, I regret to say, by speedy recurrence in a number of cases. In two of these, the uterus was also affected, once primarily and once secondarily.

#### *Varieties.*

Ovarian sarcomata are divided into cystic and solid, each of which is again classified according to its histological structure. F. Taylor<sup>5</sup> collected ten cases in which sarcomatous tissue had infiltrated the wall



of ovarian multi-locular cysts. The cells forming this infiltrating tissue were as follows, viz. : 3, spindle-celled, 3 mixed round and spindle, 1 large round, and 3 in which the form of cell was not mentioned. In the two cases reported by Pffannenstiel and Simoff, both sarcoma and carcinoma were seen in the same tumor. Melanotic sarcoma is the rarest form of disease affecting the ovary when it is primary, being much more often observed, comparatively speaking, in the external genitals. This is probably due to the fact that pigment is normally present in that region. Out of six cases of melanotic sarcoma of the ovary collected by Basso<sup>6</sup>, only one was primary.

In my own series, one was of the small round celled variety, in one the cells were oat-shaped (in this case there was also carcinoma present), and five were composed of spindle-shaped cells. One of the latter was a true solid fibro-sarcoma. Five of the tumors were primary, of which one was that one associated with carcinoma, and two were secondary, both ovaries being affected in only one instance.

The size of these tumors varies from that of a cricket ball to one almost filling the entire abdomen. In one of my own cases, the growth measured 74 x 67 cm. in circumference and weighed 5,140 grammes.

The tumor is glistening on the surface and of a bluish-white congested appearance and somewhat mottled. The vessels running over its surface are congested looking and numerous. It is usually lobulated and of an irregular consistence, feeling dense and solid in some spots while in others it is soft. The wall is, as a rule very friable, allowing a soft, dull-looking, brain-like substance to escape. When, however, the growth is of the fibroid variety it is very hard, but here also it is apt to be friable.

#### *Symptoms.*

In the earlier stages it may have very few symptoms but these soon appear.

It has little or no effect upon menstruation, but when this is affected the flow is increased in amount and becomes more or less painful.

It apparently affects multiparæ and nulliparæ equally and may be met with at any age. The very young, however, are especially susceptible to it. Doran seeing it affecting both ovaries in a seven month foetus. Sutton reports sixteen sarcomata out of sixty ovarian tumors in children. The first period of exceptional liability ends at puberty, and the second extends from 25—45 years. While it is usually bi-lateral in children, it is more often uni-lateral in adult life.

Pain may be an early symptom. This may simply be a "down-bearing" sensation or sharp and lancinating in character, this being the more common. In my own cases, pain induced the patient to seek advice

in five cases, while it was not complained of at all in two. In one, the first symptom was incontinence of urine, but in this case the ovaries were secondarily affected, the vesical irritation being due probably to disease of the fundus uteri. One patient who had a very large tumor only complained on admission into hospital of nausea and swelling of the abdomen, the case strongly resembling at first glance the pathological vomiting of pregnancy.

The woman usually first comes complaining of abdominal swelling which rapidly increases in size. She is weak and more or less emaciated, although it is surprising how well some of these patients retain their flesh until comparatively late in the disease. Usually cachexia is marked before the sarcoma has been present many months. A thin leucorrhœal discharge is frequently present although there is nothing which is characteristic of the disease to be observed about it either microscopically or by the naked eye.

The growth very frequently produced ascites, which is discovered in the usual manner. It also frequently exerts pressure upon the bladder and rectum, thus interfering with the functions of either of these organs. It may infiltrate the broad ligaments and cause such constriction of one or other ureter as to prevent the descent of urine into the bladder and so cause hydronephrosis. The same may take place as regards the rectum, thus causing death from obstruction of the bowels, as took place in the recurrence in one of my own cases.

Glandular enlargement is not marked until late in the disease, but secondary deposits may form in the lungs, giving rise to the symptoms of pulmonary consolidation.

#### *Treatment.*

The only effectual method of treating these growths is to remove them in toto. Not only should the diseased ovary itself be taken away but the uterus and the appendages of the opposite side, whether they present any evidence of disease or not, as if one ovary is left it becomes affected sooner or later in the great majority of instances. The removal should be effected through an incision in the anterior abdominal wall, and one ought to exercise the greatest possible care to remove the diseased organ entire and not to allow of the escape of any of its contents into the peritoneal cavity, as this would be sure to be followed by a speedy recurrence.

While the above is the only method of treatment which holds out any degree of hope in these cases, it is quite within the bounds of possibility that some form of radio-therapy will be found which will replace it or at least may be used after operation to prevent recurrence. These

growths are deep-seated, and while both Roentgen rays and radium are being used with some success in the treatment of superficial malignant disease, it is very doubtful if they are of the slightest use in those affecting the deeper structures, although cases have been recorded where they were beneficial. For example, M. Kretschner<sup>7</sup> collected ninety cases of sarcoma treated by the application of the Roentgen rays. Of these tumors, some were in the ovary and one large round-celled sarcoma of the ovary entirely disappeared after six months' treatment. The tumors which are most susceptible to this method are those of the quickly growing round-celled variety, which are rich in blood vessels.

Serums, such as Coley's, are unreliable but may be tried in inoperable cases, as some practitioners claim to have obtained good results from their use.

#### *Prognosis.*

If the growth is not interfered with, the patient dies from rapid spread of the disease or else of some complication induced by it, such as obstruction of the bowels. It attacks neighboring structures before those which are more remote, the peritoneum, omentum, stomach, pleura, lungs, uterus liver, diaphragm and kidneys being the order of frequency with which they are affected.

Even after removal of the apparent seat of disease, one is not safe as we can only expect to have from 25% to 50% of the patients remain free from recurrence. This is a terribly high rate of mortality and shows that we cannot be too careful to make a clean sweep of the uterus and both sets of appendages intact, together with as much of the broad ligaments as possible in cases where we have the slightest cause to consider the tumor to be of a sarcomatous nature. I am sorry to say that my own cases have a high rate of mortality from early recurrence. One of the cases was inoperable when first admitted to my ward, the whole of the contents of the pelvis being matted together into one compact mass of sarcoma. In another case, the tumor was cystic and of the spindle-celled variety. It ruptured during extraction, allowing a quantity of brain-like substance to escape into the peritoneal cavity. The patient made a good recovery and left hospital apparently well and free from disease, but died within two months from the date of the operation, the whole pelvis and lower abdomen being filled with sarcomatous tissue. In a third case, the tumor which was cystic and of the small round-celled variety, was densely adherent to the pelvic walls. It ruptured during the separation of the adhesions, allowing of the escape of material similar to that seen in the last case. Local recurrence occurred at once, followed by death from obstruction of the bowels caused by infiltration and pressure just

two months from the day of the operation. A colotomy was attempted but the tissues of the abdomen were too extensively infiltrated to allow of its being successful. The other four patients are alive and well at the present moment, all having been heard from within the last day or two. They were operated on May 3rd, 1903, December 6th, 1905, and September 10th, and November 26th, 1908, respectively, the last two being too recent to be of any value from a prognostic point of view. The nature of the growths in these patients who are still alive was fibrosarcoma in three (two cystic and one solid), and in the other one the cells were oat-shaped and carcinoma was present as well.

Judging from our present knowledge, all ovarian tumors<sup>8</sup> ought to be removed as soon as discovered, and great care should be exercised not to allow of the escape of any of their contents during operation. All should be most carefully examined by an experienced pathologist microscopically, as malignancy is thus often discovered which otherwise would escape notice. If any sign of this is seen, the uterus and ovary of the opposite side should be removed at as early a date as possible, if we would give our patients any chance of cure.

Case 1, Mrs. J. C. æt 51 years, was sent to me by Dr. C. J. Edgar of North Hatley, P.Q., in April, 1903, complaining of pain in the lower abdomen and a leucorrhœal discharge. In 1901, after one year's amenorrhœa, she had hæmorrhage from the vagina for one week. All during the following winter there was a bloody discharge which kept up, off and on, until admission to hospital. This discharge was not foul smelling but occasionally had a "stale" odour. She began to have severe pain in the lower abdomen in December, 1902, for which she was curetted. There had been some loss of weight during the last six weeks. She suffered from indigestion all of the winter and in February, she passed masses resembling pieces of "flesh," and had a great deal of hæmorrhage at the same time.

Her pulse, on admission, was small in volume, regular and beat 115 to the minute.

Examination showed the abdomen to be full and tense with the superficial veins of the upper and lower parts distended. There was a large mass to be felt in the right iliac region which was quite tender. Dullness was elicited over the mass, and in the right flank. There was also dullness in the left flank, but this disappeared on turning the patient over on her right side.

The vaginal opening was capacious with a sanguinous discharge coming from it. The os was dilated and filled with blood clot. The cervix was free but fundus was enlarged and lying to the front, and its mobility was impaired. A mass, the size of a large orange, was felt through the right fornix.

On April 13th, 1903, the uterus was curetted, the curette removing masses of blood and gelatinous material. The right ovary was cystic and adherent to the small intestines. During the separation of these adhesions the cyst ruptured allowing of the escape of gelatinous contents somewhat resembling the material which was in the uterus. This right ovary, with its tube, was removed and the abdomen closed.

The pathologist reported that the case was undoubtedly one of spindle-celled sarcoma of the right ovary and early recurrence was expected, but her Doctor writes me that the patient is still perfectly well, and able to do her own house work.

Case 2, Mrs. J. W., æt 59, was recommended to me by Dr. T. O. McLaren of Lancaster, Ontario; entering hospital on December 5th, 1905. She was complaining of bearing down pains and a growth in the abdomen, neither having been observed until two months previously. There had been no loss of flesh, and her daughter states that her mother had begun to look more "anxious" than she had done before. The pain was paroxysmal in character and at times was quite severe. The patient was well nourished and gave a good family history. Her menstrual history was negative, the menopause having come on when she was 58 years old. She had given birth to eight full term children, the last having been born 23 years ago.

She had increased frequency of micturition during the day for some time and her bowels were irregular, the fæces at times containing blood.

On making a vaginal examination, the fundus was felt to be small, retroverted and freely moveable. In front of it was a round, hard, tumor, the size of a small cocoa-nut, apparently connected with the uterus by a narrow pedicle.

The abdomen was opened on December 6th, 1905, and a quantity of fluid discovered in its cavity. The tumor was found to be one of the left ovary. It was very friable, so that it could not be drawn out of the abdomen with volsellum forceps as these tore out each time it was attempted. Both sets of appendages were removed although the right ovary appeared to be healthy.

Dr. Gillies reported the tumor to be a spindle-celled sarcoma.

The patient made an uneventful recovery and was reported well one week ago.

Case 3, C. W., æt. 21, and unmarried, was seen by me in consultation with Dr. W. J. Prendergast in November, 1906.

She complained that six weeks previously, she was bending forwards when she was seized by a sudden sharp pain in the lower abdomen on the left side. For some time she had felt what she described as a hardness in the abdomen, and was able later to make out a distinct swelling in the left side low down. The pain in the side grew steadily

worse, and she began to feel a weakness in her back which soon became so severe as to prevent her doing any work. Her doctor noticed that the mass was growing rapidly in parts structures resembling spindle-celled sarcoma, in other parts there was a definite alveolæ arrangement, made up of cells resembling epithelial cells. The whole picture was that of a tumor presenting sarcomatous and carcinomatous structures.

The patient made an uneventful recovery and there was no sign of return of the disease when she left hospital at the end of four weeks, but on March 20th, I again saw her and the whole of the lower abdomen was filled with a return of the growth from which she died a few days later. No autopsy could be obtained.

Case 4, Mrs. F. C., æt. 40, was recommended to the ward by Dr. Patrick. She complained of incontinence of urine and a tumor of the abdomen. The incontinence began to manifest itself in October, 1907, and in December, a tumor was discovered in the lower abdomen. She now began to have an aching pain in the abdomen, her bowels became very constipated and she had an attack of "inflammation of the bowels," this being relieved by emptying the rectum. For the four weeks before entering hospital she had a thin, sero-sanguineous discharge from the vagina, but this had no odour. She lost six pounds in two months.

Although married for eighteen years, she had only been pregnant once, this terminating in a miscarriage at the 5th month. Otherwise her menstrual history was unimportant.

On examination of the abdomen, a mass rising  $1\frac{1}{2}$  inches above the pubes, firm and fixed was felt to the left of the median rapidly. There was no vomiting but her pulse and temperature were above normal. Her previous health had been good and she attributed her present trouble to straining and reaching at the key-board of the telephone exchange at which she worked.

Her menstrual history was absolutely negative.

Examination of the heart and lungs revealed nothing abnormal.

The centre of the lower abdomen was distended by a regular, firm, rounded mass, which was tense and resembled the pregnant uterus at the seventh month. There was no evidence of fluid in either flank and the tumor was slightly mobile. The hymen was intact and the cervix was soft and pushed well up against the pubic bone. The os was patulous, but the fundus could not be differentiated from the mass in the lower abdomen.

A diagnosis of an ovarian tumor with a twisted pedicle was made and the abdomen opened on January 19th, 1906, the uterus and both sets of appendages being removed with little difficulty. The tumor consisted of the diseased left ovary and its pedicle had two distinct twists on itself. It was somewhat adherent to the pelvic wall and ruptured

during the separation of the adhesions, allowing shreds of the wall to remain attached to the wall of the pelvis. These shreds were scraped away as thoroughly as possible.

The tumor measured 16 x 14 x 9 inches. Its surface was irregularly lobulated and had the tube passing over it. On section it was pale, showing firm and softened areas. Sections showed in line. To the left of this again a mass the size of a golf-ball, which was firm, rounded and painless, could be felt. The cervix was small, soft and pushed to the front. An ovoid mass, the size of a large hen's egg was felt through the posterior fornix. This came down to within 1½ inches of the vaginal orifice, was continuous with the uterus and of varied consistence. The fundus was small, anteflexed and slightly mobile in a vertical direction. On inspection, this vaginal mass was seen to be of a purplish color and to have three perforations on its surface through which material resembling blood-clot protruded into the passage. In fact, this mass strongly resembled the appearance of a vaginal nodule in chorioepithelioma.

On the 17th of January, the abdomen was opened but everything was found to be so matted together that it was closed without making any attempt to removing anything except a few clippings for the pathologist, their examination revealing fatty tissue and round sarcoma cells.

In the following March, she was readmitted with signs of pulmonary involvement, but these cleared up in a short time and she was again discharged. She died in a few weeks at her own home and no autopsy was permitted.

Case 5, M. G., æt. 26, single, was sent to the Montreal General Hospital by Dr. Fraser, of Georgeville, P.Q., complaining of "stomach trouble" and a growth in the abdomen. This had started on December 20th, 1907, the stomach being irritable and bowels very constipated. She was compelled to take to her bed in a few days and only left it to come to the hospital. There was no pain, however, at any time.

Her menstrual history was negative, she being regular every month with pain for the two days before the onset of the period. She was quite emaciated and anæmic.

