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## Original Communications.

### APPLICATION OF THE PRINCIPLE OF OSMOSIS TO THE TREATMENT OF TOXÆMIA.\*

(A Preliminary Report.)

BY WALTER MCKEOWN, B.A., M.D., M.R.C.S. ENG.

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SUPPOSE we have two fluids, say water and a saturated solution of sulphate of magnesia, separated only by an animal membrane, for instance a piece of bladder wall, although the bladder wall may be impervious to water alone, and to a saturated sulphate of magnesia solution alone, yet when these two fluids are on either side of it an interchange takes place, the water passes through into the salt solution and the salt solution through into the water, carrying the dissolved sulphate of magnesia with it. This will continue until the fluids on both sides have attained an equal degree of saturation. This is known as the law of osmosis, and all crystalline

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bodies (as distinguished from colloid) have the power of so passing or dialysing through an animal membrane, provided the opposite side of the membrane is in contact with a fluid of a less or greater degree of concentration.

When any pathogenic micro-organism begins to reproduce itself in the human body it forms a poisonous product known as a toxin, and concurrently, I am not prepared to say simultaneously, an anti-toxin is formed. Speaking broadly, the toxin kills, the anti-toxin cures. The great majority of specific diseases, did the patient not die overwhelmed by the toxin, would necessarily terminate at the time when sufficient anti-toxin was produced to overcome the toxin and its producer the micro-organism. This must be true, else there is no reason why a specific organism should not, once it obtained a foothold, go on reproducing itself indefinitely.

Further, it will probably be generally admitted that the less toxin present the less anti-toxin necessary to overcome it, and the greater likelihood that the anti-toxin and the normal germicidal action of the blood serum—the natural resistance, or whatever we may wish to term or consider it—will bring about a more rapid and favorable termination.

There is a peculiar difference in their osmotic power between toxins and anti-toxins. Toxins will dialyse, anti-toxins will not. We have here, then, a method of separating these bodies. Over two years ago I evolved the following plan which I thought would draw off the toxins, leaving the anti-toxins undisturbed in the circulation. I purposed diluting the blood by injecting directly into a vein deci-normal salt solution and filling the rectum with a saturated solution of sulphate of magnesia. To retain the fluid in the rectum a pneumatic plug is used, through which passes a large afferent and a small efferent tube with a stop-cock. I reasoned that I had here everything necessary for dialysis, two fluids of different degrees of concentration (the blood and sulphate of magnesia solution) on either side of an animal membrane (the wall of rectum), and two bodies capable of osmosing through this wall, the toxin and the sulphate of magnesia. I explained my theory to a number of medical men in Toronto, hoping that they would encourage me to try if it would work out practically. No one disputed that my theory was plausible enough, but although I tried several times to put it into practice upon suitable cases at St. Michael's Hospital, the suitable case never came in a patient under my own charge, and the other men had apparently not enough confidence in my theory to allow me to exploit it on one of their patients.

However, everything comes to him who waits, and I got my case at last.

Case 1. Mrs. B., German-Canadian, 30 years of age, was admitted to St. Michael's Hospital in October last. The case had been diagnosed and treated outside for three months as "typhoid fever." For a couple of weeks after admission the patient showed a septic temperature, the evening reading varying from  $1^{\circ}$  to  $4^{\circ}$  above the morning, but falling gradually. At the end of two weeks it again rose, and as the patient showed severe constitutional symptoms of sepsis and a large mass could be made out on the right of the uterus, Dr. J. F. W. Ross, under whose care she was placed, diagnosed pus-tube and determined to operate. Operation was fixed for November 9, but the evening before Dr. Ross was called to a case of appendicitis at Belleville, and the operation was consequently postponed until the morning of the 10th. Examination under anæsthesia showed a diminution in size of mass. On opening the abdomen pus squirted out in a regular jet. The patient was in such bad condition that the anæsthetist was afraid she would die on the table, and as Dr. Ross thought so also, he hurriedly packed the wound with iodoform gauze without either irrigating or wiping the abdominal cavity, introduced a few sutures at the lower angle of the wound and brought the end of the gauze drain out through an opening about two inches long, which he left in the abdominal wall. I had assisted at the operation, being Dr. Ross' regular assistant at St. Michael's, and as it seemed an utterly hopeless case I asked to have the patient placed under my care for the purpose of demonstrating my theory. The time occupied by the anæsthesia and operation was only half an hour, and she was returned to the ward in a collapsed condition with a small poor pulse of 150. As soon as she was placed in bed I cut through the skin over one of the veins of the arm, exposed the vein freely and picked it up in a pair of dressing forceps. I had a quantity of deci-normal salt solution prepared and had also ready a piece of rubber tubing to which I attached at one end an ordinary glass funnel, and to the other a needle which I borrowed from an aspiration case. After running the salt solution freely through to ensure absence of air I pushed the needle into the vein and allowed the solution to flow in, which it did rather slowly on account of the small opening in the needle. However, filling the funnel as often as it emptied I introduced a pint and a half (30 ozs.), I covered my wound with some gauze, and as I had not prepared my rectal irrigator according to my original idea I ordered a cupful of saturated solution of sulphate of magnesia

to be introduced high up into the bowel. Forty minutes afterward she had a severe chill, and her condition became such that it was thought she was dying, becoming cyanosed and pulseless. At 5 o'clock the same day her pulse was still 150. I again injected into the same vein and through the same opening  $1\frac{1}{2}$  pints of solution, and again a cupful of saturated mg. sulph. solution. She again had a severe chill, lasting fifteen minutes, the temperature rising to  $104^{\circ}$  for a short time, and then rapidly falling to normal, and at 7 o'clock in the evening her temperature was  $100^{\circ}$  and pulse 114. Next morning (Nov. 11th), I again used salt solution in the blood and mag. sulph. in the bowel. The temperature came from  $100^{\circ}$  to  $99^{\circ}$ , and the pulse from 132 to 120, remaining about the same until 2 a.m. of Nov. 12th, when her temperature went to  $102^{\circ}$ , but the pulse was only 116. The patient seemed so well that I did not use the treatment again, the pulse keeping good, although the temperature went as high as  $103^{\circ}$ , until the morning of the 13th when I injected into another vein (the one I had previously used was obliterated by a firm clot) a quart of salt solution, and as I found that the saturated solution of magnesia sulphate was too irritating and had produced very free purging, I ordered two ounces of sulphate of magnesia in six ounces of warm water, to be introduced into the bowel instead of the stronger solution. The result was the same. The temperature dropped to normal after a prolonged chill (during which it reached  $104^{\circ}$ ), and the pulse improved. The temperature remained normal until 2 o'clock on the afternoon of the 14th, when it registered  $102^{\circ}$  and  $103^{\circ}$  by 6 p.m.; the pulse was 122. At 8 o'clock that evening (14th), I repeated the treatment. A chill followed, the temperature rose to  $104^{\circ}$ , and then dropped to normal. The next time I used it was at noon on the 15th. I tried the same vein I used at the previous injection, and pushed my needle through the thrombus, but apparently the point went out again through the wall of the vein, and the solution went into tissues. The arm swelled to a great size, and at 6 o'clock the temperature was  $102^{\circ}$ , a drop of one-degree. This was the only time the temperature did not come down to normal, the only time the patient did not have chill, and the only time she complained of any pain following the injection. She, however, now complained most bitterly of the pain of her arm, and did so for several days subsequently. I used the treatment again on the 16th, 17th and 18th, the temperature coming down after a chill to normal from  $101^{\circ}$  to  $103^{\circ}$ , and the pulse dropping 20 or 30 beats in the minute. During all this time the patient felt well. *She never vomited*, and took her nourish-



ment well. On the fifth day I removed the packing. (I did not think it well to remove it sooner for fear that the intestines would protrude if adhesions had not formed). I sucked up with an ordinary glass syringe a large quantity of pus free in the abdominal cavity, and after I was through the patient informed me that she was hungry and would like some chicken. She took a large quantity of milk daily after the first twenty-four hours, also egg nogg and scraped beef. Since the 18th of November to the present I have allowed nature to combat the toxins, washing out the wound with formalin, 1 in 500, through a uterine irrigator, which I selected as being the handiest instrument for my purpose, and which I could at first push in about eight inches down into the pelvis. She has gradually improved, and although the wound in the abdomen is still open I can introduce the irrigator only an inch and a half. She both feels and looks well, and is taking solid food, can move herself readily about in bed, and although her temperature is a little up her pulse is never over 100. In a few weeks she will be up and well. She received no medication whatever except strychnine sulphate gr.  $\frac{1}{30}$  four times daily.

An examination of the pus, kindly made for me by Mr. J. J. McKenzie, of the Biological Department, Toronto University, showed a pure culture of staphylococcus P. aureus, although from the stench of the pus I thought that the bacillus coli communis would have been found in abundance.

Emboldened by my success in this case, I tried it in Case 2.