Examination of the lower abdomen revealed a fullness in that region but no rigidity. A hard, nodular mass could be felt rising out of the pelvis as high as the umbilicus. It was firm, tender and inclined slightly to the left of the median line. The tumor did not fluctuate nor was there any evidence of fluid in the abdomen. The hymen was lacerated and cervix soft. The fundus was small, lying to the front and tender, and attached to it posteriorly was a mass the size of a cocoanut which extended into the abdomen as above described. The whole mass was ovoid and slightly mobile.

On January 13th, the abdomen was opened and the uterus and both sets of appendages were removed. The tumor was affecting the right ovary and was densely adherent to the sides and wall of the pelvis. In separating these adhesions, the capsule was torn allowing of the escape of some mucoid, gelatinous material. Several areas of the peritoneum were infiltrated by the disease. During the separation and removal of the tumor, the right ureter was divided. Its end was sutured to the lower end of the abdominal incision and the kidney was subsequently removed. On March 8th, there was such an extensive return of the disease as to cause obstruction of the bowels. It was attempted to perform a colotomy but this was found to be impossible on account of the extension of the growth and she died on March 10th.

The pathologist reported that both ovaries were affected with sarcoma of the small, round-celled variety, showing numerous mitotic figures.

Case 6, Mrs. M. S., æt. 37, entered the Montreal General Hospital on August 25th, 1908. She complained of a tumor in the abdomen and pains in the lower part of the abdomen. This began a year and a half ago with soreness and pains in that region, especially on the right side. The abdomen soon became enlarged and increased in size until seven months before admission since which time the patient thinks that it has remained stationary. She had aching pains in the back and sharp pains in the right side. There was tenderness over both sides, especially the right. Her bowels were regular and there was no loss of flesh.

The patient had given birth to five full term children and her periods were regular but scanty. Lost two sisters and one brother from pulmonary tuberculosis. Her heart, lungs and kidneys were healthy, but there was some slight obstruction to the stomach-tube at a point at the level of the cricoid cartilage but there was no evidence of ulceration at that point. There has been some difficulty in swallowing for six years but none of late.

Examination showed the lower part and sides of the abdomen to be full and rounded and the sides were tender. A firm, elastic freely moveable mass was felt in the above situation. A large firm mass was felt filling up the posterior fornix. This was continuous with the mass in the abdomen which extended to the level of the umbilicus.

On the 10th of September, 1908, the diseased ovary with its tube was removed by abdominal section, there being no complication. It did not appear to be malignant so the appendages on the opposite side were not removed. The patient made a good recovery and is still in perfect health.

The pathologist made a diagnosis of fibro-sarcoma.



Case 7, Mrs. C. E., æt. 49, was recommended by Mr. McKee, of Dansville, P.Q. She complained that her abdomen was distended, this having been first noticed six weeks previously, and having increased very rapidly since then. She had lost a great amount of flesh in the previous four weeks and was very emaciated on admission, presenting the typical "facies ovariana." There was pain in the left iliac region and above and to the left of the umbilicus. Her family history was negative and her own previous health had been good.

Her periods had been regular and painless, and the menopause had come on six months ago. She had given birth to eight full term children. There was no leucorrhœa.

The whole of the lower abdomen was distended by a hard ovoid swelling. This extended from the pelvis to just above the umbilicus on the left and for 30.5 cm. on the right, the circumference of the abdomen at the level of the navel being 89.5 cm. Between these two points there was quite a sulcus. There was dullness in the right flank but none in the left. Nothing of importance could be made out per vaginam.

On November 26th, 1908, the uterus and both sets of appendages were removed through the abdomen. The tumor felt soft and cystic so an attempt to reduce its size was made by thrusting a trocar into it but only a little thick, mucoid fluid came away. The surface of the tumor was very congested and hæmorrhagic. There was some free fluid in the peritoneal cavity.

The patient made an uninterrupted recovery and remains well at present.

The tumor was the diseased right ovary and weighed 5140 grms. (13 lbs.) It measured 74 x 67 cm. On section, it was seen that there were numerous hæmorrhagic areas in its substance, while at other portions it was of a dirty grey color. Several cysts were cut across. These contained a bloody fluid.

Microscopically, the sections are seen to be made up of a dense cellular mosaic with no arrangement of the individual elements. The cells are distinctly "oat-shaped," have a round or slightly ovoid nucleus and numerous mitotic figures are present. Numerous dilated lymph vessels and also blood vessels with very thin walls, consisting of merely one layer of endothelial cells. In other sections the arrangement of cells is distinctly carcinomatous. There is what appears to be a connective tissue matrix in which are inlaid irregular columns or masses of intercommunicating epithelial cells. These cells are large, epitheloid in character, contain an ovoid vesicular nucleus and are rich in protoplasm. Mitotic figures, although present, are not numerous.

Diagnosis was tumor of the ovary, containing both carcinoma and sarcoma.

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## THE LARYNX IN TONE PRODUCTION.\*

By T. ALEXANDER DAVIES, M.D.

WILLIAM Byrde, in the sixteenth century, wrote, "There is not any music of instruments whatsoever compared to that which is made of voices, when ye voices are good and ye are well sorted and ordered."

But long before Byrde, was the importance of voice production recognized. The ancient Greeks considered the cultivation of the voice an essential part of the education of every student, and believed it to be requisite to health. When we read of the elaborate system of vocal training established at Athens which produced such men as Demosthenes and Cicero, we must admit that this question of voice production is retrogressive. So comprehensive was the discipline for the formation and improvement of the voice among the Athenians, that no less than three different classes of teachers were employed for this purpose. The strengthening of the voice and the extension of its compass was allotted to the first class. The second class was for the purpose of improving the quality "so as to render it full, sonorous, and agreeable. Intonation and infection was left to the third class who were considered finishing masters.

The question, "How is tone produced by the vocal organs," is still unanswered, notwithstanding the elaborate experiments and investigations of Helmholtz, Garcia, Czermak, Turck, MacKenzie, Brown, Behnke and others. It is just this open question that permits of such widely

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\*Read at the Toronto Academy of Medicine.

different views in the cultivation of the voice. Says Dr. Frank E. Miller, of New York, writing in the *Musician* of Boston last month, "In review of the vocal works collected in repositories of the character of the *Lennox*, the *Scribner*, and the *Astor Library* there are no less than seventy authors who claim to have a special method of voice culture, the latest surpassing all others in its correctness." Thousands of dollars are thus spent annually in the study of empirical methods, the nomenclature alone of which resembles the diverse tongues of the Tower of Babel.

An eminent teacher says, "Voice culture should not concern itself with direct tone production; it should rather concern itself with the loosening up of the different parts of the vocal mechanism to the point of automatic flexibility and agility; then it should train the mind to a correct conception of the kind of tone and voice for which a given singer is predestined by nature." In short, voice production is a mental process expressed through the yielding instrumentality of the larynx.

In a recent sketch of Calve's career, published in the *Figaro*, Paris, she is quoted as saying that she did not become a real artist till she forgot she had a beautiful voice and thought only of the proper expression the music demanded.

Considerable progress was made in anatomy and physiology in the 16th and 17th centuries, but it was not until the middle of the 18th century that investigations were made on the voice producing apparatus of men and animals. Important experiments were carried out by Ferrain in 1741, Kempelen in 1791, and Lehfeldt in 1835, who was the first to observe that the chest voice is formed by the vibration of the vocal bands through their entire thickness, and that in *falsetto* the vibration is limited to the thin, inner edges of the ligaments. Magendie in 1838, made the important discovery that the first and indispensable condition of tone production is the approximation of the pyramids. He also observed that the pitch was higher or lower according to the ligaments vibrating only partly or in their entirety. A number of interesting experiments were made in Berlin in 1839 by Johannes Mueller, who prepared an excised larynx in a most ingenious manner. He observed that the more perfect the approximation of the vocal ligaments, the easier it was to produce a satisfactory tone; and that if the thyroid is pushed backward and upward, the vocal ligaments are relaxed and produce the lowest tones of the bass voice. He also observed that the pitch of the voice is independent of the length of the vocal passages. The force of the blast, he noted to have an effect on the pitch, being raised by increasing the power of the blast.

The first account of a laryngoscope was given in the *Mercure de France*, in 1743, by M. Levret, a celebrated French accoucheur of highly

inventive genius. It consisted of a plate of polished metal which reflected the luminous rays in the direction of the larynx and at the same time received the image of the larynx on its reflected surface.

In 1804, Bozzini of Frankfort-on-Main, invented a speculum having a bevelled end with a mirror so placed that a view of the larynx was obtained. He employed a kind of Priestly-Smith lamp for illumination. Dr. Guy Babington, in 1829, presented before the Hunterian Society in London a "glottiscope, a combination of two mirrors similar to our present laryngoscope. Liston in 1840, used a mirror on a long shank, "such a glass as is used by dentists, on a long stalk." In 1844, Avery used a mirror at the end of a speculum while he used a large circular mirror for the purpose of increasing the luminous power of a candle held near the patient's mouth. About the same time, Warden of Edinburgh, used prisms of flint glass to catch glimpses of the glottis.

Although the principle of laryngoscopy had been known to several men of science, yet their results were of comparatively little value. To Signor Emanuel Garcia, the famous professor of voice culture, fell the honor of showing to the world the real value of the laryngeal mirror. He brilliantly succeeded where all his predecessors had been more or less unsuccessful. He was the first person who conceived the idea of auto-laryngoscopy, and in 1855, presented before the Royal Society in London, a paper entitled, "Physiological Observations on the Human Voice," in which he gave an admirable account of the action of the vocal ligaments in inspiration and vocalization; also some valuable observations on the formation of falsetto notes. The paper was treated with considerable indifference in England, but Prof. Turck, of Vienna, became possessed of the importance of the observations and soon effected a revolution in the investigation and treatment of laryngeal diseases. Prof. Czermak, of Pesth, in 1857, began to use Turck's mirrors with great success, substituting artificial light for the light of the sun, and also making the mirrors of various sizes. To Garcia, Turck, and Czermak then, we owe much for our observations of the Larynx in voice production.

During the last twenty-five years, various observers have been interested in the science of voice production, eminent among them being Dr. Lennox Browne and Prof. Emil Behnke. Much has been demonstrated by them in photographing the larynx during its various movements in producing tone. In making these observations, it is unnecessary and from a physiological standpoint, quite useless to have the singer protrude the tongue. No contortions of any kind are permitted, on account of the intimate connection of the tongue and the larynx, any movement of the former affecting the latter. The important consideration is that the tongue lies flat and the subject experience a sense of muscular relaxation.

In quiet breathing the glottis is widely open, the arytenoids being held apart by the action of the posterior crico-arytenoid muscles, the latter contracting more vigorously on deep inspiration. On attempting phonation, the pyramids are brought rapidly together by the action of the arytenoideus transversus and obliquus and their vocal processes rotated inward by the action of the lateral crico-arytenoideus. The external thyro-arytenoid also takes part in this sphincter action. It will be noted that the ventricular bands in a state of health, never meet in phonation. The vocal ligaments having met are struck by the air blown against them from below and being elastic, they yield, allowing themselves to be forced upwards. A little air is thereby set free and the pressure from below diminished in consequence of which the vocal ligaments resume their former position and even move a little more downwards. The renewed pressure of air once more overcomes the resistance of the vocal ligaments which again recede as soon as another escape of air has taken place and this process is repeated in rapid and regular succession. This vibration of the ligaments may be termed the primary vibration, while the vibration of the column of air may be called the secondary. It is the result of these two vibrations we call vocal tone. This is the original sound but not the human voice in its entirety, for this is markedly influenced by the condition of the adjacent resonating chambers such as the chest, the ventricular pouches, pharynx, epipharynx, nares, accessory sinuses and mouth. What makes a voice rich and grateful to the ear is the abundance of the overtones or harmonics. It is the overtones which give to a voice its color or timbre.

The movements of the larynx in the production of the different pitches as seen by the laryngoscope, brings us to that much debated question of The Registers of the Voice. What is a "Register"? Behnke describes it as a series of tones produced by the same mechanism; and Sir Morel Mackenzie as "the series of tones of like quality, produced by a particular adjustment of the vocal cords: that is, the vocal cords being set in one position, it is the actual tones that can then be sounded without any change of position or quality. There is great diversion of opinion as to just how many registers there are in the human voice, but five seems to be recognized now by most authorities as a common basis.

Griffiths, of Liverpool, says, "In the days when two registers were acknowledged, the only singers who attained eminence in their profession, were those with beautiful voices of long compass. When singing became a popular art, and the individual with modest voice and compass was wishful of imitating the more highly favored artist, teachers were compelled to take notice of increased difficulties of voice and method, the two registers ceased to fulfil academic requirements and the three registers of necessity became common law. Later, the element of sensa-

tion of sound being no longer descriptive enough for the general body of vocalists, the definitions thick, thin, and small, were found to convey to the student's mind a clear cut picture which he could grasp and appreciate. Once it was deemed advisable to alter and improve existing modes, the march of progress became decisive and rapid and was confined to no particular school. It again became necessary to reconsider the distribution of these register areas and a further subdivision of the two lower registers was instituted. Accordingly, present day teaching includes in its category, the registers of the lower thick, upper thick, lower thin, upper thin and the small. These five registers cover all voices from bass to soprano, the former having a preponderance of the lower four and the latter, the upper four."

When a bass sings his lowest tones, the larynx is usually partly obscured by the epiglottis, but in favorable cases, it can be seen that the posterior points of the arytenoids are closely approximated and that there is a slit of an elliptical shape between the vocal ligaments, which appear as two very broad white strips vibrating throughout their entire length, breadth, and thickness. On ascending the scale, it will be seen that the vocal processes of the arytenoids, point more and more inwards till at last they meet. The vocal chink by this time has changed from an elliptical to a linear shape, while between the pyramids there is a little triangular space which points toward the front and gets smaller as the singer goes up the scale, the space quite disappearing at A. in the fifth bass line. This space may close earlier or in some baritone and tenor voices, is never visible at all. One also observes that the higher the pitch, the more the epiglottis rises, thus giving a much better view of the mechanism. The crico-thyroid muscle has a prominent place in this mechanism, for by its contraction, the vocal ligaments are put on the stretch and the anterior crico-thyroid space is obliterated, which space is widely open in the production of low tones.

If we compare those tones of the soprano, contralto and tenor, which are in common with the bass, we find them all produced by precisely the same mechanism, that is by the vibration of the vocal ligaments throughout their entire length, breadth, and thickness. The vibrations of the vocal ligaments at the higher pitches are more rapid and therefore not so full and loose as in the lower pitches, but they are nevertheless quite apparent. So then all voices up to F in the first treble space are produced in the thick register. This is about the upper limit of the bass voice and is the average extent of the thick register. If now, without a change in mechanism, a tenor, contralto, or soprano goes on singing beyond this, a great strain would be experienced, and in order to avoid this, the change in mechanism takes place, in other words, they must sing in a different register.

The lower thin register is now used. In this, the epiglottis is raised still more, so that one gets a complete view of the larynx. The vestibule is notably longer and narrower and the ary-epiglottic folds thinner. The ventricular bands are nearer each other and the ventricles are less noticeable. The vibration of the vocal ligaments is confined to the thin inner edges. This thinning action is brought about by the contraction of the outer vertical fibres of the thyro-arytenoid muscles. By transillumination through the thyroid in lean persons, this alteration in the thickness of the vocal ligaments during the mechanism of this register can be readily demonstrated. The vocal ligaments are translucent in the thin register and more opaque in the thick register. A sense of relief is experienced in changing from a strained thick register to the natural range of the thin register. Further more, the anterior crico-thyroid space which was obliterated in the upper tones of the thick register, will now be observed to have reopened, thus relaxing the tension on the vocal ligaments. In this lower thin register, we observe that the slit between the vocal ligaments is linear and that if the pitch is still further raised, the ligaments are evidently stretched and this is also corroborated by the gradual disappearance again of the anterior crico-thyroid space. This takes the voice to C in the third treble space, about which point in order to avoid forcing and straining, another change in mechanism must be effected. This brings us to the upper thin register, in the mechanism of which the slit between the vocal ligaments assumes an elliptical shape. This elliptical slit gradually decreases in size as the contralto and soprano sing from third space C to F. on the fifth treble line. This register can be used by tenors as well in the production of a few tones just above the thick register. But such tones are not satisfactory and constitute what is known as the "falsetto voice." Falsetto tones can also be produced by tenors, that are more under control and more satisfactory, by using the mechanism of the lower thin register.

The fifth and last change, the small register, takes us to the highest part of the soprano voice commencing with F sharp on the fifth treble line. The mechanism consists in the formation of an oval orifice in the front part of the glottis which decreases in size the higher the pitch, the posterior part of the vocal ligaments being approximated so closely that the slit is hardly noticeable. This part of the ligaments remains firmly fixed while the anterior portion vibrates so rapidly that the outlines of the oval orifice are considerably obscured. This peculiar mechanism is brought about by the action of certain fibres of the thyo-arytenoid muscle which has the power to contract in a great variety of ways.

Foster says, "that in the production of voice, mere dimensions of the larynx, and we might add other natural inborn features serve but as the playground for muscular skill. No laryngoscopist can predicate

the possession of a singing voice of any kind, for the power to sing is determined not by the build of the larynx, but by the possession of an adequate nervous mechanism, through which finely appreciated auditory impulses are enabled so to guide the impulses of the will that these find their way with sureness and precision to the appropriate muscle bundles. The physiological difference between a bass voice and a tenor voice, between a contralto and a soprano, probably lies not so much in the mere natural length of the vocal cords as in the constitution of the nervous and muscular mechanism; experience shews that cords of the same length may in one individual be the instrument of a bass, in another of a tenor voice, or in one individual of a contralto, in another of a soprano. Again, though the "magnificent organ" of a distinguished artist may have certain inborn qualities which lighten the labors of the nervous mechanism, it is the latter which is the real basis of the artist's fame; the former may be so slight or so abstruse as to escape observation, and a larynx the notes of which have charmed the world, may yield through the laryngeal mirror, a picture of the most common place kind.

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#### THE USE OF RUBBER ELASTIC BANDS FOR DRAINAGE.\*

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**D**RAINAGE of wounds is desirable under certain circumstances, among which the following are some of the chief conditions: (a) when a wound is or is expected to become septic at the time of operation; (b) when a cavity in the tissues is left into which blood or serum is apt to ooze and collect. For the above purposes drainage is carried out either by a tube or by a gauze drain or by one or other of the methods described below.

Drainage tubes are made of glass or rubber. The use of rigid glass tubes is not so general as it was at one time, on account of the fact that they have been found to produce pain by pressing on the already injured tissues, and that they prevent the cavity into which they are inserted from collapsing. Rubber tubes are probably the most satisfactory form of drain which we possess. They are used in various sizes and lengths, according to the conditions present. In certain cases their efficiency is increased by splitting them down one side or by cutting holes in them. Oiled silk and rubber tissue make excellent materials for draining wounds, used either in the form of a strip or folded or rolled into a tube.

Gauze, aseptic or antiseptic, is probably used for drainage more than any other material on account of its always being at hand and of

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\*Read at the Toronto Academy of Medicine.



its flexibility. The great disadvantage of using it is that in a great many cases it does not act as a drain; for, either it dries or adheres closely to the surface of the wound thus forming a plug damming back the discharge, or its meshes become impregnated with fibrin and its capillarity is destroyed. It has also the disadvantage of producing considerable pain during its introduction or its removal, to say nothing of the number of granulations broken down by it during these processes. As a result of this irritation sinuses which are dressed in this way daily and presumably drained by a strip of gauze, are kept from healing. Small loose threads from the end of a gauze strip are now and again responsible for the persistence of a sinus. Gauze only continues to act as a drain so long as it is kept thoroughly moist either by a profuse discharge or by the frequent changing of moist dressings to the surface of the wound. In private practice and in out-patient work the proper degree of moisture is extremely difficult to be always sure of from the time of one dressing until the next, and then, as was stated above, if it is not kept moist the gauze no longer acts as a drain. In spite of these facts gauze strips continued to be introduced into abscess cavities and sinuses with the idea that they are draining them. All of you can recall cases in which, when you have removed the dressing, you have found it dry, and on loosening it and removing the gauze strip from the wound, it has been followed by the escape of a greater or smaller amount of puss which has been dammed back into the deeper part of the wound. It is needless to say that such a retention of purulent exudate delays the healing of the wound as well as increasing the toxæmia and suffering of the patient. Most of the above disadvantages are overcome by the use of drainage tubes, or in small wounds by a strip of oiled silk or a bunch of silk-worm gut or horse-hair sutures.

The ordinary elastic band occurred to me as a convenient method of carrying out the principles of drainage. It is made of rubber, a material which has been used to such great advantage for drainage in the form of tubes. Through the kindness of Dr. Primrose and Dr. F. N. G. Starr, to whose services in the General and Children's Hospitals I am attached, I was enabled to put this method of drainage to a practical test. It was applied in all cases in which drainage was required, with the exception of those cases in which a tube was still considered advisable. From the test cases, of which a list is appended, it was learned that the discharge was taken up into the dressing, practically none of it being dammed back into the cavity as the result of drying around the mouth. The discharge was found to run up between the approximated surfaces of the two layers of rubber, as well as between the outer surface of the band and the surrounding wall of the sinus. If the smooth surfaces of two impermeable bodies are placed in contact,

and one of them is put into a solution, the fluid will work its way along between the adjacent surfaces by the action of capillarity, the old example of the fluid spreading out between a coverslip and a slide being familiar to you all. As the approximated surfaces of the bands are always moist with discharge, and the cavity emptied of its contents, it was considered that capillary action was the force which was responsible for the draining of the wounds. This principle of capillary drainage has been used for years by introducing a number of strands of silk-worm gut or horse-hair into the wound. The same principle is also active when a piece of folded oil-silk or rubber tissue is used as a drain. The rubber band, therefore, is only another convenient method of applying this principle.

Among the advantages of the bands that were noted, were the ease of introduction, the absence of pain and the efficient way in which they carried out the drainage. The bands can usually be readily introduced, having sufficient rigidity in themselves to travel down to the bottom of the cavity with pressure on the outer end, although a probe was necessary to overcome the resistance of the tissues and get the band well into the cavity. In all cases in which a strip of gauze had been used previously, the freedom from pain during and after the introduction of the band was what the patient remarked upon. At the Children's Hospital the small amount of pain in using the bands in contrast with that produced by gauze was the advantage which the nurses who were doing the dressings thought most important. If, therefore, we save our patient's pain by using the bands instead of gauze, it seems to me that for that reason alone, the bands are a better method of treating our wounds than is gauze. It was found that the pain, which was sometimes produced by a stiff drainage tube against the bottom of the cavity, was relieved by replacing the tube by a band. The flexibility of the bands also allows the cavity to collapse, and in this way hastens the healing process. On account of the flatness of the band and the small amount of granulation tissue that forms in a collapsed cavity, the resulting scar with its subsequent contraction will be small.

Some of the practical advantages of rubber bands might also be mentioned. They are cheap and easily obtained. They are made in all sizes from a small strand-like band up to those an inch in width and six or eight inches in length, and therefore do not require to be cut or prepared for the wound. The size of the band selected will vary according to the depth and capacity of the cavity, the length of the wound into the cavity, and the amount of discharge from it. They can be readily sterilized by boiling, and kept ready for use in a bichloride solution. They can be prevented from slipping into the wound by leaving the end outside long or by putting a small strip of dressing through the outer loop or by a safety pin.

In view of the above facts, rubber elastic bands seem to me to be a very convenient and sufficient method of draining wounds. They are more easily and painlessly introduced and harm less newly-formed granulation tissue than does gauze, as well as draining more satisfactorily, and therefore should replace gauze in a great many of the cases in which it has been used in the past. As to their use in relation to that of the drainage tube, I am not yet in a position to say anything more than that in many cases with large sized cavities and very profuse discharges, the tube is unquestionably the best form of drain; but still a number of cases in which the bands were tried have showed me that many medium sized cavities are just as efficiently drained by a band as by a tube.

The conditions in which I consider that rubber bands will carry out drainage satisfactorily are abscess cavities, acute and chronic sinuses, operation wounds of medium size in which bloody oozing is expected, e. g., thyroidectomy, or in which the wound is expected to become septic.

The following is a list of the cases in which drainage was carried out by the use of rubber bands, and will illustrate to some extent the kind of case in which they have proved successful:—

Toronto General Hospital:

1. M. P. Carcinoma of glands of neck. Infiltrating muscle, deep fascia and vessels. Cavity drained through stab drain.
2. J. S. Appendiceal abscess. Two weeks' standing. Drained through flank. At first with tube and later with band.
3. J. P. Appendiceal abscess. Drained through flank.
4. B. W. Appendiceal abscess. Drained with band. Fistula remained open until appendix removed some weeks later.
5. C. H. Osteomyelitis of femur.
6. M. C. Ulcer of leg with diffuse cellulitis.
7. C. C. Appendicectomy. Gangrenous appendix. Tube replaced on second day by a band, which was left out after four days. At end of two weeks could not have told that wound had been drained at all.
8. P. K. Thyroidectomy. Cavity drained through stab drain. Dressings saturated with blood when changed after 48 hours, with no collection in cavity.
9. G. M. Compound fracture of humerus. Cut down upon and plated. Drained with band. Dressings soaked with blood. Wound healed by first intention.
10. A. T. Empyema. Resection of rib. Drained at first with tube, but later with band. Relieved pain which was caused by pressure of tube.

11. G. S. Scalp wounds. Drained with band.
12. T. M. Tuberculous caries of metatarsus.
13. H. W. Tuberculous inguinal gland, with softening and breaking down.
14. H. B. Appendiceal abscess, sub-phrenic abscess, and pyaromic abscess on arm and side.

15. R. V. Flexor tendons cut at twist. Tendons sutured.

16. M. J. Cellulitis of hand and forearm.

Miss. Appendicectomy. Wound swollen with sero-purulent on 6th day after operation. Band introduced and swelling and discharge all disappeared in 24 hours.

Hospital for Sick Children :

17. A. W. Osteomyelitis of tibia.

18. M. C. Tuberculous osteomyelitis of tibia.

19. L. S. Cellulitis of foot with rarefying osteitis of tarsus and metatarsus.

20. M. R. Acute suppurating adenitis of neck.

21. G. K. Tuberculous adenitis of neck.

22. A. M. Infected scalp wound and olecranon bursa.

23. H. L. Acute infective arthritis of knee. Drained at first with tubes, and after first few days, with bands.

24. W. T. Acute suppurating periostitis with osteomyelitis of tibia.

25. Osteomyelitis of femur with spontaneous fracture. Femur wired. Tube replaced by band after five days. No subsequent collection of exudate and good union resulted.

26. W. H. Cellulitis of foot and leg.

27. D. B. Umbilical fistula. Plastic operation. Wound infected. Drained for few days by band. Closed rapidly.

28. Osteomyelitis of humeros; old discharging sinus rapidly healed with a band drain.

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## CURRENT MEDICAL LITERATURE

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MEDICINE.Under the charge of A. J. MACKENZIE, B.A., M.B., Toronto.  
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## FRESH AIR IN THE TREATMENT OF DISEASE.

At the last Annual meeting of the American Pediatric Society, Dr. E. E. Graham, of Philadelphia, and Dr. W. P. Northrup, of New York, presented two interesting papers on Fresh Air in the Treatment of Disease, which led to considerable discussion. The following constitutes the brief report of these papers and the discussion which followed their reading.

Dr. Graham began to use the fresh air treatment eight years ago in the children's ward of the Philadelphia Hospital. He noticed that the young infants, mostly foundlings, failed to do well in hospital life, while the same type of infants in private practice almost without exception did well. Believing that the so-called "hospitalism" was nothing but lack of fresh air, he ordered these children to be placed for two hours each day on the fire escapes, though it was the month of January. He noticed very satisfactory results of this treatment.

During the last three years all severe cases of broncho and lobar pneumonia in children of all ages have been subjected to fresh air treatment. Typhoid cases are treated in the same way. The author states that in private practice he makes parents keep their children out in the open air as much as possible. Winter and summer, infants under his care have been kept out all day long, simply being brought into the house for the change of soiled clothing, and he states that in that time he has not seen a single injurious symptom result.

The author is enthusiastic concerning the benefits of fresh air treatment, and urges all to join hands in the endeavor to secure open squares, to indorse roof gardens, and to teach the importance of deep breathing.

Dr. Northrop dwells on the importance of open air, that is, fresh, flowing, out-door air.

He has noticed that when the New York Health Department first began to put out the New York tuberculous insane in the air to keep that the patient slept soundly and well, as they had never done before. Dr. Northrop has noticed the same thing in feverish children.

With regard to the class of cases, Dr. Northrop states that he does not hesitate to put cases of severe pneumonia, scarlet fever and

several others of the exanthemata, as well as bronchitis, nasopharyngitis and laryngitis, into the open air.

With regard to the practical application of this treatment he states that the dressing and washing of patients should be done in warm rooms, and that patients when once made comfortable can then be exposed for hours to cool or cold fresh flowing air and remain comfortable. The first requisite is that there should be as much clothing below the patient as above. The bedding and patient is so arranged that a large kind of blanket can be so placed as when pinned over the top of the bed it forms a huge bag, in which the patient may move somewhat without the air getting in between the blankets. The important point is that the patient must be made comfortable.

The author states that "open air treatment has killed no one; has injured no one; has helped everyone, and determined a cure in a few," in his experience.

Drs. Caille, Jacobi, Freeman and several others expressed themselves as being in full harmony with the authors. Dr. Freeman stated that measles cases did well on the open air treatment.

The general opinion by those taking part in the discussion was that the public are very quick to take up this treatment.

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#### ETIOLOGY AND TREATMENT OF NEURALGIA FROM A CLINICAL STANDPOINT.

John S. Moreman, M. D., in writing under the above title says:— In general terms, I may say, neuralgia is the outgrowth of any disease process which tends to diminish the vital forces, and to deprive the tissues of an adequate supply of nourishment, or such nourishment as is necessary to keep the tissues adequately in repair. When the tissues are inadequately nourished, their vigor and power of resistance is lost, and the establishment of neuralgia may supervene at any time. We may expect to see neuralgia proceed from a lowered physical power incident upon constitutional syphilis and also upon exposure to malarial infection. In fact, malarial influence is a most potent factor in the production of neuralgia.