Case 2. Wednesday evening, Dec. 1, during my absence, a message was sent me to go to a woman who had engaged me to attend her in confinement. She was 35 years of age, mother of several children, and a fairly healthy woman, with the exception that she was troubled with asthma. It was about two hours after the message came when I returned, and I went immediately to the house. I found that another medical man had been called in, and that everything was over. She had a short labor, and the child was born ten minutes after the doctor had made his first and only examination. The after-birth came away without any trouble. I arranged with the gentleman who attended her that I would go on with the subsequent attendance. Next day, December 2, she was very well indeed. December 3, I called in the afternoon and found her suffering from a severe chill, temperature  $104^{\circ}$ , pulse 130. I gave an intra-uterine douche, and ordered free purgation with sulphate of magnesia. I was sent for the next morn-

ing at six o'clock, and found her temperature  $105^{\circ}$  and pulse 140. She complained of severe pain during the night in the uterine region, and although there was no distension I suspected the disturbance was septic, and without any further examination advised her removal to St. Michael's Hospital.

On making a more complete examination there I found some dulness over the back of the right lung and crepitant rales over a considerable area. She had no pain, her temperature remained high, and the pulse was rapid. Bronchial breathing developed in the apex of the right lung (I was unable to detect any at the back). During afternoon of Dec. 6th her pulse, which was about 120 on admission, went up to 136 and the temperature to  $105^{\circ}$ , and I determined to use the saline solution in blood and sulphate of magnesia in bowel, but as the pulse had gone down to 120 a few hours afterwards and before I returned to the hospital I deferred it until the afternoon of the 7th (fifth day of disease): pulse 138, temperature  $105\frac{2}{3}^{\circ}$ , patient very restless and delirious, cyanosed and apparently in very bad condition. I injected  $1\frac{1}{2}$  pints of salt solution into a vein in the arm, ordered an injection of 3 ozs. of magnesium sulphate in 8 ozs. of warm water in the bowel, to be repeated if not retained for more than 15 minutes, and left her. She had a chill, the temperature rose to  $106\frac{1}{4}^{\circ}$ , but in four hours was  $98\frac{2}{3}^{\circ}$  and pulse 100. She fell into a deep sleep and slept all night. The next morning (Dec. 8), the sixth day of the disease, the temperature was  $97^{\circ}$ , pulse 96. The patient said she felt well and asked for some bread and butter. Much to my surprise the temperature remained normal or sub-normal all the next day, the pulse kept below 100, and the patient seemed remarkably well. The next morning at six o'clock (thirty-six hours after treatment), the temperature was still normal, and pulse 96. At ten o'clock of the same day it rose to  $101\frac{2}{5}^{\circ}$ , at one o'clock it was  $106\frac{3}{8}^{\circ}$ . The pulse also rose rapidly to 160 and 180. The woman was apparently dying, and I hurriedly again introduced saline solution and sulphate of magnesia, using the same quantity of each as at the previous treatment. She again had a chill and temperature dropped, although not as rapidly as at first, to  $101^{\circ}$ , and the pulse came down to 136. At about midnight of the same day I used the treatment again. Next morning the pulse was 120, temperature  $101^{\circ}$ , which gradually fell to normal, and the pulse forty-eight hours after the last injection was 80. Pulse kept below 80, and temperature normal or sub-normal for three days when it again ran up to  $104^{\circ}$ . Her general condition was, however, good, and after a high evening temperature and

morning remission lasting for about a week, pus was discharged per vaginam, the temperature came down and has remained normal since. Vaginal examination revealed a great deal of inflammatory thickening in pelvis. She is at present in excellent health and tells me her asthma is better than it has been for years.

The two cases have convinced me that my theory is correct, and that it will work out in practice. I quite realize that my pneumonia case might have recovered anyway, although after a pulse-rate of 180 and temperature of  $106\frac{2}{3}^{\circ}$ , it would have been remarkable. I also realize that my case of purulent peritonitis might have recovered under the ordinary treatment, although I would characterize such a result as extraordinary. It is not upon the fact that they recovered that I place my faith. It is upon the fact that my treatment is based upon the mechanical application of a natural law, the surest of all foundations, and upon the fact that, although I have treated only two cases, marked improvement followed immediately upon the use of saline and magnesia sulphate, and that there can be no doubt in the world that the treatment and the improvement bear the relation of cause and effect.

Let us consider that as a rule pathogenic micro-organisms do not inhabit the blood—their growth takes place and their toxins are produced in the tissues. How do they get into the circulation? Through the lymphatics. Going further, how do they get into the lymphatics? It is true stomata exists in the walls of the lymph capillaries of the serous membranes, and this may, to some extent, explain the very rapid absorption from these surfaces, but I do not think that there is very good ground for the belief that stomata are present in lymph capillaries of other parts. Now, if there are not stomata, toxins can get into the lymph ducts in no other way than by osmosis. This theory will, to my mind, better than any other explain the circulation in the lymphatics, because, as we know that if, for instance, we have a jar divided into two halves by an animal membrane, and solutions of different degrees of concentration on either side, if we fill each side so that the fluids are at a level the less concentrated will pass into the more concentrated at a greater rate than the reverse will occur, and consequently the level of the more concentrated is forced above its original level, and the less concentrated falls below it. This probably takes place in the lymphatics, the osmotic power forcing the fluids onward, and the peculiar construction of the lymph channels keeping as they do nearly the same calibre throughout their course would further favor this; the circulation in these being more rapid than if they

widened out as do the veins. If toxins will pass through the wall of the lymph capillaries they will do the same through the wall of the blood capillaries, and so they are thrown out of the circulation. Anti-toxins on the other hand are possibly produced within the blood current, and as they have not the power of dialysing they remain there for at least a considerable period of time. Now we can readily imagine that if toxins are thrown off by dialysis a large quantity of the fluid constituents of the blood passes out at the same time. Furthermore, the formation of pus in a large abscess cavity, for instance, must drain off a large quantity of serum from the blood stream. These two conditions acting together must tend to a considerable concentration of the blood itself, and we may judge this to be the case by looking at the hard, dry, brown tongue of a patient suffering from toxæmia. In suggesting the dilution of the blood I am helping nature's method of getting rid of these poisons. The solution of mag. sulph. in the rectum still further aids and ensures that once the toxins are thrown into the bowels they will not be left there for possible re-absorption but will be carried off at once.

If I am correct in my surmise the application of this process offers wonderful possibilities. Death from toxæmia is probably much more common in the specific diseases than is death from any other cause. Whether subsequent investigation will bear me out or not I am unable to say, but making all due allowance for the likelihood of being carried away by my own idea I feel certain it will. I quite realize that many modifications may occur to me or suggest themselves to others as regards the method of applying the principle of osmosis. For instance, my friend, Dr. Graham Chambers, of this city, who was one of my first converts to the theory, has used continuous irrigation into the bowel with a stronger salt solution in two cases of general peritonitis with ileus and obtained most gratifying results. Again, it has occurred to me that the same principle might be carried out by immersing the patient in water, and I see no reason why osmosis should not under those circumstances go on readily through the skin. I think warm water would be best, no matter how high the temperature, both because it would be more agreeable to the patient and because it would determine more blood supply to the skin, and consequently hasten elimination by osmosis. Some such method as this, if found to work practically, would be very valuable in milder cases of toxæmia where opening a vein might seem heroic, or even in the more severe, when there was no immediate danger of death.

The application of the principle is enormous and would prove use-

ful not only in the toxæmia due to specific disease, but in rheumatism, in uræmia, in poisoning by alkaloids, in fact, in any condition in which a poison is present in the blood, which is capable of being dialysed through the capillary wall, we are in a position to assist nature at a time when under ordinary methods of treatment, we are quite helpless.

I will report whether my success be good or ill in future cases, and I am especially anxious to determine whether total immersion of the patient for a long time will drain off toxins. As to Dr. Chamber's modification, I am afraid that thorough irrigation of the bowel could not be carried on well in any condition except in one in which paralysis of the bowel was present.

I have been asked how I account for the chill following saline injection. It seems to me the explanation is obvious—a condition of equalization has taken place between bodies capable of dialysis without and within the blood current. Dilution of the latter necessarily means a rapid increase from without. Hence chill ; but toxins so absorbed are rapidly eliminated, and as the supply in the tissues has undergone a sudden diminution a fall of temperature follows which continues until a new supply is elaborated.

I have purposely refrained from bringing in the action of the kidneys in this paper. I am not prepared to say whether their action is a large or small factor in carrying off toxins, but I may say that in my first case I used three pints injected into the vein, within about seven hours. The nurse, following the usual routine, did not pass the catheter for eight hours. At the end of that time in spite of the large quantity of fluid injected directly into the blood she drew off only six ounces of urine.

In conclusion let me say that I may be only groping ; but of this I am certain that I am groping in the right direction.

## CARCINOMA OF THE STOMACH WITH SUBCUTANEOUS METASTASIS.\*

BY DR. H. J. HAMILTON,  
TORONTO.