The treatment of neuralgia comprehends local applications of various kinds, the administration of remedies for the removal of the cause, remedies for the relief of the pain, and the application of certain surgical measures looking toward the removal of tumors, or any other growth upon which the neuralgia may depend. I employ opium now only when the pain is so intense that death is imminent from its effects. Opium and its alkaloids are supplanted now in my hands by

antikamnia tablets, which relieve speedily and carry no disagreeable after effects. When malaria is the cause, we will have to depend on quinine, which we can give in combination with antikamnia in the form of antikamnia and quinine tablets, each tablet containing  $2\frac{1}{2}$  grains sulph. quinine.

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### ANTISEPSIS OF THE INTESTINAL CANAL.

The griping pain and flatulence which accompany bowel and stomach complaints, particularly during the heated term, are so readily overcome and controlled by the timely administration of one or two Antikamnia and Salol Tablets, repeated every two or three hours, that it behooves us to call our readers' attention to the grand efficacy of this well-known remedy in these conditions. The above doses, are, of course, those for adults. Children should be given one-fourth tablet for each five years of their age. When the attack is very severe, or when the disturbance is evidenced at or near the time of the menstrual period, we find it preferable to give two Antikamnia and Codeine Tablets, alternately with the Antikamnia and Salol Tablets. The latter tablets promptly arrest excessive fermentation and have a pronounced sedative effect on the mucous membranes of the bowels and stomach, and will check the various diarrhoeas without any untoward effect.

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### FREEZING AS A THERAPEUTIC MEASURE.

In the *Medical Record*, April 17th, there is an article by Jackson and Hubbard, describing the method by which this therapeutic agent has been used with success for ten years at the Vanderbilt Clinic. While either liquid, air or carbonic acid may be used, it is the latter in the form of a snow that they have found most convenient, it is prepared by allowing the gas to escape from an ordinary drum such as we see used in the soda-water fountain, it forms in the form of a fine snow in a mould lined with chamois, perhaps about the size of the finger. This can be handled with chamois gloves and is applied to the spot with steady pressure for from a few seconds to a minute and a half, depending on the structure that is to be treated. It has been found the treatment par excellence for superficial epitheliomata, for lupus, for naevus except the port wine kind, powder stains, tattoo-marks, keloid, verruca, warts, moles, etc. It has never been known to do harm, is not painful, and is in every way preferable to x-ray. The scar formed dries up and separates in from one to three weeks.

## GYNÆCOLOGY AND ABDOMINAL SURGERY.

Under the charge of S. M. HAY, M.D., C.M., Gynecologist to the Toronto Western Hospital, and Consulting Surgeon, Toronto Orthopedic Hospital.

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## POSTURE AS AFFECTING THE DISEASES OF WOMEN.

Joel E. Goldthwait, orthopedist, has called attention recently in his address before the Obstetrical Society of Boston, January 26th, 1909, to the great importance of correct body posture both in enteroptosis and uterine misplacements, and in the abdominal and plastic operations undertaken for the cure of pelvic disease. He points out that in the correct upright posture the woman stands with shoulders well back and the center of gravity passing through the trochanters. The back is hollowed in the lumbar region, the plane of the inlet of the pelvis is inclined at an angle of  $60^{\circ}$  to the horizon and the curved axis of the pelvic cavity intersects this plane at very nearly a right angle. Transverse frozen sections of the body show that the abdominal cavity is shallowest opposite the fifth lumbar vertebra, where it represents only a third of the entire thickness of the body. This is because of the forward curve of the lumbar spine.

It is plain that this forward curve of the posterior wall of the abdominal cavity furnishes a shelf for the support of the kidneys and the rest of the abdominal contents, which are otherwise held up by their mesenteries, by resting on each other and by the elastic support of the anterior wall of the abdomen. The frozen sections show well, as pointed out by Dr. Thomas Dwight many years ago, that there is no waste space in the abdomen, each organ being crowded into close relation with its fellow.

The downward pressure and weight of the abdominal contents, shunted forward by the sloping forward curve of the lumbar spine, comes almost entirely on the lower, pubic portion of the anterior abdominal wall, whence it is directed backward towards the plane of the pelvic inlet in a direction practically at a right angle. In other words, the downward pressure exerted by the abdominal contents comes indirectly and not directly onto the contents of the pelvis.

If the patient stands with shoulders and head forward and back straightened, in the slouchy attitude so commonly seen, it becomes evident that the downward abdominal pressure is increased because the anterior lumbar curve has been eliminated by the straightening of the back and the obliquity of the pelvis has been lessened by backward tilting. At the same time the shelves for the support of the kidneys are done away with and thus ptosis of these organs is favored while the shape of the abdominal cavity is altered, becoming more evenly tubular from



above downward. In operating to fix a movable kidney the surgeon should try to restore these shelves by obtaining at the same time, if possible, a correct upright posture of the patient; otherwise his surgical efforts will result in ultimate failure.

Increased abdominal pressure is an important consideration in cases of prolapse and uterine misplacement, and the physician to effect a cure must give attention not only to local treatment and operation, but also to the correction of faulty posture. In incorrect standing the expanding capacity of the thorax is decreased so that respiration is apt to partake more of the abdominal than of the thoracic type, contrary to the usual rule in women; therefore the intra-abdominal pressure is increased. By decreasing the room for the expansion of heart and lungs an incorrect standing posture favors not only disease of the thoracic organs but, by insufficient aëration of the blood, the lessened blood pressure and consequent slowing of the blood current favors congestion and inflammation of the pelvic organs.

As regards the position of the patient during operations, the plastic operations performed with the patient in the lithotomy position involve a good deal of pressure on the thighs by the assistants, who, being in strained positions themselves, as their muscles become tired necessarily put an ever-increasing amount of their weight on the patient's flexed thighs for a considerable period of time, depending on the length of the operation. This practice has the effect of causing excessive flexion of the thighs on the trunk with consequent eversion of the innominate bones and strain on the sacro-iliac joints and tilting of the pelvis so that it takes an unnatural angle with the spine. It is to be remembered that the sacro-iliac joints are true joints and may be wrenched and sprained like other joints. Some of the backache which commonly follows plastic operations is to be ascribed to the traumatism inflicted by the assistants during the operation.

By placing a pad under the lumbar spine the pelvis is supported. The thighs should not be flexed more than two-thirds the full amount and they should not be everted, while assistants may be cautioned to stand up from time to time and not to throw their weight on the patient.

[The Von Ott and the Robb leg-holders protect in no way against extreme flexion or eversion of the thighs. The Clover crutch, on the other hand, prevents eversion but does not guard against too much flexion. Although somewhat in the assistant's way and, therefore, not so popular, the leg-holders attached to most of the operating tables on the market obviate both of these dangers.]

In abdominal operations, particularly when the patient is in the Trendelenburg position, the lumbar region is not supported and a great strain is thrown on the back. The lower back is flattened by carrying

the thighs downward, *i.e.*, back of the long axis of the body, as is done in the Trendelenburg position. There can be no question but that many post-operative backaches are due to this cause. One has only to make trial of the position and remain in it for twenty minutes to be convinced. To obviate the disadvantages and to prop the pelvis and lumbar spine a cushion or pillow, preferably one that supports not only the back bone itself but also the flanks, should be employed in all cases.

[It is also well to place a folded blanket or quilted cotton pad under the pelvis so that the hard and cold surface of the glass table shall not cause trauma and chilling during a prolonged operation. The modern plan of warming the operating table by hot water or electric heaters, although not strictly within the scope of the subject under discussion, is an excellent one. In many instances a cotton pad is sufficient, however.]

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## OBSTETRICS AND DISEASES OF CHILDREN.

Under the charge of D. J. EVANS, M.D., C.M., Lecturer on Diseases of Children, Medical Faculty, McGill University, Montreal.

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### GASTRIC DIGESTION IN INFANTS.

T. Wood Clark in *Amer. Jour. Med. Sciences*, May, 1909, gives a practical review of the literature of this subject, and on this the author bases the following resume:—

From these various investigations it will be seen that many and contradictory results have been obtained; a few facts, however, seem to be pretty definitely proved. In the first place, it may be said that all the factors present in the adult are found in a weaker form in the young infant. In the new born child on breast milk the stomach usually empties itself in from an hour to an hour and a half; as the child grows older this time becomes longer. The new drops of gastric juice found in the empty stomach are the remains of that secreted during the last meal, and are not due to a secretion into the empty stomach. The motility is more rapid in breast-fed children than those on cow's milk or artificial food, and more rapid in the healthy than in the ill child.

The acidity immediately after a meal is nil, but steadily increases during digestion, and is less in the very young than in the older. On a barley water diet free hydrochloric acid appears in the stomach in a few minutes, but on a milk diet it does not show itself for an hour or more, due to the fact that the casein absorbs it or combines with it in some way, and the free acid does not appear until the casein has taken up all required for its complete digestion. The free acid appears later in dis-

ease than in health, due to the increased amount of food in the stomach and to the slower secretion of the acid; in cases of pylorospasm the acidity is increased. Opinions differ as to the occurrence of lactic and volatile fatty acids, but these probably do not occur in healthy breast-fed infants, while in those ill or on cow's milk they are fairly common. Part of the acidity is probably due to a fat-splitting enzyme in the infant's stomach.

Pepsin is present in all ages and in all kinds of health, and acts in the infant stomach though to a less degree than in the adult. The peptic digestion goes on to the stage of peptones, but not beyond that.

Rennin occurs in the stomach after the first few weeks of life; whether during the first week is a moot question.

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#### SEVEN HUNDRED HEBOSTEOTOMIES.

Ad. Schlafi in *Zeit. f. Geb. und Gyn.*, Bd. 64, Hft. 1, deals at length with a study of 701 cases of hebosteotomy collected from literature coming under the author's observation. He deals with the various complications that arise as a result of pubiotomy, the injuries to the child, and the complications attending recovery as well as the sequela.

Of 664 cases where the actual results are given, 32 of the mothers died, a mortality of 4.82%. The result is that the mortality for the mother is not so good, and that for the child is very much worse than attends the operation of Cæsarean section. The operation is one undertaken in the interest of the child, and it should not be attended with greater risks to the mother, and this is not the case as the statistics of this paper shows. An overwhelming proportion of the fatal cases died of sepsis, many of them having suffered severe traumatism in the course of delivery.

Of the 664 cases mentioned in the paper 64 children were born dead or died during the puerperal period. In only three was death not the result of the operation. Deducting these the mortality is 9.18%. Most children died from lesions of the central nervous system in consequence of traumatism in delivery.

A table is given showing the statistics in regard to the various complications attending the operation and its consequence both for mother and children.

The author concludes from his study that this operation is one not to be lightly undertaken. The dangers to the mother, the seriousness of the subsequent complications and the percentage of infant mortality makes the operation one of doubtful value except in specially suitable cases.

THE BACTERIA OF THE PUERPERAL UTERUS, WITH A  
SPECIAL REFERENCE TO THE PRESENCE OF HÆMO-  
LYTIC STREPTOCOCCI.

A. W. W. Lea & E. J. Sidebotham quote recent observations, *Jour. Obstet. and Gyn. of the B.E.*, Jan., 1909, and state that these make it apparent that in a great majority of cases of infection, the streptococci present possess well marked hæmolytic power. Whether this hæmolysis can be depended upon as an absolute means of differentiating between saphrotic and pathogenic organisms is as yet an open question.

The authors then give in detail their method of procedure. The local discharge from the cavity of the uterus was examined in a series of 58 cases, between the 7th and 9th days after delivery. The contents of the uterus were sterile in 12 cases, while in 80 per cent. of the cases bacterial growth on blood agar plates take place within 24 hours. In 53 of the patients the puerperium was febrile throughout.

The organisms present were mainly those which had been shown to be present in the vaginal secretions during pregnancy. There is, however, considerable evidence to show that organisms also ascend from without during the early days of the puerperium.

Streptococci were present in 20 per cent. of the cases, and frequently showed marked power of hæmolysis.

The presence of hæmolytic streptococci in the vagina or uterine secretion cannot itself be regarded as an indication of infection.

The paper concludes with a table giving an analysis of the cases recorded.

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BLOOD PRESSURE, LEUKOCYTE COUNT AND OPHTHAL-  
MOSCOPIC EXAMINATION IN THE DIAGNOSIS OF  
PRE-ECLAMPTIC TOXEMIA.

A. J. Skeel, M.D., in *Amer. Jour Obstet.*, March, 1909, discusses this subject carefully.

The author's findings are based entirely on a study of cases reported in literature, and his general conclusions are: That albumin in considerable quantity in the urine is a strong indication of mischief. Casts and diminished twenty-four hour quantity add to the value of the urinary findings.

Blood pressure tests by means of a suitable instrument is of value as a clinical guide. A pressure of over 150 mm. should be considered a serious matter. After labor the blood pressure should quickly drop to

normal. In pre-eclamptic toxemia blood pressure is probably always elevated and is of diagnostic and prognostic importance.

The Leukocyte count is increased 50% and upward over the normal.

In demonstrable ocular disturbances of early pregnancy especially when accompanied by ophthalmoscopic lesions, evacuation of the uterus is indicated. These symptoms if present in the latter two months of pregnancy indicate a high degree of toxemia.

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## OPHTHALMOLOGY AND OTOTOLOGY.

Under the charge of G. STERLING RYERSON, M.D., L.R.C.S., F.R.C.S., Professor of Ophthalmology and Otology Medical Faculty, University of Toronto.

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### THE NON-OPERATIVE TREATMENT OF SUPPURATIVE OTITIS MEDIA.

Edmund Prince Fowler, M.D., New York City, in the *Medical Review of Reviews* directs attention to the following considerations :

In spite of all that has been written on the subject, one is apt to forget that from a clinical standpoint the middle ear is not the tympanic cavity, but that it consists of all the passages and tissue and bony spaces from the pharyngeal mouth of the Eustachian tube to the furthest cell in the surrounding bony structures.

Inflammations in the middle ear proper are prone to exacerbations, complications and chronicity largely because of persisting pathological processes in these parts, and our treatment, to be efficient, must tend to the relief of the conditions therein presenting.

Proper prophylactic treatment of otitis is an ideal only too seldom realized. I do not mean by this that every little adenoid vegetation must be removed from the naso-pharynx, but that if there exists the slightest obstruction to nasal respiration or to a free ventilation of the Eustachian tube, it is surely a crime to neglect the removal of conditions which are so prone to be etiological factors in the causation of ear disease.

In its incipiency it is impossible to foretell whether or no an acute otitis media will prove to be a suppurative inflammation, and it is therefore wise to treat all as likely so to eventuate.

With the treatment usually employed during the onset of an otitis you are all fully acquainted, and I, therefore, will not go into the application of heat and cold, anodynes and depletions inside and outside of the ear, but will state it as my belief that the most effective measures during this stage of the disease are those brought to bear on the naso-pharyngeal condition and on the Eustachian tube.