MRS. D., æt 60, under the care of Dr. McCoy, of St. Catharines, and seen in consultation by Dr. Graham, to whom I am indebted for the specimen and clinical notes.

(1) Good health until about four years ago, when she complained of digestive disturbance.

(2) In March, 1897, definite symptoms of tumor presented.

(3) Digestive symptoms, continuous emaciation resulting.

(4) Pains never marked during her illness, but constant tenderness over the stomach.

(5) Hæmatemesis—on Sept. 10th.

(6) No further vomiting of blood nor of anything else until a short time before death.

(7) Nausea always intense.

(8) Constipation prevailed throughout.

(9) Blood in stomach tube when it was used.

(10) The patient was much emaciated and presented a great many subcutaneous nodules varying in size from that of a pea to that of a hazel-nut. These appeared about six weeks after the symptoms pointed to tumor of the stomach, tended to multiply rapidly, and did not grow much larger as time advanced. They were not very painful. There were more on the trunk than on the limbs, but still were very numerous in the latter situations.

(11) Tumor could not be felt distinctly. Size of the stomach not changed. Lymphatic glands not appreciably enlarged.

*Diagnosis:* Sarcoma of the stomach was thought probable on account of the subcutaneous nodules, but the fact that the symptoms all pointed to a primary affection of the stomach prevented a diagnosis of sarcoma being made.

Died November 13, 1897.

\* Read at meeting of Pathological Society.

*Post-mortem*: A large somewhat hard mass involves the whole stomach with the exception of a small area at the cardiac end. The walls are uniformly thickened, the greater and lesser curvatures being equally affected. The cavity is diminished in size. The lumen of the pylorus is less than normal, but not markedly stenosed. The stomach has been opened along the greater curvature and shows a large ulcer about midway between the pyloric and cardiac orifices. Peritoneal glands involved. The pancreas is adherent and implicated.

The spleen was adherent but not involved. These organs were all adherent to the abdominal wall. The liver was not affected. Heart and lungs normal.

*Microscopical examination*: Section from the cardiac end of the stomach and from the greater curvature near the pylorus, show marked proliferation of epithelial cells. The structure of the mucous membrane is lost. The greater amount of cell proliferation is in the submucous coats, but the muscular and serous coats are also involved. In some places there is more fibrous tissue than in others.

The subcutaneous nodules present a similar appearance. The spleen and liver are not involved. Sections of the pancreas show it to be infiltrated with epithelial cells.

The point of interest is the presence of the subcutaneous nodules, which are undoubtedly of the same character as the growth in the stomach. In this case the clinical picture was that of sarcoma. The metastasis cannot be explained by saying that there was transmission through the lymphatics; it must have been through the arteries. Osler records two cases in which subcutaneous cancerous nodules were found in cases of carcinoma of the stomach. It is not stated whether there were secondary growths in the liver and lungs or not. Dr. Findlay records a case which he presented at the Pathological Society of London, in which there was an epithelioma of the stomach, with secondary growths in the lungs, liver, suprarenal capsules, as well as in the subcutaneous tissues. It is somewhat difficult to say how subcutaneous metastasis could occur without the liver being involved, but two possible theories offer themselves for consideration. While, as a rule, the blood from the lesser curvature of the stomach passes almost entirely into the portal vein, sometimes the coronary vessel fails to communicate with the latter, but empties directly into the ascending vena-cava, thus giving transmission by blood vessels to the right side of the heart, and to the pulmonary capillary area without the intervention of the liver. The cancer medium might then pass to the left heart, and reach the

general circulation without even involving the lungs. In a case of sarcoma of the stomach, presented at this Society a year ago, by Dr. H. B. Anderson, there was involvement of the supra-renal capsules, the right auriculo ventriculus valve, and also two growths in the brain with no metastasis in the lungs or liver.

According to the second theory, the cancer particles, whether fluid or solid, may have reached the blood stream, being carried directly from the abdominal glands by the thoracic duct, to the left side of the heart. This is the more probable explanation.



## CASES OF MECHANICAL OBSTRUCTION IN THE FEMALE PELVIS.

BY T. K. HOLMES, M.D.,  
CHATHAM, ONT.

THREE cases of mechanical obstruction in the pelvis of sufficient magnitude to interfere with childbirth have given me much anxiety, and have seemed to me of sufficient importance and interest to be published. Deformity of the pelvis is not common in this country, and it is not to such cases that reference will be made in this article, but there are others and minor cases of obstructed labor which may be overcome sometimes, quite easily, if one is prepared to act promptly; but if such a case be presented for the first time unexpectedly it is not always possible to be prepared to meet it in the best way, or, indeed, to decide on the spur of the moment what is the most judicious course to pursue.

The first case occurred in the early years of my practice. The woman was a multipara and 38 years old. I had attended her in a labor in 1876, and had then delivered her, with great difficulty, of a living child by means of forceps. I then discovered a small hard mass springing from the sacro-iliac synchondrosis which I believed to be an enchondroma. She made a normal recovery and became pregnant again in 1880. Labor came on at full time and I was called to attend her. The mass had increased in size somewhat since her former labor, but I thought there was still room to deliver the child, the shoulder preventing, by postural version. This I did and succeeded in getting the head through the narrowed canal. The child was dead, the mother did not rally well and on the following day had a frequent weak pulse and a general bad appearance. Forty-eight hours after delivery a gangrenous spot as large as a silver dollar appeared about the location of McBurney's point, and within twenty hours more this had increased to the size of the top of a pint cup, and numerous smaller gangrenous spots had appeared on the thighs. No treatment availed, and she died in 88 hours after delivery.

I had cautioned this woman against becoming pregnant after the previous labor, and, as she was somewhat advanced in life, I thought the chances of her becoming so were rather remote. If I had known of her last pregnancy in time, the induction of labor prematurely would have been the safe course. When full term had been reached, I doubt if any better course could have been pursued than the one adopted. The removal of the ovaries in a woman having this form of obstruction would be justified, if on opening the abdomen removal of the tumor were found impracticable.

The second case was a primipara, and the first stage of labor was completed when I first saw her. A solid tumor as large as an orange was pressed firmly down into the hollow of the sacrum by the advancing head. It seemed so small that I thought delivery by forceps could be accomplished, but a trial soon convinced me that this could not be done. Drs. Fleming and McKeough were sent for, and, as a result of the consultation, craniotomy was performed, and the child delivered in that way. Two months later I removed the growth, which proved to be a solid fibroid tumor, occupying the posterior part of the cervix. A subsequent labor was free from difficulty, both mother and child doing well. When this child was ten years old the mother came under my care for melancholia, and examination revealed another fibroid similar in size and location to the first. This I removed by enucleation, and felt sure the melancholia would be cured by the operation. In this I was disappointed, and on examining her again two months afterwards another fibroid as large as a hen's egg was found occupying the posterior and lower segment of the uterus wall and encroaching on the cervical tissue. This I removed by means of Thomas' scoop, and her recovery from melancholia was then rapid and complete.

I have on several occasions observed cervical fibroids complicated with melancholia, and their removal has in every case been followed by disappearance of the mental depression. A singular circumstance connected with this case was that her mother and two of her sisters consulted me on account of tumors of this kind, the mother's being in the palm of the hand, one sister's on the thigh, and the other sister's on the abdominal wall just below the ensiform cartilage.

The third case occurred in a woman about twenty-five years of age, who had one child three years old. She had been in rather poor health for nearly a year, and for several months her temperature had been 100° F. every evening, and her pulse 90. While in this condition she became pregnant, and as her symptoms resisted

the treatment prescribed by her attending physician, Dr. Dewar, of Windsor, he kindly referred the case to me for examination. She came to me in November, 1896, and aside from the increased temperature and pulse, presented a healthy appearance. Examination for tuberculosis in any part of the body was negative, but a vaginal examination enabled me to detect a firm mass in Douglas' cul de sac and more to the right side of the ovary. The presence of this, taken in connection with the pulse and temperature, led me to suspect pyosalpinx, and I wrote to Dr. Dewar, suggesting the emptying of the uterus, for it seemed certain that if it were pus labor would rupture it and kill her, or if it were not pus, it would prevent delivery by the natural way. I further suggested that he ask Dr. Donald McLean, a very experienced surgeon of Detroit, to examine her and to get his independent opinion. This was done, and Dr. McLean was of opinion that it was pyosalpinx and that it should be removed through an abdominal opening.

The patient was placed in Harper's Hospital in Detroit, and I was invited to perform the operation, which I did on the 18th of November, 1896. She was, at the time of operation, between three and four months pregnant.

On opening the abdomen and exploring the pelvis with my finger, I found a hard mass springing from the right posterior aspect of the uterus just above the vaginal junction. Without much difficulty I incised the capsule and enucleated the growth. I then closed the cavity left by the tumor by means of a continuous fine silk suture, which completely controlled the bleeding, and closed the abdominal wound in the usual way. The patient vomited a good deal for two or three days, and there was a slight discharge of blood from the vagina on the second and again on the fourth day after the operation. She made a good recovery, and was confined on the 29th of May, 1897. The labor was normal in every particular, and the child weighed ten pounds. The most difficult things to account for in this case are the temperature and pulse, which continued about the same during the whole term of gestation and even after confinement they did not become normal as late as July. I have not learned her condition in this respect since.

## THE PLACE OF THE STATE IN DEALING WITH TUBERCULOSIS.\*

BY PETER H. BRYCE, B.A., M.B.,  
Secretary of Provincial Board of Health, Ontario.

(Abstract of Paper.)

PRIOR to twenty-five years ago all laws dealing with what are now called social subjects, especially relating to systematic state or municipal supervision of public health, were very crude in European countries, or neglected altogether in America. The cause is easily understood, for it was in 1850 that Davaine began his investigations into the origin of charbon. Pasteur recognized its spores in 1863; Koch advanced it a stage in 1870, which were concluded by Pasteur himself in 1877; thus was the germ theory of disease established, and the basis for modern medicine and public hygiene immovably constructed. Five years later Koch discovered the bacillus of tuberculosis, which in varied form attacks alike the infant, the growing youth or maiden, or those in the prime of life, almost since creation's dawn.

Statistics taken from almost any country will abundantly illustrate this; but, taking those of Ontario, as seen in the following, we obtain abundant food for thought:

### ONTARIO STATISTICS.

Deaths from tuberculosis in Ontario in successive census years:

1871—1,042, or 11.2 per cent. of all deaths.

1881—2,397, or 10.8 per cent. of all deaths.

1891—2,463, or 11.4 per cent. of all deaths.

Deaths from tuberculosis in Toronto in 1890-1896:

1890 . . . . . 387

1891 . . . . . 430

1892 . . . . . 477

1893 . . . . . 512

1894 . . . . . 442

1895 . . . . . 430

1896 . . . . . 442

\*Read before the American Public Health Association.

Total deaths from tuberculosis in United States in 1880, 91,551, or a little better than 12 per cent. of all deaths having reported causes; 1890, 101,903.

Divided as follows in 1890: North Atlantic division, 37,443, or a ratio of 2.2 per 1,000 population; south Atlantic division, 14,670, or a ratio of 1.7 per 1,000 population; north central division, 29,922, or a ratio of 1.3 per 1,000 population; south central division, 15,304, or a ratio of 1.4 per 1,000 population; western division, 4,564, or a ratio of 1.5 per 1,000 population.

## MORTALITY IN ASYLUMS.

Table of returns of Ontario asylums, giving inmates, admissions, annual deaths, and percentage of deaths from tuberculosis:

Year.	Inmates.	Yearly Admission.	Annual Deaths.
1871.....	1,366	166	62
1881.....	2,584	161	166
1891.....	3,865	308	190
1892.....	3,985	125	211
1893.....	4,174	189	243
1894.....	4,334	160	241
1895.....	4,557	223	309

Table giving the total deaths in Ontario asylums (exclusive of Mimico) during 1892 from tuberculosis, in a population of 4,231, the total deaths from all causes being 211:

Residence.	Total Deaths.	From Tuberculosis.	P.C. of Total.
Under 1 year.....	72	7	9.7
Bet. 1 and 2 years.....	25	5	20.0
Bet. 2 and 3 years.....	40	9	22.5
Bet. 5 and 10 years.....	19	10	52.6
Bet. 10 and 15 years.....	16	6	37.5
Bet. 15 and 20 years.....	15	2	13.3
Over 20 years.....	24	2	8.3
Total.....	211	41	23.4

In examining this table it is seen that nearly 2,500 persons die in Ontario from this dread disease, or more than ten times as many become affected every year with tuberculosis as with insanity, and ten times as many die. This does not take into account those deaths registered as due to diarrhœa, chronica, atrophica, anæmia, and so on.

In Ontario the Legislature has since 1826 been gradually extending the scope of its charities until in 1874 there were 10 hospitals with a per diem grant of 30c.; 4 refuges with a per diem grant of 7c.; and 13 orphanages with a per diem grant of 2c. This has further increased to 39 hospitals, 32 refuges, and 31 orphanages in 1896.

The population of these institutions increased as follows :

	1878.	1896.
Asylums.....	1,366	4,709
Hospitals.....	4,372	17,517
Refuges.....	1,300	4,355
Orphanages.....	1,356	3,995

The cost of maintenance also increased :

	1871.	1895.
Asylums.....	\$173,611	\$595,843
Hospitals.....	\$93,067	\$421,809
Refuges.....	51,176	193,160
Orphanages.....	11,223	116,570

Of which the Government in 1896 paid :

Hospitals.....	\$110,082
Refuges.....	51,306
Orphanages.....	15,594

Ontario was practically settled in 1871, and the increase of population since has not been rapid, and if the cost of erection of the institutions to house these unfortunates many millions more would be added to the yearly cost. The province has spent on asylums alone since 1867 the sum of \$9,854,479.

In the hospitals for 1896 some 430 persons were treated for tuberculosis, of which 25 per cent. died. Public aid is therefore given to a few consumptives in Ontario.

In New York we find that of every 1,000 deaths between the ages of 15 and 60 years, or the productive years of human life, there died 373.9 persons of tuberculosis. This percentage of 37 will be found to be nearly correct for all large cities in temperate climes.

Applying the calculation of Guerrard it follows that in 1895 in Ontario, there was \$2,472,000 of an economic loss from the deaths from consumption alone.

It is conceded that proper treatment in sanatoria will save at east 50 per cent. of the cases of tuberculosis. Hence an annual

saving of some \$2,472,000 for Ontario alone would result. Many other results of an economic character, such as the cost of sickness, loss of time through nursing, might be added, but these suffice to indicate the nature of the problem.

How far state intervention with regard to this disease is practicable must be, then, determined by expediency, and the circumstances of time and place. The state cares for other defectives, but as yet the aid given to those affected with tuberculosis is practically nothing.

Is, then, intervention of state and municipal government in dealing with tuberculosis expedient? And, if so, is it practicable?

Compulsory notification is beneficial to lessen the danger from contagion and to furnish suitable data upon which to base calculations, but much as may be done by making the houses sanitary, yet until we have suitable sanatoria for the treatment of these persons no great results will be seen.

#### THE TREATMENT OF CONSUMPTION.

The several classes of charitable institutions have been indicated, and the argument the paper points to, is that institutions partaking of some of the characteristics of each, are demanded as a means by which we shall begin the systematic attempt to combat the ravages of tuberculosis. Hospitals exist in all of the large cities for the relief of all acute, and many chronic, diseases, and it is now time for the state to recognize the necessity of making an effort to combat the spread of the disease and to open hospitals for the systematic treatment of the tuberculous poor.

What is needed, so far as Ontario at least is concerned, is not so much an increase of expenditure, but something of a readjustment to meet the changed conditions. As soon as we recognize that the true place to treat this disease is in proper homes, then can we ask the state to assist the private philanthropy already bestowed. Ontario has been the first to recognize the justice of the claim, and has made the per diem grant of the general hospitals apply to the Home for Consumptives at Gravenhurst.

Every city or county in Ontario could provide a suitable home within a reasonable distance for this work, and the cost per week need not exceed, to any great extent, \$6 as at Saranac Lake.

In the asylums of Ontario one-sixth of the cost of maintenance is collected from nineteen per cent. of the patients; *i.e.*, from the paying patients. With a shorter residence for consumptives the proportion of paying patients would be greater.

The choice of location is important for the "Homes"; but the voice of the Moscow Congress was for air-cure and hygiene.

But the era of experimentation in dealing with tuberculosis has gone by. As Aeneas, driven by the fury of Juno for years over tempestuous seas before he reached Italy and the dear Lavinian shores, so succeeding generations,

"Multos per annos  
Errabant acti fati maria omnia circum."

Men have exploited nostrums of every kind, being driven by the Parcean fates to spin and unwind the thread of life like Clotho, and to imitate Lachesis by casting lots if perchance they might throw a number which would bring life and healing, only at last to find themselves in the unalterable, unrelenting hands of Atropos the Unchangeable. All these years have people been blinded to the simple truth that instead life has been in the air and sunshine around them.

The age of practical sanitation has come! Gentlemen of the association, this great work in the cause of humanity is in your hands, I leave it with you.

In the works of the greatest poet of scientific evolution, our late beloved Laureate :

"O ye the wise who think, the wise who reign,  
From growing commerce loose her latest chain,  
And let the fair white-winged peacemaker fly  
To happy heavens under all the sky,  
And mix the seasons and the golden hours  
Till each man finds his own in all men's good,  
And all men work in noble brotherhood."



# Selected Articles.

## MITRAL STENOSIS.\*

BY H. D. ROLLESTON, M.D., F.R.C.P.,

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IN order to understand the effect of mitral stenosis, it is essential that the morbid changes in the heart should be clearly understood.