It is for this reason mainly that I always administer calomel, put the patient to bed on a fluid diet, avoid all stimulants and secure as perfect rest for the body and auditory apparatus as is possible. Dover's powder and hot drinks are serviceable in this connection to produce perspiration and to diminish the fever often present in adults and almost without fail in children. Salol and aspirin often benefit acute rhinitis and should be used in the early stages of an otitis accompanying it.

A properly adjusted cold compress about the throat seems to be of real service in relieving the throat and nose inflammations, and if this is supplemented by an overlying constricting band of elastic webbing, the patient usually experiences a sense of rest and well-being that it is difficult to explain. Various local applications are of use if there are definite indications for their employment, but by gargling little is gained.

In using sprays, douches or direct applications to the nose or nasopharynx it is well to keep in mind the fact that a patent Eustachian tube will permit transit toward its pharyngeal mouth with more facility than in the opposite direction, and that when blocked there is little likelihood that anything will enter the tube and add to the trouble.

During the past year I have seen several acute inflammations of the ear run their course without rupture or paracentesis of the drum, and in all these I made use of a new method of treatment; I refer to my suction bell irrigation, which when applied to the ear every two hours and when a hot saline solution is used therewith seems to exert a beneficent action upon not only the middle ear, but also reflexly, maybe, on the Eustachian tube, and usually relieves pain in a most satisfactory manner. As soon as the tube was able to take care of the exudate, as was evidenced by its patency and the subsidence of the inflammatory tension, I instituted gentle inflation by a method which appealed to me as particularly safe in these conditions, but which on account of lack of space I cannot describe to you fully in this paper.

From first to last the tympanic and flaccid membranes must be carefully watched, for it is by the appearance of these that we obtain our most valuable guides to diagnosis and treatment. If the pain or tenderness does not subside promptly under the measures instituted, it is probable that the inflammatory reaction is beyond their control and that we must relieve the tension within the auditory apparatus by a free incision in the drum membrane. Of all procedures for the relief and cure of suppurative otitis a properly executed and free incision of the drum membrane stands pre-eminent, and though this is, strictly speaking, an operative procedure, I must dwell upon it, for without its aid the results of non-operative treatment at this stage of an otitis would be practically nil.

It may seem paradoxical for an ardent advocate of non-operative treatment to thus strenuously state his position, but there is no other way out of the difficulty, and it would be contrary to all the laws of good surgery to act otherwise.

There is one way to shirk responsibility, and that is to allow nature to bear all the burden and finally cause a rupture in the drum. Even this does not suffice unless the rent is sufficient for the escape of the evil dammed up behind.

There have been published many lists of indications for puncturing or incising the drum, but I believe we can simplify matters if we hold to the following:

The drum should be freely incised if there is pus retention in the middle ear or adjacent cavities. For our diagnosis we must depend on the location, severity, persistence or recurrence of the symptoms, the appearance of the drum membrane and the advent of threatening complications. The leucocyte and differential counts may be of service in obscure cases.

Before incising cleanse thoroughly the drum, external auditory meatus and auricle and execute the operative manipulations in an aseptic surgical manner and according to the viewed picture presenting. The parts may be adequately and most agreeably prepared by using the bell douche, with a suitable antiseptic solution.

Unless contraindicated, I prefer to carry out the operation with the patient under the influence of gas, as I know I can do better work by this method. If for any reason a local anæsthetic is to be used, I prefer the following mixture:

R Cocaine.....	8	(ʒii)
Acid carbolic (95%).....	4	(ʒi)
Menthol.....	4	(ʒi)

*M. Sig.* Ten minims dropped into canal and allowed to remain fifteen to twenty minutes (follow by instilling alcohol and drying canal).

This often works like a charm, and, like a charm, it often does not work at all. It is a more successful anæsthetic if applied immediately after the ear has been subjected to about 10 minutes of suction irrigation, as the latter seems to further its better absorption and itself to slightly numb the canal and drum membrane. The above solution tends to make the post-operative pain less severe, and the suction and heat, if applied after the incision, usually relieves the pain and the tension in the middle ear.

After the drum has been freely incised the fever, pain, tenderness and other symptoms regularly quickly abate, as does also the danger of

extension of the inflammation to the mastoid cells or cranial cavity. The discharge at first is frequently profuse and bloody, but sometimes it remains viscid for several days, and we must endeavor to accelerate its liquefaction by irrigations of normal salt and boric acid solutions. I believe this is best accomplished if carried out under suction, as in my apparatus.

The frequency of the irrigations depends upon the amount and character of the discharges, and I gradually discontinue them as the patient recovers. After each irrigation the external ear should be dried with cotton and a loose piece of the latter placed in the meatus, or, better still, a small piece of sterile gauze, to absorb the moisture and any excessive discharge. A frequent renewal is usually necessary for cleanliness and comfort.

As the action of my douche during this stage of an acute otitis is similar to that which it exercises during the chronic periods, I defer any further reference to it until I arrive at the discussion of the latter stage of the disease, except to state that it is especially useful in liquefying and removing thick viscid discharges which otherwise would seriously interfere with drainage. Mechanical removal of the inflammatory exudate and the facilitation of a free discharge is imperative if we would assist Nature in her endeavor to overcome the anatomical difficulties, such as the narrowness of the tube, the numerous connective tissue reduplications and the smallness of the perforation, for all these tend to prevent a spontaneous cure.

So-called gauze drains and plugs, or repeated swabbings, are of little value in preventing stagnation of pus in the middle ear, and as it is impractical to entrust their use to the patient or the family, the drains are apt to become soggy, pus-soaked poultices and irritate the inflamed mucous membrane and block the drainage.

In some cases hydrogen peroxide may be useful to mechanically loosen an inspissated discharge, but care must be used in this stage of an otitis not to cause damage by the explosive action of this substance.

If with the cessation of the discharge the perforation heals, stop gradually all irrigations and institute daily politzerization, or simultaneous inflation of the middle ear and external auditory canal. This latter procedure accomplishes all claimed for the former, and in a more gentle manner, and adds the important action of alternate condensation and suction on the drum membrane and middle-ear contents. By bringing simultaneously an increased air pressure to bear on both ends of the Eustachian tube we necessarily open the latter more readily and with the use of less pressure than if inflation by Politzer's method is employed. This may be proved experimentally by connecting the apparatus with a



manometer and noting the pressures necessary to accomplish the desired result under both methods of treatment.

In normal ears it can easily be demonstrated by applying the treatment first to one ear and then to the other and observing that the tube under its influence is the first to inflate.

The massage action due to the alternate compression and suction in the diseased tissues is also of real value in bringing about a return toward normal.

The instrument I use to accomplish the above consists of a nose piece connected by rubber tubing to a Y-tube, the other extremities of which are joined one to an air bag and the other to one of my massage cups or a magnifying Siegle's speculum. The latter is used at first, for patients often cannot readily detect the gentle bulging of the drum membrane brought about by this method, and it is necessary for the operator to inspect the parts during the procedure to be certain an efficient inflation has been obtained. If the speculum is now removed from the tubing and replaced by one of the author's ear cups, the inflations may be continued with great comfort to all concerned.

To prevent a return of the affection it is important not only to protect the patient from cold winds and other shocks to his auditory or general economy, to rectify pathological conditions in the nose and naso-pharynx, but to build up the general health by all means at our command. This latter is usually neglected, with the result that the ear never even approximately regains its normal state, and therefore remains as a continual menace to health and happiness.

If the treatment of an acute suppurative otitis be neglected or faulty, exacerbations and the chronic condition are prone to occur, and especially in lowered constitutional states and with the diseases which go with these, notably tuberculosis, syphilis, anæmia, marasmus and chronic suppurative otitis may develop without reactive phenomena in these conditions.

In a series of over 100 cases I found that, with but few exceptions, all patients with chronic running ears gave a positive reaction to the tests of Calmette or Von Pirquet. Whereas in acute cases the percentage was small, and as a rule only those who gave tuberculous histories or who went on the exacerbations or complications reacted positively.

These facts eloquently emphasize the necessity for general constitutional treatment in acute or chronic ear disease. As in acute, so also in chronic suppuration we must establish and maintain adequate drainage and remove all granulations, polypoid growths or other obstructions to the usually purulent, profuse and putrid discharges.

## LARYNGOLOGY AND RHINOLOGY.

Under the charge of PERRY G. GOLDSMITH, M.D., C.M., Assistant Laryngologist and Rhinologist,  
Toronto General Hospital.

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## CASE OF IMMOBILITY OF THE LEFT VOCAL CORD IN A MALE.

At the December meeting of the Laryngological section of the Royal Society of Medicine the case of a patient, aged 16, was presented by Dr. Dundas Grant.

The patient had a weak voice and hoarseness for about two years. One month before being presented Dr. Grant observed immobility of the left cord in the cadaveric position. A chain of large glands was pressing along the anterior border of the sterno-mastoid. Clinical examination was negative, and no opportunity had yet presented itself for making a radiosopic examination.

In the discussion which followed, Dr. Jobson Horne was inclined to think the paresis was due to pressure from the large cervical glands. He did not think the case was tuberculosis. Dr. Ball agreed with Dr. Horne, he thought the pressure might be further down in the chest.

The chairman, Dr. Watson Williams, said he regarded it as an interesting case, illustrating the difference in accounting for paralysis of the vocal cord, especially in so young a patient. He agreed that the condition was suggestive of pressure on the recurrent laryngeal nerve.—*Proceedings of the Royal Society of Medicine*, Vol. II., No. 3.

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## STREPTOCOCCAL ("SEPTIC") THROATS.

Dr. J. O. Hollick, medical officer to the Midland Counties' Idiot Asylum, gives an interesting account of an outbreak which occurred in that institution, in 1908, of a pharyngitis and tonsillitis of an infectious nature, at first thought to be due to the Klebs-Loeffler bacillus. Subsequent examination showed, however, an absence of diphtheria bacilli, but plentiful streptococci and staphylococci.

The general symptoms were as follows: Feeling of malaise, pains in the back and in the neck up to the occiput, and headache. The evening temperature often rose to 104° F., and the morning temperature to 100° F. Slight soreness on one or both sides and difficulty of swallowing; the submaxillary and glands adjacent to the angle of the jaw and in the triangles of the neck were slightly enlarged and tender. Tonsils showed creamy white secretion with angry looking areola of inflammation extending to the anterior pillar of the fauces, the uvula swollen and intensely oedematous. No follicular exudation on the tonsils. The urine was

febrile, and in some showed slight trace of albumen. In from two to four days the symptoms and local signs decreased, the glandular swelling and tenderness remaining for some days after the clearing up of the throat symptoms. In connection with this epidemic two cases of cutaneous erysipelas of the foot and leg occurred. Several of the patients, with the throat symptoms and glandular enlargements, showed a tendency to relapse if allowed to get up within too short a period of subsidence of temperature.

With regard to treatment, all were isolated at once on rise of temperature, or on complaint of soreness of throat, and owing to this precaution in a colony of 160 people, only 15 were affected with the malady. Formamint lozenges were sucked (three a day) by all not affected, and by those affected a lozenge every three hours, while frequent swabbing of the tonsils and pharynx with "izal" solution (suitably diluted) was resorted to. All cups, spoons, etc., used by the affected inmates were sterilized in formalin solution after use. In addition to the swabbing, spraying of the pharynx and nares, with the formalin sprays, was also carried out.

A similar, but more severe, epidemic occurred at a private preparatory school. There was a history, before the commencement of the epidemic, of one boy returning to school who had had sore throat which had imperfectly cleared up. In from two to three weeks later a boy was seized with convulsions. His temperature was 130° F., he complained of no sore throat, but his cervical glands were enlarged and tender. He was isolated at once. Next day he had a creamery secretion over both tonsils, but not extending on to the palate or faucial pillars. There was much angry congestion over the latter.

Four other boys on this day were put to bed with rise of temperature, tenderness over the cervical glands, headache, malaise, and some pain on swallowing on one or both sides. One of these showed a more suspicious look about his fauces and tonsils than the rest, and he had signs of much nasal obstruction. A swab from his throat showed Klebs-Loeffler bacilli. He was treated with 4,000 units of antitoxin, but succumbed fourteen days after onset of symptoms to cardiac failure.

Swabs from other throats showed Hofmanns' diplococci and streptococci but no diphtheria bacilli. One boy, and only one had middle-ear trouble ending in suppuration, with no mastoid complication. A feature of this epidemic, and one that was so very striking that the veriest tyro on throat affections could not have failed to notice it, was the comparative slightness of the internal (tonsillar and pharyngeal) signs in the older boys of from twelve to fourteen years of age, with, in some cases, no secretion or exudation, and the mildness of their constitutional symptoms; while the younger boys of from ten to twelve years of age had

sharp febrile disturbance, with much pain in the throat and glands, and took much longer time to convalesce, whilst the subsequent anæmia was often very marked. Some showed signs of heart dilatation. Others, again, had albuminuria, mostly of a very transient nature, only lasting from three to four days. There was no doubt about the izar swabbings and sucking of formamint doing good in checking the amount of secretion and local pain on swallowing. In several the pharyngeal tonsil and adjacent lymphoid tissue showed signs of congestion for from two to three weeks after disappearance of throat discomfort, and the nares were in a few cases slow to resume their normal appearances.

Hæmatogen and maltine with iron ("brynophosphates") seemed to do most good as an after-tonic. A noticeable feature of the epidemic was a slight pharyngitis experienced by the adult people (masters and servants) of the school with no serious constitutional disturbance.

A streptococcal throat infection is not to be treated lightly, owing to the persistent and clinging properties of the micro-organism, resulting in much adenitis and subsequent constitutional disturbance and anæmia.—*Journal of Laryngology*, February, 1909.

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## ELECTRO-THERAPEUTICS AND RADIOLOGY.

Under the charge of JOHN STENHOUSE, M.A., B.Sc., Edin., M.B., Tor.

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### RADIUM IN THE TREATMENT OF CANCER OF THE SKIN AND MUCOUS MEMBRANES AT THE ST. LOUIS HOSPITAL, PARIS.

Professor Gaucher gives a review of the methods and results in the treatment of the above conditions by Dr. Dominici in his service during 1908 (*British Medical Journal*, Jan. 23, 1909).

*Apparatus.* Two kinds of apparatus are used in radium-therapeutics: (1) Supports of metal or cloth on the surface of which a pulverized radium salt is spread and maintained by means of some adhesive substance, generally Danne's varnish. The bromide, carbonate, or more often the sulphate, of radium is used pure, or mixed in varying proportions with an inert salt, the bromide, carbonate, or sulphate of barium. The metallic supports are in various forms—discs, quadrilateral plates, balls, ovoids, or cylinders—according to the conformation of the part to which they are to be applied. They can thus be applied to flat or convex surfaces, within cylindrical cavities, such as the external auditory meatus; they can be insinuated beneath the eyelids, etc. (2) Apparatus with *free* salts of radium, contained in tubes or ampoules of glass, the

salt of radium being pure or mixed in varying fixed proportions with a barium salt. In describing an apparatus in which the salt is stuck on metal or cloth it is necessary to know (1) the surface on which the radium salt is spread; (2) the weight of the salt; (3) its theoretical and effective activity. Thus a metallic or cloth square whose side measures 2 cm., on which is stuck 1 cg. of pure radium sulphate, would be described as *apparatus*: S. (surface), 4 cent. cubes; W. (weight), 1 cg.; A. (activity), 2,000,000. In practice, however, the radium salt is mixed with barium salt, and the activity of the mixture is expressed by the respective proportions of radium and barium; thus the apparatus generally used in treating epitheliomas are said to be of A. 500,000, because the radium-producing powder is a mixture of one part of a radium salt with three parts of a barium salt. This is the theoretical and not the real activity, which may be modified by various causes—for example, the absorption of a part of the radiation by the varnish, the superposition of the layers, etc. The activity of metal apparatus is less than in apparatus made of cloth, as in the former the grains of radium are completely embedded in the varnish, whereas in the latter the grains stick out of the layer of varnish. A very useful apparatus containing the free salt is a glass cylindrical ampoule containing 9 cg. of pure radium salt; this is placed within a silver sheath of 1 mm. thickness.