*Morbid anatomy.*—There are two forms of mitral valve stenosis; that in which the orifice is in shape crescentic or button-hole, and that in which it is round and funnel-shaped. But very often a transition between the two is found, and then, when looked at from above, the orifice is somewhat button-hole in shape, while from the ventricular aspect the depression of the valve segments gives it a funnel-shaped appearance.

*Button-hole mitral.*—The adjective “button-hole” refers, it must be remembered, to the shape and not to the size of the orifice. It is to be regretted that sometimes it is used as if it was synonymous with a much-contracted valve, and is employed much in the same way as the expression pin-point pupils is with regard to the condition of the pupils in extreme myosis. This is inaccurate, for every contracted mitral is not button-hole, and indeed many of the most narrowed orifices are not button-hole mitrals.

Normally in systole the edges of the mitral valve segments meet along a curved line, so that the closed orifice is button-hole in shape; when the valve segments become thickened and rigid, and retain this their normal position in systole, a button-hole slit is left.

Generally speaking, chronic valvulitis would, by cicatrization and contraction of the valve segments, lead to their becoming puckered and retracted, so that simple mitral reflux and incompetency would result. If, however, the extremities of the adjacent valve segments become united by vegetations, and so welded to-

\* From a Clinic at St. George's Hospital, October 21st, 1897.

gether, retraction seems to take place towards the centre of the orifice, or to be concentric, rather than from the centre of the valvular orifice, or to be eccentric, and so mitral constriction instead of mitral incompetence results.

What determines this welding together of the valve segments? It would appear probable that any endocarditis occurring in a heart where the valve segments are already thickened and rigid would supply vegetations which, by growing together, union by the third intention, would provide the necessary factor in the evolution of mitral stenosis. This is the explanation which appeals most to my own mind. In cases of mitral stenosis it is fairly common to find fresh vegetations along the edge of the thickened mitral valve. These may be due to two causes; (*a*) a fresh attack of rheumatism, or (*b*) endocarditis due to strain. In many cases of mitral stenosis, however, the clinical evidence of recurrent attacks of rheumatism is not forthcoming, and we are then left with the supposition that the welding together of the valve segments is due to endocarditis set up by strain.

The chronic inflammatory process spreads from the valve segments to the chordæ tendineæ, which become thickened and welded together, thus imitating the behavior of the valve segments. The brush of delicate chordæ tendineæ becomes amalgamated into two or three thick strands, which, like all cicatricial tissue, tend to contract, and the valve is pulled down into the cavity of the ventricle so that the valve appears funnel-shaped from below, though the rigid valves surround a slit-like or button-hole mitral.

*Funnel-shaped mitral.*—By continuation of the process of blending and welding together of the rigid edges of the valve segments the slit or button-hole orifice may gradually become converted into a round orifice. In this way the funnel-shaped mitral can be derived from the button-hole form.

The thickening and contraction of the chordæ tendineæ depress the united segments into the ventricle, and thus complete the funnel-shaped mitral.

Although the funnel-shaped mitral may be derived from the button-hole form, it must not be supposed that this sequence is in any way inevitable and unvarying. Cases of long standing mitral stenosis may simply present the button-hole form.

On theoretical grounds it might be supposed that a button-hole and a funnel-shaped mitral would present different physical signs; that a button-hole mitral could give rise to pure obstruction, while a funnel-shaped mitral would give rise both to obstruction and, since it is held rigidly open, to regurgitation as well.

*The effects of mitral stenosis.*—There is a constant obstruction to the onward flow of blood through the mitral orifice ; this contrasts with mitral reflex, where the blood is intermittently driven back by the hypertrophied left ventricle on to the lungs, but in the intervals can return without any impediment into the left ventricle.

Mitral stenosis and regurgitation are often combined, but in order to simplify matters we will only consider the effects of pure stenosis. As less blood enters the ventricle, it tends to become smaller than in health, and its development is also interfered with by a blood-supply which is impaired, since the blood pressure on the coronary arteries is diminished. The apex-beat is a little nearer the sternum than in health, and is somewhat feeble. Since the left ventricle is less well filled than in health, and so loses its normal stimulus to contract, it tends to do so less frequently. In the earlier stages of mitral stenosis, therefore, the pulse may be, though it is not necessarily, slower than natural. In passing we may note that the only two diseases of the heart in which it beats more slowly than natural are mitral stenosis in the early stages, and aortic stenosis. In the later stages of mitral stenosis the pulse is rapid and very irregular—in fact, the two chief pathological conditions in which the pulse is irregular are dilatation of the left ventricle and advanced mitral stenosis. In mitral stenosis the irregularity depends on the left auricle becoming over-dilated, and, from over-distension and over-stimulation of its walls, irritable, so that it starts irregular—sometimes, indeed, abortive—contractions which spread to the ventricle.

The first effect of the constant obstruction at the mitral orifice is dilatation of the left auricle ; this shows itself clinically by upward extension of the cardiac dulness to the third or second rib. In this area there may be pulsation due either to the pulmonary artery and infundibulum of the right ventricle from which the pulmonary artery arises, or, as some think, to the forcible contraction of the auricle itself. It should be remembered that in other cases pulsation in this situation may be communicated from an unduly exposed pulmonary artery, the left lung being retracted as the result of past inflammation, usually tuberculous.

The distended auricle should, in accordance with the rule that whenever there is obstruction to the passage of blood out of any orifice of the heart the first change which occurs is hypertrophy, undergo compensatory hypertrophy of its muscular walls ; and so to a certain extent it does, but there is so little muscular tissue available in its walls that the hypertrophy is, so to speak, taken on by

the cavity next behind, viz., the right ventricle. The hypertrophy of the right ventricle constitutes the compensation in mitral stenosis, and clinically is evidenced by pulsation of the epigastrium.

The increased blood pressure in the left auricle leads to thickening of its lining endocardium ; this may be regarded either as a physiological hypertrophy, or as a pathological chronic endocarditis due to strain. It should be remembered that normally the endocardium of the left auricle is thicker than that of the right, but in mitral stenosis this is exaggerated.

The blood stagnates to a certain extent in the dilated auricle, more especially in the auricular appendix ; and partly as a result of the stagnation, partly as a result of imperfect nutrition of the lining endocardium, clotting of blood may take place during life. The appendix of the auricle is the usual site ; in exceptional cases only does a clot of any size arise elsewhere in the auricle. You have lately seen a large pedunculated clot arising from the septum of the auricles in the case of Dr. Ewart's.\*

These ante-mortem clots are firmly fixed to the wall of the auricular appendix, and undergo a certain amount of organization ; the central portions are very prone to soften down, so that a cavity is formed. These thrombi have been described as "suppurating cardiac polypi." The clot may, as already implied, become pedunculated, and a round mass arises from a stalk which is attached to an endocardium of the auricular appendix. This pedunculation probably depends on the muscular contraction of the appendix moulding the soft blood-clot, and extruding it into the more roomy auricle.

The pedunculated part may get broken across, and a loose ball of fibrinous blood-clot, perhaps softened internally, or, as one of our museum specimens shows, solid throughout, remains in the cavity of the auricle. The ball clot thus formed is an exception to the rule that ante-mortem blood-clots are firmly adherent to the wall of the vessel or heart, but only an apparent exception, for, as has been shown, it was at one time firmly adherent. These ball clots may remain in the auricle without producing any untoward symptoms, since they are too large to pass through the constricted mitral orifice. In a few cases they appear to have been driven into the stenosed mitral orifice, and by their impaction there to have produced sudden death.

When smaller patches of clot become detached and pass into the ventricle, they give rise to embolism in the systemic vessels ;

\**Vide* "Trans. Clin. Soc.," vol. xxx, p. 190.

when they lodge in the middle cerebral, to hemiplegia; and it is important to bear in mind embolism as a cause of hemiplegia in young girls. If the embolus lodges in the vessels at the base of the brain, which lying on the subarachnoid space are badly supported, the artery may be so damaged by the impact that an aneurysm results at the site of the embolus, just as in rare instances an aneurysm occurs at the site of a ligature. Another situation where a simple non-infective embolus may give rise to an aneurysm is the poorly supported arteries of the mesentery. In both cases the unsupported condition of the vessels is the disposing cause of the giving way of the arterial walls.

Such aneurysms may rupture and give rise to extensive hæmorrhage. I was much impressed by a case illustrating this. A girl was brought into St. Bartholomew's Hospital some years ago when I was house physician for Dr. Church, insensible and affected with hemiplegia. On examining her heart it was found that she had signs of mitral stenosis. She rapidly died, and feeling confident of the diagnosis I rashly signed the death certificate "mitral stenosis, cerebral embolism," before seeing the post-mortem examination, which showed extensive cerebral hæmorrhage from rupture of an aneurysm, which no doubt was in its turn the result of past embolism.

Embolism of the *arteria centralis retinæ* occasionally occurs, giving rise to loss of vision.