*Application.* The apparatus may be used in the treatment of epitheliomas in one of two ways: (1) By utilizing the radiation as it is furnished by the apparatus, or after having filtered it, allowing all the gamma rays, and a large portion of the beta rays to pass; if not also the alpha rays. (2) By filtering the radiation so as to suppress the alpha rays, almost all the beta rays, and the less penetrating fraction of the gamma rays. This is the Dominici's method of ultra-penetrating radiation. The two methods have the same rules as to the protection of healthy tissues from the radiation, and the asepsis of the diseased parts; to protect the neighboring healthy tissues, lead slides or plates covered with tarlatan are used; asepsis of the diseased tissue is necessary to prevent erysipelas or lymphangitis.

*Method of Composite Radiation* is the name given to the first of the above, since it brings into play the totality or the largest portion of the different effective radiations of the apparatus used. (a) These are used without the interposition of any screen save a thin piece of gold-beater's skin to protect the apparatus from organic liquids; (b) the radiation is partially filtered by means of substances with relatively slight absorbing power, such as rubber, cotton-wool, tarlatan, or aluminium, which is one of the least dense metals, and consequently one of the most permeable to the radiations. Composite radiation is used in two ways, either to prevent or to cause the production of massive sloughs. The first way,

devised by M. Danlos, consists in placing the apparatus on the tumors during a very short time, for example, ten minutes, and frequently repeating the applications. Neoplastic tissues can thus be caused to undergo retrogression without causing any scar. The method is excellent, but is only applicable to epitheliomas of small dimensions, and very sensitive to the radiations. The duration of the treatment is extremely long, and certain cancers resist its action. The *destructive* method, used by M. M. Louis Wickham and Degrais, consists of placing on the tumors apparatus of A. 500,000 and leaving them *in situ* for six to ten hours on the average for each zone of application. These applications are completed in two or three sittings, which at intervals of one or several days, after which the treatment is stopped. The effects are shown by an intense reaction of the neoplastic tissue followed by the production of a slough, which falls off about the sixth week, leaving a red and squamous skin surface, which eight or ten weeks after the end of the treatment takes on the appearance of a white, supple, and regular cicatrix. Drs. Wickham and Degrais advise, before applying the radium, that the diseased part should be carefully cleaned, removing the crusts and making the part aseptic.

*Method of Ultra-penetrating Radiation* consists (1) in the filtration of the radiation, only keeping the ultra-penetrating rays of Dominici; (2) in varying the intensity of the radiation thus obtained. The ultra-penetrating radiation of Dominici is defined relatively to the nature and the thickness of the screens traversed to the radiation of the radium itself, and to the x-rays. Dominici describes as ultra-penetrating rays those which have traversed leaden plates of five-tenths to several millimetres of thickness. The rays thus filtered are essentially the gamma rays and an infinitely small quantity of beta rays. The ultra-penetrating gamma rays are rays which have traversed metallic screens which intercept the great majority of ordinary x-rays. The advantage of suppressing the alpha rays, the great majority of the beta rays, and a fraction of the gamma rays, which correspond to the ordinary x-rays, consists in the remarkable innocuity of the ultra-penetrating radiation which remains, an innocuity which does not interfere with its healing properties when applied to gangrenous, inflammatory, and neoplastic processes.

*Apparatus.* Dominici uses very powerful apparatus surrounded by plates of lead, silver, or gold the thickness of which is calculated so as to let pass only the ultra-penetrating rays. The lead screens, for instance, are superposed on apparatus with radium fixed in varnish containing 6 mg. to 1 cg. of sulphite of radium of A. 500,000, or else over glass ampoules containing pure radium bromide. The thickness of the lead sheath varies from five-tenths to several millimetres, to which are

then added sheets of paper to a thickness of 1 or 2 millimetres. This is then put into a rubber sheath. The paper stops the secondary radiation given off by the leaden sheath, and the rubber protects the apparatus from the action of organic liquids.

*Applications.* The apparatus of Dominici are either placed on the surface of tumors or in their depressions, or introduced by surgical operation into the interior of neoplasms. The apparatus is left in position for a period of 20 to 120 hours at the most for a single series of applications. The applications is continuous or intermittent; thus, if a patient objects to wearing the apparatus during the day, it is left *in situ* from 9 p.m. to 9 a.m.; the apparatus is removed once or twice a day to be cleaned and to allow of the surface of the neoplasm being cleansed. In some cases the tumors receive at once the amount of radiation necessary to determine their retrogression; in other cases the treatment is recommended after an interval of three or four weeks. If the retrogression stops the treatment is begun again, and, if necessary, the intensity of the radiation and the length of its application are increased.

*Therapeutic Effects.* Under the influence of the treatment the deep neuralgic pains cease, gangrene disappears, the neoplastic process stops, and finally, after a period of eight to fifteen days, during which a more or less intense flow of plasma occurs, the tumor begins to retrogress. The vegetations are reabsorbed, the ulcerations gradually fill up, the healthy portions of tissue become free, and, finally cicatrization is established in five to eight weeks. This applies to medium cancers, and not to extensive or very ulcerated or infiltrating cancer. Sometimes cancers of the skin require three or four months' treatment. It is simpler to treat cancers of medium type by the method of composite radiation producing a slough, an application of six to ten hours only being necessary; but when the tumors are extensive or deeply infiltrated and ulcerated, then the ultra-penetrating radiation is preferable. The latter is absolutely necessary in all cancers in cutaneo-mucous regions or those on mucous membranes only.

*Treatment of Cancers of Cutaneo-Mucous Regions.* Wickham and Degrais have been able to cure cancers of the palpebral conjunctiva by short and repeated applications of apparatus of A. 500,000. Epithelioma of the mucous portion of the lip are aggravated by radiations of strong intensity. On the other hand, they are improved or cured by ultra-penetrating radiation, the intensity of which is relatively very small. Professor Gaucher described the three following cases:

1. Superficial epithelioma of the mucous membrane of the lower lip, of four years' duration, refractory to cauterizations with silver nitrate and the thermo-cautery. This was cured after twenty-four hours' application of an apparatus furnishing an ultra-penetrating radiation of about 3,500 gamma rays through 1 mm. of lead.

2. Typical cancriod developed on the posterior surface of the lower lip in a plaque of leucoplasia, in the form of hardened ulceration covered with a crust, with raised edges, above the mucous membrane. Cured in two months after forty-eight hours' application of an apparatus giving 4,500 gamma rays through 2 mm. of lead.

3. Epithelioma of rapid development on the mucous membrane and at the left commissures of the lower lip. Cured after 140 hours' application of an apparatus giving a radiation of 4,500 gamma rays through 5/10 mm. of lead. The cure is maintained—nine months since treatment.

The same treatment has been applied to cancers of the tongue, and Professor Gaucher has seen papillary epitheliomas restricted to the chorion of the mucous membrane retrogress after twenty-four or forty-eight hours' treatment with apparatus giving an ultra-penetrating radiation of A. 500,000. The "precancerous" condition of the mucous membrane—that is, leucoplasia of the mouth—is cured by this treatment. The results of treatment of infiltrating cancer of the tongue extending below the mucous membrane are encouraging, for amelioration has been obtained in conditions such that it would not seem impossible to cure eventually by means of radium certain varieties of one of the most terrible and the most incurable cancers.

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## PERSONAL AND NEWS ITEMS.

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### ONTARIO.

Dr. A. R. Pyne has been appointed chairman of the Ontario Milk Commission.

The Salvation Army has established a woman's hospital in Toronto on Bloor Street.

Dr. W. A. Young, Editor of the Canadian Journal of Medicine and Surgery is spending three months in Europe.

Dr. A. W. Maybury, of Toronto, has gone to Europe for a few months.

The Toronto General Hospital has established a series of Saturday clinics, at 10.30 a.m. These clinics are open to the profession.

Dr. W. H. Ballantyne has removed from Verona to Vernon, Carlton County.

Dr. J. G. Dwyer, after spending some time in the Manhattan Eye and Ear Hospital, New York, has returned to Kingston.



Dr. C. Laidlaw has returned from Britain and has been appointed Bacteriologist to St. Luke's Hospital, Ottawa.

Dr. H. B. Longmore, who has been for two years in Glamis, Bruce County, has removed to Cambellford.

The Ontario Milk Commission consists of Dr. A. R. Pyne, Chairman; Mr. C. C. James, Mr. F. G. Macdiarmid, M.P.P., J. R. Dargavel, M.P.P., and W. F. Nickle, M.P.P.

### QUEBEC.

Dr. J. R. Goodall, after two years of post-graduate work in Europe, is now in Montreal.

A chair in Chemistry is to be founded in McGill University in memory of the late Professor Harrington.

Dr. E. D. Archibald, of Montreal, will spend some months in Europe.

Quebec has extended the course of study requisite for a license to five years.

Drs. W. W. Chipman and Charles E. Martin, of Montreal, have returned from Europe; and Drs. J. L. Day and Ernest Brown, of the same place, have gone to Europe for a lengthy holiday.

Dr. Robichaud has resigned his position as Superintendent of the Hotel Dieu Hospital, Montreal, and has been succeeded by Dr. G. H. Baril.

The Tuberculosis Institute, of Montreal, has received a Charter. Sir George Drummond is president, and Drs. Raddich, Adami and Lachafelle are vice-presidents.

The Legislative Council of Quebec has rejected the Bill to incorporate the Christian Science Church of Westmount, on the ground that the said belief is an undesirable one.

Montreal will soon have a hospital for the care of advanced cases of tuberculosis. This is a vast improvement on the condition when a young man died on the door steps of a hospital while the question was being discussed whether or not such cases should be admitted.

### MARITIME PROVINCES.

In Prince Edward Island there were 142 deaths from tuberculosis for the year 1908 out of a total of . . .

Dr. Thomas Walker, of St. John, visited New York and Boston, studying the best methods of looking after tuberculosis.

The meeting of the Nova Scotia Medical Society will be held this year in Sydney, C.B., on 7th July.

The Nova Scotia Hospital for the Insane cared for 605 patients last year. The number admitted was 173.

Dr. Smith L. Walker, of Truro, had a pleasant visit to the United States. He was paying a good deal of attention to the tuberculosis campaign.

St. Joseph's Hospital, Glace Bay, last year cared for 833 patients. The largest number in any one day was 87. The total days' stay was 26,717.

The number of smaller hospitals in Nova Scotia is steadily increasing. There are now hospitals in Antigonish, Amherst, New Glasgow, Glace Bay, Pictou, Windsor, Sydney and Sydney Mines.

The Report of the Hospitals and Charities of Nova Scotia for last year shows that there were 2,119 cases of tuberculous disease, with a death rate of 25.6 per cent. There were no less than 1,740 cases of small pox last year in Nova Scotia. The death rate was, however, very low.

In the report of the Victoria General Hospital, Halifax, attention is drawn to the need for more accommodation, for provision whereby consumptives may be separated from other patients, and for a better laboratory for pathological work. During the year 1,693 patients were treated in the wards.

#### WESTERN PROVINCES.

The Alberta Medical Society meets this year at Calgary, on 18th August.

Dr. Thornton, M.P.P., in addressing the graduating class of Manitoba Medical College, said he was in sympathy with the Roddick Act.

There is urgent need for an Isolation Hospital in Moose Jaw. The General Hospital there will give a site if the city will erect a building.

The plans for Sanatorium at Ninette, Manitoba, have been approved of, and work will be pushed with energy.

Dr. Tanche's residence at Silver Lake was destroyed by fire lately, and his family had a narrow escape.

Dr. McLean, of Winnipeg, spent some time at the Hospital, Queen's Square, London, studying the surgery of the nervous system.

Dr. Matthews, of Edmonton, has gone to Britain for two years' post-graduate study.

Dr. Pope, of Calgary, has returned from California, and is now in excellent health and has resumed his practice.

Winnipeg is making great preparation for the meeting of the Canadian Medical Association on 23rd, 24th, and 25th August.

The Western Provinces are still urging interprovincial registration among themselves. This scheme is ably advocated by Dr. J. D. Laffarty in a letter in the *Western Canada Medical Journal*.

Dr. Arthur, of Vegreville, Alberta, announces the receipt of \$1,000 from Eastern friends towards the Nurses' Home there in connection with the Presbyterian Hospital, with which he is identified.

#### BRITISH COLUMBIA.

Dr. Dyer has been appointed assistant Medical Health Officer of Vancouver.

Dr. W. Ivan Senkler, of Vancouver, has been very ill in Portland, Oregon.

Dr. H. H. McIntosh has resigned the Superintendency of the General Hospital in Vancouver, and Dr. Whitelaw has taken his place.

The Medical Health Officer for Vancouver reports that one death there in every eight is due to tuberculosis.

Owing to the heavy drains upon the resources of the Jubilee Hospital, Vancouver, in caring for so many free patients, the institution went behind last year.

The Vancouver Medical Association has organized a Milk Commission. The members are Dr. W. D. Brydon-Jack, Dr. Underhill, Dr. O. Weld, Dr. C. S. McKee. It is understood the dairymen are willing to co-operate with the Commission.

#### FROM ABROAD.

Percy Boulton, M.D., M.R.C.P., London, Consulting Physician to the Samaritan Free Hospital for Women, died recently, in his 68th year.

Dr. Simeon Holgate Owen, Consulting Physician to the Manchester Northern Hospital died on 19th May.

From the *Australasian Medical Gazette* we learn that the Pure Food Law is being administered with vigor, and that fines are imposed when the law is violated.

Professor Th. W. Engelmann, Professor of Physiology in the University of Berlin, died at the age of 66, on 20th May. He was Professor du Bois Raymond's successor.

The New South Wales Branch of the British Association has decided to fix a wage for the members of friendly societies who are entitled to receive medical attendance. This is a move in the right direction.

Dr. Edward Liveing has resigned the office of Registrar of the Royal College of Physicians, of London, a position which he has held with marked ability for the past twenty years.

The people in Ireland are now beginning to recognize that consumption is an infective disease. This is the first step towards doing something of value in the way of real prevention.

*School Hygiene*, an excellent publication devoted to the interests of health in the school room, has amalgamated with *Hygiene and Physical Education*, published by the F. A. Bassette Company, of Springfield, Mass.