Embolism of the end arteries in the kidney and spleen produces an infarct, and the absorption of tissue fibrinogens derived from the necrosing cells of the infarcted area gives rise to an elevation of temperature. At the time of the embolism there may be violent pain in the splenic region, with some peritonitis, as shown by tenderness and pain on taking a deep breath, suggesting pleurisy; the spleen, too, may be found to be slightly enlarged. In the case of the kidney the signs are slight or not noticed, probably because its relations to the peritoneum are limited as compared with those of the spleen. Hæmaturia is very seldom seen. Infarcts do not, except under most exceptional conditions, occur in the liver, as there is a double blood supply to the liver, from the hepatic artery and portal vein.

When a large branch of the superior mesenteric artery is blocked, a loop of intestine may become gangrenous, and the signs of acute intestinal obstruction result; but from the free anastomosis such an accident is very rare. Still, its possibility should be borne in mind when a patient with mitral disease suddenly develops acute obstruction.

Embolism of the arteries of the limbs gives rise to sudden and acute pain, followed by loss of power ; but since it usually occurs in young subjects with healthy arteries, the free collateral circulation prevents gangrene, which in old persons would be likely to result.

The constant damming up of the blood in the left auricle leads to a similar condition in the lungs, which undergo the change known as brown induration. They are darker in color than natural ; constant dilatation of their capillaries gives rise to extravasation of red blood-corpuscles into the substance of the walls of the air cells, and degenerative changes in the hæmoglobin lead to pigmentation. The lungs are moister than natural, and prone to catarrh. Bronchitis is thus a common incident in the course of such cases. The moist condition of the lungs probably accounts for the rarity of pulmonary tuberculosis in mitral disease. They are both common diseases, and would naturally coincide occasionally, but this is extremely rare. The moist condition of the lungs probably leads to the removal of any tubercle bacilli which may be inspired, before they have had time to take root and multiply.

The stagnation in the pulmonary veins necessitates a similar condition in the pulmonary artery ; the increased strain due to the obstruction in front and the hard-working, hypertrophied right ventricle behind shows itself clinically by the accentuated and sometimes reduplicated second sound over the pulmonary artery. The forcible closure of the pulmonary valves can often be felt in the second left interspace as a shock. Pathologically the effect of this continued high blood-pressure or strain from within is to give rise to chronic endarteritis of the branches of the pulmonary artery. The atheroma in its turn leads to a dilated condition of the pulmonary arteries, endarteritis deformans, and rupture may occur. The blood is then poured out into the lung tissue—a pulmonary apoplexy. As a result hæmoptysis occurs, while the pleura may become inflamed and an effusion may follow. Rupture of vessels brought about as described is the most frequent cause of pulmonary apoplexy. It may be due to an embolus from the right side of the heart, but it is usually difficult to make out that the clotted blood in the artery going to the apoplexy contains any embolus ; the thrombosis is usually, as shown by its age, secondary to the apoplexy. That embolism from the right side of the heart may give rise to a so-called pulmonary infarct is undoubted, but it is equally true that an embolus may occur in the pulmonary vessels without any "apoplexy" or infarction resulting in the lungs. It is generally

thought that pulmonary apoplexy is commoner in mitral stenosis than in mitral regurgitation ; but in 70 cases of pulmonary apoplexy tabulated by Dr. Lee Dickinson from the post-mortem records of this hospital, only sixteen were associated with mitral stenosis, most of the rest being cases of mitral reflux. It is possible that the sudden pumping back of blood in mitral incompetence brings a sudden strain to bear on the delicate terminals of the pulmonary vessels, which is more detrimental to them than the sustained high pressure of mitral obstruction. In passing we may notice that pulmonary apoplexies occasionally depend on the dilatation of the left ventricle and the resulting mitral incompetence which occur in the course of nephritis, whether chronic or acute.

The hypertrophy of the right ventricle shows itself not so much by increase in the thickness of its muscular wall, as by an alteration in its firmness ; it becomes tougher, more resistant, and denser. This hypertrophy constitutes the compensatory mechanism against obstruction to the passage of blood through the mitral orifice ; the danger that may result from this compensation has already been referred to—pulmonary apoplexy. As a result of the gradually increasing obstruction at the mitral valve in front, and the hard-working, hypertrophied left ventricle behind, the thin-walled vessels in between may give way. The increased pressure inside the hypertrophied right ventricle may produce thickening of the lining endocardium, and especially of that part which by its reflection forms the tricuspid valve, so that a certain amount of chronic valvulitis is produced. The thickening of the valve segments is, however, not a very serious thing, and probably of itself does not often give rise to tricuspid regurgitation ; the chronic strain may perhaps in some instances lead to the valve segments becoming united together, and so to tricuspid stenosis ; but this is rare. Tricuspid stenosis is practically always associated with mitral stenosis, and is produced either as described above, when it is directly secondary to mitral stenosis, or is partly due to this and partly due to acute endocarditis of rheumatic origin.

When the mitral obstruction, which from cicatricial contraction tends to be progressive, reaches a stage at which the hypertrophied right ventricle can no longer drive the blood satisfactorily through into the left ventricle, the compensation fails and the right ventricle dilates. The same result is brought about if the resistance in the lungs is greatly increased by intercurrent bronchitis, or if the nutrition of the right ventricle is otherwise impaired. When the right ventricle dilates, the ring, partly muscular, partly fibrous, at the base

of the ventricle from which the valve segments arise, dilates with the rest of the ventricle, and the valve segments are unable to meet. Tricuspid regurgitation results, and the compensation is said to be ruptured. There are thus three stages as regards the state of the compensation ; the first where it is good or perfect, the second where it is strained and likely to fail, and the third where it has given way entirely. It is in the second and third stages that patients come with symptoms of heart disease.

Let us first trace the effects of tricuspid regurgitation. The blood will no longer be driven forcibly on into the lungs, and the left auricle will no longer be so well distended with blood ; but the blood will be partly driven back into the right auricle and venous system generally, and partly onwards into the pulmonary artery, though at a much lower tension than before. The proof of the lower tension in the pulmonary artery is the disappearance of the accentuation of the pulmonary second sound, which becomes, if anything, less marked than in health. The backward pressure has become transferred from the lungs and right side of the heart to the venous system, which becomes engorged with blood, while the arterial system becomes comparatively empty. The diminished pressure in the left auricle accounts for the disappearance of the presystolic murmur, and all that may be heard over the apex is a systolic murmur due to concomitant regurgitation, perhaps no definite murmur at all.

As a result of tricuspid regurgitation, a systolic murmur may be heard at the bottom of the sternum ; but, as a matter of fact, it often is not. The dilated right auricle and right ventricle give rise to increased dulness to the right of the sternum and epigastric pulsation.

We will now briefly trace the effects of general venous engorgement due to tricuspid regurgitation. Each time that the right side of the heart contracts, the blood is driven backwards into the *venæ cavæ*. The backward pulse does not for a time appear in the jugular veins. This is due to their orifices into the innominate veins being guarded by valves, which only become incompetent when the dilatation of these veins has so enlarged the circumference of the orifice of the jugular veins that the valves situated there are unable to come in contact. The pulsation in the neck which then results has a somewhat vermicular character and is double, there being two waves for each beat of the heart—one for the auricle, one for the ventricle, of which the latter is the best marked. This pulsation can be exaggerated by pressure on the liver, which probably acts by driving a larger



quantity of blood up into the head and neck. The engorgement of the veins in the head and neck accounts for the characteristic complexion of patients with advanced mitral disease, and for any disturbance of cerebral function.

The blood being driven into the inferior vena cava produces chronic engorgement of the hepatic and sublobular veins ; the liver becomes enlarged, and from the tension exerted on its capsule, tender. As a result of venous stagnation, the functions of the liver are imperfectly performed. The liver cells tend to atrophy, and undergo fatty degeneration, and there is some stagnation of bile. On section the liver presents an appearance which has been compared to the section of a nutmeg, the sublobular and the intra-lobular veins in the centre of the lobule standing up as prominent purple areas, which contrast with the surrounding liver substance, which is pale from fatty degeneration, and perhaps bile-stained. Sometimes, but much more rarely than one would expect, the hepatic veins are so dilated that the liver expands with each beat of the heart like an accordion. This pulsation must, of course, be distinguished from transmitted pulsation either from the heart or more rarely from an abdominal aneurysm. As the result of the partial atrophy of the liver cells, which is specially marked in the centre of the lobules, and is due partly to a deficient supply of arterial blood and partly to the constant pressure exerted by the dilated capillaries, a certain amount of fibrous substitution occurs. This may be called cardiac cirrhosis, but is not comparable either in its degree or in its effects to common cirrhosis starting from the portal vein. The venous stasis in the liver produces a similar condition throughout the portal vein, giving rise to dyspepsia, from which cardiac patients especially suffer, to imperfect absorption of food, and to irregularity of the bowels, generally constipation. The interference with the assimilation of food may induce an ill-nourished habit of body ; this is especially the case in growing children, among whom morbus cordis is a "wasting disease."

As a further result of continued portal stagnation ascitis results, and this is associated with chronic thickening of the peritoneum ; the abdominal distension compresses the lungs and further embarrasses respiration.

All the abdominal organs share in the venous engorgement ; the spleen becomes firm and hard, but is not appreciably increased in size unless there is fever. The pancreas becomes enlarged, firmer than natural, and shows a varying amount of fibrous increase, in very rare instances clinically simulating an abdominal tumor.

The kidneys of chronic venous congestion are tougher than natural, and at the post-mortem not engorged as they must be during life, but, contradictory as it seems, slightly paler than in health. Being rather badly supplied with arterial blood, the delicate epithelium covering the glomerular tufts is likely to degenerate and allow albumen to pass into the urine; a similar result often occurs in fevers and toxæmic states, and accounts for febrile albuminuria. As a result of the comparatively low arterial pressure in the kidneys, the urine is diminished in amount and high colored. As in the liver so in the kidney, chronic venous congestion necessitates an impeded and impaired arterial blood supply; on this follows a certain amount of atrophy of the active, secreting parts of the kidney, and the fibrous supporting tissue of the organ becomes more evident, and perhaps actually, as well as relatively, increased in amount. A real granular kidney is never produced, but a fair naked-eye imitation of it may result from the scars left by numerous infarcts, but you must be on the alert to distinguish these two conditions.

The backward pressure in the inferior vena cava leads to œdema of the legs, so that in the last stages of tricuspid regurgitation the patient is generally waterlogged all over the body and limbs. There is an important difference between mitral stenosis and mitral regurgitation as regards the development of œdema; it appears early in the course of regurgitation, late in stenosis.

In conclusion, we will consider briefly a few points of interest in connection with the murmurs of mitral stenosis. Time will not allow of a full discussion of the many interesting questions involved, so we will not at present go through the signs characterizing the three stages of mitral stenosis.

The apex beat, as we have seen, is rather nearer the sternum than in health, and at this point the presystolic murmur is heard, usually over a limited area; but sometimes this area spreads out very considerably. At the apex a presystolic thrill, due to the coarse eddies induced in the blood stream as it is driven from the auricle through the constricted mitral orifice into the ventricle, may usually be felt when there is a presystolic murmur; the thrill and murmur being the palpable and audible manifestations of the eddy in the blood stream. The thrill is, of course, intra-ventricular. This is of some importance in distinguishing a genuine thrill from a vibration of the chest wall which simulates it—a pseudo-thrill. When the whole hand is placed on the chest wall, vibrations conducted from a forcibly-beating heart to several intercostal spaces may produce a thrill which is really only due to the pulsation of the

chest wall being interrupted by the rigid ribs. In such a case, if the fingers be separated and placed over the intercostal spaces, the sensation of the thrill disappears, and a pseudo-thrill due to vibration of the chest wall can thus be distinguished from the finer, purring thrill produced inside the left ventricle in mitral stenosis. The presystolic murmur is extremely capricious, comes and goes within short intervals of time, and may be replaced by the mid-diastolic or early diastolic murmur.

The mid-diastolic murmur is the commoner, and is best heard at the apex, immediately after the second sound, so that it is often described as reduplication of the second sound. It can be distinguished from true reduplication of the second sound by listening at the base of the heart, where the second sounds are produced; if there is no reduplication there, what appears to be reduplication at the apex must be something else. This mid-diastolic murmur is probably due to the suction-pump action exerted by the left ventricle producing an eddy in the blood stream as it rushes in from the auricle. The early diastolic murmur which replaces the second sound, and is of the same character as the aortic diastolic murmur, is best heard about the fourth left costal cartilage, but is often well heard at the apex. This is Hope's murmur described by the first assistant physician to this hospital. Comparatively rare though the murmur be, its causation has given rise to a good deal of discussion. It has variously been ascribed (*a*) to the same cause as the presystolic murmur, namely, the forcible contraction of the left auricle, which in this case is supposed to begin abnormally early in the diastole, producing an eddy in the blood as it runs through the constricted mitral; (*b*) to the same cause as that giving rise to the mid-diastolic murmur, namely, the suction-pump action of the left ventricle; and (*c*) more recently to regurgitation through the pulmonary valves—a kind of safety-valve action brought about by dilatation of the trunk of the pulmonary artery which results from backward pressure.

Though, generally speaking, the presystolic murmur means mitral stenosis, there are exceptions to this, as to most rules. The best known example of this is Flint's murmur, a presystolic murmur audible at the apex in cases of well-marked aortic regurgitation without any organic narrowing of the mitral valve; the production of the murmur can be explained by supposing that the regurgitant column of blood strikes the anterior or aortic cusp of the mitral valve, bulges it in, and thus temporarily diminishes the size of the mitral orifice, through which at this time (diastole) the blood is pouring into the ventricle from the auricle, or by supposing that irregular

vibrations are set up in the mitral valve by the impact of blood regurgitating from the aorta. The presystolic murmur is also heard in some cases of dilatation of the ventricle, and especially in children with adherent pericardium. In some of these cases there is probably greater dilatation of the left ventricle than of the mitral orifice, so that a certain degree of relative stenosis is brought about.—*The Chemical Journal*, Dec. 1, 1897.

## RELIEF OF TYMPANITES BY POSTURE.

BY LESSLIE M. SWEETNAM, M.D.,

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FEW complications in abdominal cases, both medical and surgical, give rise to so much distress, and, if unrelieved, so certainly produce death as extreme intestinal distention. Some years ago I was called to a case of this kind. My patient was a woman between forty and fifty years of age. I found her pulseless at the wrist. On examining the heart its action was markedly tumultuous, her breathing shallow and rapid, her face and hands were cold and covered with moisture. Hoping to improve the heart's action, I at once raised the foot of the bed some two feet. In her distress she kept constantly rolling. Finally she settled on the right side and before many minutes the obstruction was removed, the tympanites promptly disappeared, and her general condition became practically normal as far as this difficulty was concerned. I was greatly surprised at the sudden improvement so promptly developing after the elevation of the foot of the bed. Having some time before this noticed, in treating a case of stricture of the sigmoid portion of the colon, that the dilators were introduced with increased ease when the patient was placed in the Sims's position, the hips being well elevated, I decided that the relief resulted from some change brought about in the folds of the rectum. I have since continued to employ position as a means of relief in all cases of tympanites, both medical and surgical, before resorting to more heroic treatment. It was not, however, until last winter, when on a visit to Dr. Howard A. Kelly, of Baltimore, that I fully appreciated the amount of alteration which takes place in the arrangement of the rectal folds when one is placed in the knee-chest position. One day, while watching Dr. Kelly make a rectal examination, I was able to see Houston's folds in their usual position, but the patient being kept in the knee-chest position, gradually the rectum straightened out, the additional length being contributed to by these folds, which absolutely disap-

peared into the bowel wall. Here was a complete and satisfactory explanation of the relief secured in the great majority of cases of tympanites in which posture had been employed as a means of relief. Sometimes it is necessary to keep the hips in this elevated position for ten or fifteen minutes before the contents of the abdominal cavity gravitate sufficiently from the pelvis to enable the upper portion of the rectum to pass out of the pelvis towards the abdominal cavity. Until this occurs, of course, no relief is secured. In cases of marked tympanites the distention is practically confined to the large intestine, and it would appear that the obstruction to the escape of flatus is due to the downward pressure of the descending colon and sigmoid flexure upon the upper portion of the rectum, forcing the folds of Houston one upon the other, and bringing about, in this way, what is for the time in effect an impermeable stricture. If an attempt is made to pass this obstruction from below the soft rubber tube will coil upon itself, and fill that portion of the bowel just below the folds. The most rational method of relieving this obstruction and liberating the imprisoned gas would seem to be the inversion, or partial inversion, of the patient, and removal through the aid of gravitation of the pressure from above, which has converted the mucous folds referred to into an absolute obstruction.

The value of this expedient, as a remedial measure, in tympanites which so frequently follows intestinal surgery, has recently been emphasized by an experience with a case of bile duct obstruction, in which anastomosis had been established between the gall-bladder and the duodenum. Some thirty hours after the operation the medical man in charge of the case, and with whom I had been associated at the time of the operation, telephoned me that his case was in extreme danger. She had developed, to a marked degree, the usual symptom of abdominal distention, and her attendant, after adopting all the measures usually employed in this condition, feared immediate heart-failure. After hearing the treatment he had adopted, I advised him to place his patient in the knee-chest position, this notwithstanding the fact that it was only thirty hours since the operation was done, and that the drainage-tubes were still in the wound. He adopted the suggestion, and in less than five minutes his patient had secured absolute relief.

If my experience be confirmed in the practice of others, it would seem a pity that none of the many works treating upon the subject of abdominal surgery make mention of this as a possible means of affording relief in this condition. And its application is by no means confined to surgery, for in typhoid fever and the other forms

of intestinal disturbance, which so frequently give rise to this condition, the remedy promises to be equally safe and satisfactory.

There is, however, one notable exception, and that is in severe cases of general peritonitis. Here it is questionable whether one is justified in resorting to the position. In the cases in which I have employed it, no good has resulted from it. There was, however, no evidence of its having inflicted any injury.