Dr. William W. Ireland died at the age of 77 years in Edinburgh on 17th May. He was a distinguished author and is known by such works as "The Blob upon the Brain," "Through the Ivory Gate," "Idiocy," "Mental Affections of Childhood," etc.

The Medical Inspection of Schools in Edinburgh has revealed the fact that in the examination of 3,548, the average weight was 5.65 lbs. under the standard. These children were also under the standard in height.

The recent researches of Dr. Klimento has gone a good way to establish the work of Bordet and Gengou as the identity of the bacillus of whooping cough which they claim to be the specific organism of this common disease.

Dusty and unhealthy occupations cause an enormous waste of human life. In Sheffield the deaths were as follows: Potters, 453; cutters, 407; file-makers, 373; glass-makers, 335; and copper-makers, 317.

Mr. Burns replied to a question by Mr. Lupton regarding small pox in Liverpool, which is a well vaccinated centre. It appears that there were only two mild cases among all the vaccinated children, whereas there were seven severe cases with three deaths among the smallish number of unvaccinated children. This should satisfy Mr. Lupton and the anti-vaccination faddists.

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## OBITUARY.

### J. N. ANDERSON, M.D.

Dr. J. N. Anderson of 5 College Street, Toronto, for over twenty-five years a practising physician, was stricken with apoplexy on the evening of 8th June, visiting at the home of a patient, and died in a few minutes. The deceased had not been in the best of health since the first of the year, but was able to attend to his professional duties, and his sudden death comes as a surprise to those who knew him.

The late Dr. Anderson was born in Norfolk county, near Simcoe, sixty-eight years ago. He was a widower, and since the death of his wife a year and a half ago his niece, Miss Tisdale, has been keeping house for him. Mrs. A. Garnett and Mrs. P. Dean, both of Tillsonburg, are sisters of the deceased.

## GEORGE L. MACKELCAN, M.D.

Dr. George L. Mackelcan, who had practised in Hamilton for more than forty years, died 9th June, at his residence, Catharine Street north. Dr. Mackelcan was born in Guelph 74 years ago, being a son of the late Dr. John Mackelcan, and a brother of the late City Solicitor Mackelcan. Mrs. Mackelcan predeceased him four years ago. Deceased is survived by a family of five, one son and four daughters. The son is Rev. G. F. A. Mackelcan, of Detroit, and the daughters, Mrs. Thomas Dallas, of Vermont, Alta.; Mrs. J. W. Cockburn, of Dundas, and Misses E. A. and Theodora, at home.

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 BOOK REVIEWS.
 

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## OSLER'S MODERN MEDICINE, VOL. VI.

*Modern Medicine, its Theory and Practice, in original contributions by American and foreign authors, edited by William Osler, M.D., Regius Professor of Medicine in Oxford University, England; Honorary Professor of Medicine in the Johns Hopkins University, Baltimore; formerly Professor of Clinical Medicine in University of Pennsylvania, Philadelphia, and the Institutes of Medicine in McGill University, Montreal, Canada, assisted by Thomas McCrae, M.D., Associate Professor of Medicine and Clinical Therapeutics in the Johns Hopkins University, Baltimore; Fellow of the Royal College of Physicians, London. Vol. VI., Diseases of the Urinary System, Diseases of the Ductless Glands, Diseases of Obscure Causation, Diseases of the Muscles, Vasomotor and Trophic Disorders. Life Insurance Illustrated. Philadelphia and New York, Lea and Febiger, 1909.*

The sixth volume of Osler's *Modern Medicine*, just off press, covers a very wide and important range of subjects, namely, the diseases of the urinary system, of the ductless glands, of the muscles, those of obscure causation, vasomotor and trophic disorders, and the medical aspects of life insurance. These diseases are all handled by specially competent men. John McCrae, of Toronto, begins the volume with two chapters on the kidney, followed by two on urinary anomalies and uraemia by Garrod, of London. Herrick, of Chicago, deals with all aspects of nephritis, as well as amyloid disease, and Thomas R. Brown, of Baltimore, considers pyogenic and tubercular affections of the kidney. Its medico-surgical aspects, from the pen of H. H. Young, of Baltimore, conclude this section. George Dock, formerly of Ann Arbor, and now of New Orleans, has written the entire section on the ductless glands. Longcope, of Philadelphia, considers Hodgkin's Disease; T. McCrae, of Baltimore, arthritis deformans; Dock, of New Orleans, osteomalacia; and D. J. McCarthy, of Philadelphia, astasia-abasia and adiposis dolorosa. Together with W. R.

Steiner, of Hartford, McCarthy has written the section on muscular diseases. The editor, Dr. Osler, with his former colleague, C. P. Emerson, of Baltimore, handles the section on vasomotor and trophic disorders, and Charles Lyman Greene, of St. Paul, concludes with the medical aspects of life insurance.

It is obvious from the foregoing brief contents that the English-speaking world of medicine is ably and impartially represented, and that the cosmopolitanism which is a distinguishing feature of *Modern Medicine* is consistently maintained. The best collective medical knowledge of the world is being placed at command of every practitioner in the most helpful form. The seventh volume will cover diseases of the nervous system, and will complete this great library of medicine. Its practical value is attested by its phenomenal success.

Each time we have been called upon to review one of these volumes the merit of the work as a whole grows upon us. To plan such a work and to carry out to a successful completion is no easy task. Professor Osler has, however, fulfilled all that was expected of him when he undertook *Modern Medicine*.

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#### PROGRESSIVE MEDICINE, VOL. I., MARCH, 1909.

A quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by Habart A. Hare, M.D., Professor of *Materia Medica and Therapeutics* in Jefferson Medical College, Philadelphia. Price, in four paper bound volumes, \$6 per annum, and in cloth, \$9. Lea and Febiger, Philadelphia and New York.

The June issue of *Progressive Medicine* deals with subjects of exceptional importance. W. B. Coley's large experience in the whole field of hernia enables him to write with authority, and renders every line of his article useful and informing. Of special interest is the section on hernia and undescended testicle. E. M. Foote writes on the broad subject of abdominal surgery, and adequately covers all the many recent advances. Hirschsprung's disease, which has latterly been attracting much attention, and the surgery of the pancreas, are handled in a manner deserving particular notice. For several years J. G. Clark's review of the cancer problem has been the most noteworthy contribution in English medical literature towards the ultimate solution of this great question. His present article is no exception. It alone and apart from all the valuable accompanying papers is well worth the year's subscription. Alfred Stengel has summarized progress in diseases of the blood and ductless glands in a most interesting manner. His section on diabetes mellitus, a subject much to the front just now, is full of value to the general medical reader.

Edward Jackson closes with a review of the year's developments in ophthalmology. The accumulation of this series of fine volumes makes a splendid library in itself, both from a historical and a scientific point of view.

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### DISEASES OF THE RECTUM.

*Hand Book of Diseases of the Rectum*, by Louis J. Hirschman, M.D., Detroit, Michigan, Fellow American Proctological Society; Lecturer on Rectal Surgery and Clinical Professor of Proctology, Detroit College of Medicine; Attending Proctologist, Harper Hospital; Consulting Gynaecologist, Detroit German Polyclinic; Collaborator in Proctology, "Physician and Surgeon;" Editor "*Harper Hospital Bulletin*," Chairman section in Surgery, Michigan State Medical Society; ex-President Alumni Association, Detroit College of Medicine, etc., etc. With the hundred and forty-seven illustrations, mostly original, including two colored plates. St. Louis, Mo.; C. V. Mosley, Medical Book and Publishing Company, 1909. Price, \$4.00.

The anatomy, symptoms, examination, and diseases of the rectum are carefully discussed in this book. The author shows that he possesses a thorough grasp of his subject. The book is got up in the well known style of the publishers; and the paper, binding, and press work are of the very best. We can recommend this volume as one well calculated to give satisfaction to all who may procure a copy and study it. The illustrations are numerous and good.

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### POLITZER ON THE EAR.

A *Text-Book of the Diseases of the Ear*, for Students and Practitioners. By Professor Dr. Adam Politzer, Imperial-Royal Professor of Aural Therapeutics in the University of Vienna; Chief of the Imperial-Royal University Clinic for Diseases of the Ear in the General Hospital, Vienna, etc. Translated at the personal request of the Author and edited by Milton J. Ballin, Ph.B., M.D., Assistant Surgeon, New York Ophthalmic and Aural Institute; Assistant Surgeon, Mount Sinai Dispensary, Ear, Nose and Throat Department, etc., and Clarence L. Heller, M.D. Fifth Edition, enlarged and thoroughly revised. Octavo, 892 pages, with 337 original illustrations. Cloth, \$8.00, net. Lea & Febiger, Publishers, Philadelphia and New York, 1909.

The Vienna School of Otology is famous and it centres around Politzer admittedly the world's foremost authority. Fortunately for all concerned with this intricate organ, he has placed his knowledge in book form, covering the entire field in a single volume. It has become an aphorism that the whole of otology is in Politzer, not that the subject is small, but that it takes a master to condense it uniformly and clearly so that nothing needed by the general practitioner or specialist shall be missing. It is seldom that a translated work runs through many successive

editions, but *Politzer* is in exceptional book in every way, and it again comes to the English reading profession freshly revised by the author and with the translation scrutinized and approved by him, so that practitioners in this part of the world have direct access to the knowledge of the master. Such a work necessarily bears a price apparently high, but it is well worth it to anyone interested in the subject.

When one has read *Politzer* on the Ear he has read the final statement of our knowledge up to date. The author's preface bears the date of 22nd April, 1909. It is many years since the first edition appeared, but as the eminent author grows older in years he grows ever more up-to-date. There is not a careless line in the whole book. We could wish that every practitioner read such a work as this. He would then be a safe guide for his patient and when he should advise a specialist.

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### THE INDIANS OF THE SOUTHWESTERN STATES.

Physiological and Medical Observations among the Indians of Southwestern United States and Northern Mexico, by Alex. Hedlíčka. From the Smithsonian Institution, Bureau of American Ethnology, Bulletin 34. Washington, Government Printing Office, 1908.

This book of 460 pages gives a very good account of the Indian tribes of the regions under consideration, and their modes of living. It is certainly an interesting work and will prove of value to those engaged in this class of study.

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### VACCINE AND SERUM THERAPY.

Including also a Study of Infections, Theories of Immunity, Opsonins and the Opsonic Index, by Edwin Henry Schorer, B.S., M.D., Assistant Professor of Parasitology and Hygiene, University of Missouri; Formerly Assistant Rockefeller Institute for Medical Research, New York City. Illustrated, St. Louis: C. V. Mosby Company, 1909. Price, \$2.00.

All history yields no more wonderful romance than the study of infections, bacteriology, immunity, and serum therapy. This is true whether one directs his attention to the nature of men, or things, or persons, or sciences. The work of Pasteur, Koch, Behring, Wright, Aaronson, Kitasato, and many others stands out in the world's history as among the noblest achievements of the human intellect. In the present work of Professor Schorer we have a sound exposition of vaccine and serum therapy as it is now viewed by the leading exponents of this work to-day. Throughout the book are to be found illustrations which assist very materially in making the subject matter clear. A clear account is given



of the various sera and their mode of preparation, and their therapeutic value. This book contains chapters on infections, immunity, opsonic index, nature of opsonins, vaccine therapy, and serum therapy. By the perusal of such a work as this one's mind is steadied, and a clear conception is gained as to "where we are at" in this phase of the study of the treatment of disease. Much splendid work has been done, but the book also shows that there is much yet to be done.

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### ANAESTHETICS AND SURGICAL TECHNIQUE.

By Rowland W. Collum, L.R.C.P., M.R.C.S., Eng., Anaesthetist to St. Mary's Hospital, Paddington; the Charing Cross Hospital, and the Hospital for Sick Children, Great Ormond Street; and H. M. W. Gray, M.B., C.M., Aberd.; F.R.C.S., Edin.; Surgeon and Lecturer on Clinical Surgery, Royal Infirmary, Aberdeen. Edited by James Canthie, M.A., M.B., C.M., Aberd.; F.R.C.S., Eng.; Surgeon Seamen's Hospital Society; Lecturer on Surgery, London School Tropical Medicine; Surgeon West End Hospital. London: John Bale, Sons & Danielsson, Limited, Oxford House, 83-91 Great Titchfield Street, Oxford Street, W.; 1909. Price 10s. net.

This is a typical pocket medical book in flexible leather cover. The contents are all that could be desired in the space devoted to each section. This book will prove very useful to senior students, and busy practitioners. This is the first volume of a series to be known as "The Medico-Chirurgical." The book is well bound, printed on good paper, and well illustrated. It is often too true that many senior and young practitioners fail in the minor details than in the larger aspects of the healing art. So far as the space permits of it, this book of about 400 pages is a veritable *multum in parva*.

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### DISEASES OF CHILDHOOD.

Common Disorders and Diseases of Childhood. By George Frederic Still, M.A., M.D., (Cantab.) F.R.C.P., (Lond.). Professor of Diseases of Children, King's College, London; Physician for Diseases of Children, King's College Hospital; Physician to Out-patients, Hospital for Sick Children, Great Ormond Street; Honorary member of the American Paediatric Society. London: Henry Frowde, Oxford University Press; Hodder & Stoughton, Warwick Square, E.C., 1909.

To those who know what an excellent series of books the "Oxford Medical Publications" is, it will at once become apparent that this work is of high standard to find a place in this list. This book is an exceedingly neat one of a little over 700 pages. It is handsomely bound, and printed on paper of superior quality and in clear type. It would be quite out of place to speak of the authority as an authority of weight on

the diseases of childhood. For many years his name has been before the medical profession as an authority on this class of diseases. This book treats of all the morbid conditions that a practitioner is ever likely to encounter. This book, from beginning to end, is solid food. There is no waste padding. The best, and nothing but the best, and all the best is herein to be found.

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## MISCELLANEOUS.

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### THE ONTARIO MEDICAL ASSOCIATION.

The recent meeting, the 29th one, was a decided success. This, every one who was present admits. The attendance was large, and the work in the general meetings and the sections was of a high order of merit.

Dr. H. J. Hamilton made an ideal president for several reasons. He was very energetic, he was attentive to every detail, and he gave an excellent and timely address.

The social side of the meeting was well in evidence. Those present were glad to meet old friends and make new ones. The social hour in the Medical building after the first evening's session was enjoyable. The dinner on the second evening was well attended and the interest well sustained, as the speaking was bright and of happy form.

A good deal of the work was done in the various sections of medicine, surgery, gynaecology and obstetrics, and eye, ear, nose and throat. All who attended these sections were fully satisfied with the programme provided and the standard of the papers and the discussions.

In the general sessions the members were treated to some addresses that will be long remembered, because of their merit. One of these was by W. L. Emmett Holt, of New York, on "The Serum Treatment of Cerebro-Spinal Meningitis." After hearing his paper one could no longer have any doubts as to the great merits of Flexner's serum in the therapeutics of this terrible disease.

Dr. John B. Deaver, of Philadelphia, gave an able address on Diffuse Peritonitis. He made it very clear how far the profession had advanced in the treatment of this condition.

Professor Osler's address in medicine was all that was expected. He covered a wide field and gave sound advice on the many points touched upon.

On the subject of pasteurization of milk there was a very lively discussion. Drs. Amyot, Machell, and Hastings contended strongly in favor of pasteurization. They did not in any way discount the efforts that

should be made to secure clean milk as well. Dr. Sheard, on the other hand, though the effort should be to obtain pure, clean milk, and regarded pasteurization as only a compromise between the sanitarian and dirt.

The following officers were elected: President, H. R. Casgrain, Windsor; Vice-President, H. B. Anderson, Toronto; J. M. Rogers, Ingersoll; J. C. Connell, Kingston; J. R. Arthur, Collingwood; General Secretary, F. A. Clarkson, Toronto; Assistant Secretary, G. S. Strathy, Toronto; Treasurer, J. H. Mullin, Hamilton.

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### MISLEAD THE PUBLIC.

The College of Pharmacy Council criticize certain advertisements. The publishing of certain remedies and medical treatment of a nature calculated to do harm to those impressed by such advertisements should be made illegal and a criminal offence, was the purport of a strong resolution passed at yesterday's session of the Council of the Ontario College of Pharmacy. The members thought the attention of the proper authorities should be directed to the publicity given such advertisements, holding that they tend to mislead the innocent public.

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### PURE MILK LEAGUE ASKS CIVIC GRANT.

The Pure Milk League, with the endorsation of Dr. Sheard, City Medical Health Officer, persuaded the Local Board of Health at a recent meeting to pass a resolution requesting the Board of Control to authorize Dr. Sheard to pay bills which might be rendered by the Pure Milk League this summer, up to the amount of \$500, for milk distributed through the league's milk depots. The milk is for the infants of poor parents residing in the congested districts of the city.

The Board of Control referred the matter to Dr. Sheard for a report on it.

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### DR. H. MACMURCHY TALKS AT BUFFALO.

Dr. Helen MacMurchy of Toronto, Ontario, who holds a commission from the Ontario Government for the study of feeble-minded children in penal institutions, took a prominent part in the discussion of Mrs. Amigh's paper at the conference on truant children. The report of the British Commission submitted two or three years ago, said Dr. MacMurchy, showed that the proportion of feeble-minded and delinquent boys outnumbered those of girls three to two. Too little attention was paid to the boys, she said. Dr. MacMurchy advocated the appointment of official

guardians for "border line" girls, sending only special cases to custodial homes. Clergymen and others who perform the marriage ceremony for persons of weak intellect should have the right of marrying taken away from them. Dr. MacMurchy spoke interestingly of her work in Ontario, and she was heartily applauded.

"Good discipline rests upon justice," said Superintendent Penn. "I would abolish the word punishment from our institutions." More can be accomplished, he declared, by winning the children's love and instilling in their minds an appreciation of the benefits of good order.

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#### DR. BELL'S EXPERIENCE IN PORT SEVERN DISTRICT.

Infection is not the only danger to be encountered in the fight against disease, according to the story of Provincial Health Inspector R. W. Bell, who has been dealing with an outbreak of smallpox in the vicinity of Port Severn. On his arrival he learned that there were some forty cases in the neighborhood. A wedding celebration was in progress, and the people, fortified with the stimulants provided for the occasion, offered a vigorous resistance to Dr. Bell's attempt to quarantine and vaccinate them. Indeed they drove him from the place.

The inspector, unable to secure assistance in the neighborhood, travelled afoot to Port Severn and telegraphed to Toronto for aid. Two sanitary inspectors answered the call. Armed with large blue cards, printed in red, and bearing imposing seals, Dr. Bell, Dr. Montgomery and the two inspectors went through the district and vaccinated 292 persons, all French-Canadians. Sixteen patients were lodged in a temporary hospital and ten others in a house nearby. The officers believe that the epidemic is now under control.

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#### UNIVERSITY OF TORONTO, MEDICAL EXAMINATIONS, FOURTH YEAR.

The following are the results of the fourth year examinations in medicine for the University of Toronto:—

Final examination—Degree with honors—1, W. J. M. Marcy; 2, F. J. O'Connor; 3, R. McTavish.

Medals—Gold, C. B. Parker; silver, 1, W. H. Tytler; 2, W. J. M. Marcy; 3, A. G. Brown.

Graduates in arts, in natural sciences or in the biological and physical sciences—H. W. Baker, I. R. Bell, H. R. Holme, W. L. C. MacBeth, A. B. Macallum, C. B. Parker, R. S. Pentecost, E. A. Rae, L. B. Robertson, L. J. Solway, C. R. Totton, W. H. Tytler, N. J. L. Yellowlees.

Group I.—Medicine, clinical medicine, pathology and therapeutics—1, C. B. Parker; 2, W. H. Tytler; 3, F. J. O'Connor; 4, W. J. M. Marcy; 5, C. A. Harvie.

Group II.—Surgery, clinical surgery, surgical anatomy and pathology—1, C. B. Parker; 2, J. A. Johnston; 3, R. McTavish; 4, W. J. M. Marcy, W. H. Tytler; 6, C. A. Harvie.

Group III.—Obstetrics, pediatrics, gynæcology and pathology—1, W. J. M. Marcy; 2, C. B. Parker; 3, W. H. Tytler; 4, C. A. Harvie; 5, R. H. Thomas; 6, F. J. O'Connor; 7, R. V. B. Shier; 8, L. A. Douglas; E. A. W. Morgan; 10, G. N. L. Earle; R. D. Lane, 12, J. H. McIntosh; 13, H. R. Holme; 14, I. R. Bell; J. A. Johnston; 16, J. R. Christian; 17, R. McTavish.

Group IV.—Medical jurisprudence, toxicology, hygiene and psychiatry—1, A. G. Brown; 2, R. D. Lane, 3, R. H. Thomas; 4, C. B. Parker; 5, W. F. M. Adams, W. H. Tytler; 7, J. L. Graham; 8, J. R. Christian; G. J. Whetham; 10, W. W. Tyerman, W. S. Verrall; 12, A. E. Sutton; 13, H. M. Clarke; 14, L. B. Robertson; 15, R. McTavish.

Fourth year—Pass—G. W. Anderson, C. F. Atkinson, G. O. Barclay, G. Belfie, J. S. Boyd, R. W. Breule, R. J. R. Bright, N. E. Culbertson, J. D. Cunningham, D. V. Currey, R. E. Davis, W. Davis, T. A. J. Duff, E. J. Eacrett, W. M. Ecclestone, H. H. Eady, S. Ellis, H. G. Emerson, H. B. Ewens, E. S. Fish, V. S. Francis, J. C. Gandier, J. R. Gibson, G. A. J. Glionna, C. W. Graham, G. C. Gunn, M. J. Haffey, B. Hannah, E. C. Harris, E. K. Henderson, B. H. Hopkins, W. Jamieson, D. B. Janieson, W. G. Leggatt, R. W. Lynn, R. O. Miller, H. H. Moshier, K. M. Murray, C. J. McBride, D. McCaffery, W. L. McCullough, R. J. McEwen, S. F. McEwen, J. A. McInnis, W. T. McLean, J. D. McPhee, A. E. Naylor, S. W. H. Nelson, G. B. New, H. M. Nicholson, K. J. O'Neill, T. S. Orr, T. W. Peart, W. C. Pedlar, W. G. Penny, G. R. Philip, J. W. Pilcher, Miss B. T. Pullan, J. N. Richards, L. A. Richmond, W. L. Ritchie, F. N. Robertson, W. H. Robertson, N. W. Rogers, J. A. Simpson, W. D. Slater, Miss J. Smillie, F. C. D. Smith, J. G. R. Stone, H. A. Taylor, N. Telford, N. L. Terwilligar, W. M. Thomas, J. T. Thomas, H. L. Turnbull, V. L. Turrill, G. H. Wallace, E. R. Wells, L. B. Williams, J. S. Wray, D. A. Campbell is granted aegrotat standing of the fourth year.

A number of students are required to pass supplemental examinations in the subjects mentioned against their names in a list given below.

#### SUCCESS IN SUPPLEMENTALS.

The following students have completed supplemental examinations in the following subjects:—Medicine—J. J. Field. Clinical medicine—J. E.

Haight, G. W. Ross. Surgery—J. A. Campbell, J. J. Field, R. E. Humphries, R. R. Walker. Clinical surgery—R. L. Hurst. Pathology—R. E. Humphries. Gynæcology—J. J. Field, C. F. W. Ross, A. A. Thompson, R. R. Walker. Ophthalmology, otology, laryngology and rhinology—A. A. Thompson.

#### MUST PASS SUPPLEMENTALS.

The following graduating students are required to pass supplemental examinations before completing the fourth year in the subjects named. 'Medicine—D. V. Currey, W. M. Ecclestone, S. Ellis, H. B. Ewens, J. R. Gibson, C. W. Graham, G. C. Gunn, D. B. Jamieson, Miss M. Morden, K. M. Murray, W. L. McCullough, W. T. McLean, S. W. H. Nelson, H. M. Nicholson, G. R. Philp, J. N. Richards, W. L. Ritchie, N. W. Rogers, Miss J. Smillie, J. G. R. Stone, N. Telford, J. T. Thomas, G. H. Wallace, E. R. Wells, L. B. Williams.

Clinical medicine—G. W. Anderson, W. M. Ecclestone, S. Ellis, H. B. Ewens, G. A. J. Glionna, C. W. Graham, B. Hannah, W. Jamieson, K. M. Murray, W. L. McCullough, W. T. McLean, I. D. McPhee, S. W. H. Nelson, H. M. Nicholson, W. G. Penney, W. H. Robertson, N. W. Rogers, W. D. Slater, Miss J. Smillie, J. G. R. Stone, N. Telford, J. T. Thomas, E. R. Wells, L. B. Williams.

Surgery—G. C. Gunn, R. O. Miller, W. T. McLean, J. D. McPhee, S. W. H. Nelson, H. M. Nicholson, E. R. Wells.

Pathology—H. B. Ewens, G. C. Gunn, D. B. Jamieson, J. N. Richards, W. L. Ritchie, N. W. Rogers, H. A. Taylor.

Hygiene—N. Telford.

Pediatrics—G. A. J. Glionna, B. Hannah, R. O. Miller.

Ophthalmology, otology, laryngology and rhinology—S. Ellis, J. R. Gibson, G. A. J. Glionna, C. W. Graham, G. C. Gunn, W. L. McCullough, H. M. Nicholson, W. G. Penney, W. D. Slater, J. G. R. Stone, H. A. Taylor, J. T. Thomas, G. H. Wallace, E. R. Wells.

Clinical surgery—J. R. Gibson, W. Jamieson.

Obstetrics—H. H. Moshier, H. M. Nicholson, G. R. Philp, W. L. Ritchie.

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#### BILL INCORPORATING THE CANADIAN MEDICAL ASSOCIATION.

The Canadian Medical Association has been incorporated by Act of Parliament. The following is a copy of the bill, which was promoted by the Committee on Legislation, named herein :

Whereas, Adam T. Shillington, Robert Wynard Powell, Frederick Montizambert, Henry Beaumont Small, and John D. Courtenay, all of

the city of Ottawa, in the Province of Ontario, physicians, have by their petition on behalf of the unincorporated society known as "The Canadian Medical Association," prayed that it be enacted as hereinafter set forth, and it is expedient to grant the prayer of the said petition: Therefore, His Majesty, by and with the advice and consent of the Senate and House of Commons of Canada, enacts as follows:

1. The said Adam T. Shillington, Robert Wynard Powell, Frederick Montizambert, Henry Beaumont Small, and John D. Courtenay, and all other members of the said present unincorporated society, together with such other persons as become members of the corporation, are hereby constituted a corporation under the name of "The Canadian Medical Association," hereinafter called "the Association."

2. The objects of the Association shall be the promotion of the medical and allied sciences, and the maintenance of the honour and interests of the medical profession, by the aid of all or any of the following:—

(a) Periodical meetings of the members of the Association, and of the medical profession generally, in different parts of Canada or elsewhere.

(b) The publication of such information as may be thought desirable in the form of a periodical journal, which shall be the journal of the Association.

(c) The occasional publication of transactions or other papers.

(d) The grant of sums of money out of the funds of the Association for the promotion of the medical and allied sciences in such manner as may from time to time be determined.

(e) And such other lawful things as are incidental or conducive to the attainment of the above objects.

3. The Association may make such by-laws and rules, not contrary to law or to the provisions of this Act, as it may deem necessary for the government and management of its business and affairs, and especially with respect to the qualification, classification, admission and expulsion of members, the fees and dues which it may deem advisable to impose, and the number, constitution, powers, and duties of its executive council, or other governing or managing committee, and of its officers, and may from time to time alter or repeal all or any of such by-laws and rules as it may see fit.

4. Until altered or repealed in accordance with the provisions thereof, the existing constitution, by-laws and rules of the said unincorporated society, in so far as they are not contrary to law or to the provisions of this Act, shall be the constitution, by-laws and rules of the Association.

5. The present executive council and other officers of the said unincorporated society shall continue to be the executive council and officers of the Association until replaced by others in accordance with the constitution, by-laws and regulations aforesaid.

6. No member of the Association shall, merely by reason of such membership, be or become personally liable for any of its debts or obligations.

7. The Association may receive, acquire, accept, and hold real and personal property by gift, purchase, legacy, lease, or otherwise, for the purpose of the Association, and may sell, lease, invest or otherwise dispose thereof in such manner as it may deem advisable for such purposes; provided, however, that the annual value of the real estate held by the Association shall not exceed the sum of fifty thousand dollars.

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## MEDICAL NEWS.

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Dr. R. Rowan has removed from 301 Dundas St. to 552 Bathurst St., Toronto.

Drs. F. L. M. Grassett, Charles Trow, P. H. Mason and Geoffrey Boyd, all of Toronto, have gone to Britain.

Drs. S. T. White, of Shelbourne, Dufferin County; Kenneth Campbell of Bruce Mines, Algoma; W. F. Loucks, of Campbellford, Northumberland, have been appointed Associate Coroners for their respective counties.

Dr. David Heggie, who has been in practice in Brampton for 44 years is spending the summer in England.

J. B. Leather, F.R.C.S., of London, Eng., has been Professor of Chemical Pathology in the University of Toronto.

The University of Toronto is to have a new museum building at an early date. It is estimated to cost about \$300.00. It is understood that the University will also have a regiment of volunteers made up entirely of University men and University students.

There was a fire in the Melfort Hospital, Sask., but owing to prompt action of the fire brigade, no injury was done to any of the patients.

There is to be a new asylum building at Selkirk. It will be 152 ft. by 90 ft. and consist of a basement and three stories. It will cost about \$100.000.

The Medical Association of Manitoba elected officers as follows:— President, Dr. Harvey Smith, Winnipeg. First Vice-President, Dr. Hicks, Griswold. Second Vice-President, Dr. J. Matheson, Brandon, Hon. Secretary, Dr. J. Halfpenny, Winnipeg. Hon.-Treasurer, Dr. Rorke, Winnipeg. Executive Committee, Dr. Wright, Oak Lake; Dr. Keelet, Porage la Prairie; Dr. Ross, Selkirk; Dr. Speckles, Pilot Mound; Dr. Harrington, Dauphin.