While the knee-chest position may answer best in cases of extreme distention, the placing of the patient upon the side, with elevation of the foot of the bed, will commonly secure relief in cases of moderate distention.

Among other remedies spoken of as being worthy of a trial in this condition we find enemata of turpentine, creosote, and assafoetida. The same remedies are frequently resorted to and administered by the mouth, as are also alcohol, charcoal, ginger, capsicum, and other carminatives. The frequency of our disappointment in connection with the administration of drugs is readily explained. During extreme distention the stomach and bowels have not only their power to contract, but also that to absorb, absolutely paralyzed. If relief be not too long delayed, the removal of the distention is followed by a marked increase in peristalsis. If purgatives have been freely administered, the distention being relieved, peristalsis may be excessive and a severe diarrhoea caused—a form of cumulative action.

A form of treatment which at one time had many advocates, but which now has become practically obsolete, or, if employed at all, is simply used to secure euthanasia, is puncture. The one indication for puncture in excessive tympanites would appear to be malignant obstruction where abdominal section was contra-indicated or declined. In excessive distention it is usual to find the distention practically confined to the colon, sometimes in the stomach, rarely in the small intestine. When in the latter position, puncture gives but little relief unless applied at so many points as to render the development of peritonitis probable; if situated in the stomach, relief is secured with greater safety and equal promptness by means of a stomach-tube; if in the colon, the knee-chest position, with, if necessary, the insertion of a gum-elastic tube, offers at least as good a prospect of relief as puncture without the risk attending that operation. The danger in puncture will practically be from one of two causes, hæmorrhage or fæcal extravasation; hæmorrhage when the triangular or spear-pointed trocar is used, and extravasation, from the production of a wound in the intestine larger than that required

for the removal of the gas. Just as a pin-prick in a piece of rubber tissue stretched over a convex surface rapidly becomes a large rent, so, often, puncture in extreme intestinal distention has resulted in a rent of the intestinal wall, altogether out of proportion to the size of the instrument with which the wound was produced. Examination of the intestine post-mortem gives very little idea of the size of the wound in the intestine while distention existed. This, doubtless, will explain many of the cases in which extravasation, peritonitis, and death occurred, and where, after death, considerable difficulty was experienced in discovering the point at which puncture was made. Of course, the better the condition of the bowel, the more prompt the contraction, the shorter the time allowed for extravasation of the intestinal contents. Cases of extreme and long-continued distention without the evidence of peritonitis with plastic exudation would seem to be the least favorable for this form of treatment, which under the very best conditions must always remain somewhat hazardous.—*Annals of Surgery*.



# Progress of Medicine.

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## MEDICINE

IN CHARGE OF

**J. E. GRAHAM, M.D., M.R.C.P. Lond.,**

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AND

**THOMAS F. McMAHON, M.D.,**

Professor of Medicine, Women's Medical College; Physician, St. Michael's Hospital; Physician to Toronto General Hospital;

ASSISTED BY

**JAMES G. CAVEN, M.B.**

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### THE DEBACKER TREATMENT OF TUBERCULOSIS AND CANCER.

If the question were asked of a physician, "In what way would you wish to immortalize yourself?" the chances are that he would answer "by discovering a method of curing tuberculosis," or "by curing cancer." The claims of Dr. deBacker, of Paris, that he has discovered a method of curing these dread diseases which not only promises, but has actually yielded remarkable results, must be of interest to physicians the world over.

The method, according to a description by Horace Manders, of London, in the *British Medical Journal* of Sept. 25, is founded upon the discovery that yeast cells possess under certain conditions the same phagocytic powers as blood leucocytes.

In some wine which had gone wrong it was noticed that certain of the cells of the ferment (saccharomyces) contained within them the bacillus aceti; the bacteriæ so englobed were killed and digested by the nuclein within the cell. Having in view Metchnikoff's theory of phagocytosis deBacker surmised that these cells might prove a splendid aid to leucocytes if they could be safely injected into the blood. After many failures due to the use of impure yeasts, he finally prepared a pure culture of saccharomyces cerevisiæ which could be injected into a guinea pig without bad results. His next step was to inject this pure culture with a quantity of sterilized fer-

mentable matter to see if the yeast cells would multiply and carry on the function of fermentation within the system of the animal. He thus was able to prove that alcohol was produced within the body of the animal and given off with its breath and perspiration. The animal was none the worse of the experiment. An animal previously inoculated with diphtheria was then injected with the mixture of yeast cells and fermentable matter (called for convenience backerine), and it made an astonishing recovery. Encouraging results having also followed injections of backerine into guinea pigs rendered artificially tuberculous, phthisical patients were next treated in the same way. DeBacker claims that in the early stages, the disease has been nearly always arrested, whilst even in the stage of softening seventy-five per cent. have either been cured or shown permanent improvement. He does not think these ferments are specifics for tuberculosis, but is of the opinion that the cells come to the aid of the natural phagocytes—the leucocytes—and help them to destroy the invading bacteriæ, and, to quote deBacker, “substitute a healthy, natural fermentation for one that is pathological.” In making wine large quantities of the wine wort may turn sour owing to the presence of bacilli (acetic, butyric, or lactic); if now a certain quantity of pure ferment is added the acetic fermentation is arrested and the wort brought back to its normal fermentation.

The blood is compared to this wort and is conceived to be disturbed in its functions by Koch’s bacillus, as the wine wort is disturbed by the bacillus aceti, and to be capable of being restored to its normal condition by a quantity of pure ferments.

The results in cancer have been, he claims, even more astonishing. “Out of a total of sixty tumors we have seen eighteen cures lasting over some years. Of these, four had been operated upon with rapid recurrence. Twelve cases of very rapid growth also have been very markedly retarded.”

Whilst testing the innocuity of backerine upon guinea pigs by giving them repeated injections a curious result was noted. Although they got fat they were generally sterile, and when impregnation did occur, the foetus did not develop. He suggests that the sterility may be due to “the lessened glycogenous material in the uterus.” Now cancer contains a large proportion of glycogen and is prone to occur in localities in which glycogen is normally present in large quantities (breast, liver, uterus, etc.). If these ferments can lessen the natural glycogen of the body we can conceive of their checking the pathological increase of the same substance, and thus tending to starve the cancer cells which grow luxuriantly in its

presence. The rapidity of growth in a tumor is said by M. Brawl to be in direct proportion to the amount of glycogen contained in it, probably because the cells are enclosed in a medium too rich in this substance in which they proliferate without order, symmetry, or selection.

In this age of fads we must be cautious in accepting statements for facts, but the results aimed at are of such importance that we shall await further experiments with much interest.

# SURGERY

IN CHARGE OF

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AND

**HERBERT A. BRUCE, M.D. Tor., F.R.C.S. Eng.,**

Associate Professor of Surgery in the University of Toronto.

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## TYPANITES.

An article upon this subject from Dr. Miles F. Porter appears in a recent issue of the *Medical News*. He draws attention to the danger of distension and the probable fatal termination by heart failure. He speaks of the causes as being either obstruction to the passage of gas or the undue formation of gas. The obstruction may be due to paresis or physical causes, as bands, etc. He quotes Sweetnam, and gives him credit for priority in recommending postural treatment of tympany.

He arrives at the following conclusions :

1. That intra-intestinal tympany in and of itself often kills patients suffering from abdominal and pelvic disease, and that it may do so in cases which are neither pelvic nor abdominal.

2. That tympany occurring in the course of any serious illness should be considered a symptom of ill omen, and that measures for its relief should promptly be instituted.

3. Failing to obtain relief by cathartics, posture, enemata, and the use of the rectal tube, celiotomy and incision of the gut should be promptly done.

4. In cases of general peritonitis and bowel obstruction, no trial should be made of other methods, but celiotomy and incision of the gut should be performed as soon as the diagnosis is made.

5. Puncture of the bowel should be carried out only in cases in which the patient is *in extremis*, and then only in cases such as typhoid fever without perforation, pneumonia, etc., which present no other cause for celiotomy than the tympany itself.

THE TREATMENT OF CUT-THROAT WOUNDS BY IMMEDIATE  
SUTURING OF ALL THE DIVIDED STRUCTURES.

This is strongly advocated by Mr. Henry Morris, F.R.C.S., Senior Surgeon to the Middlesex Hospital, in a clinical lecture delivered in May, 1897. By the liberal use of buried and superficial aseptic sutures immediate union is secured and convalescence is shortened to one quarter, or even less, of the time required by leaving the wound open to heal by granulation.

It enables the patient to talk and swallow naturally within a few hours after the injury, instead of being fed for days, or even for a week or two, by means of the œsophageal tube; it does away with the offensive discharge of food, saliva, and tracheal secretion through the wound; it permits the dressing being retained over the wound unchanged for several days, and it is not followed by any of the old risks of incurvation of the edges, of stricture, or of fistula. There are no grounds for the old objections to immediate suturing, for primary union is as easy to obtain in wounds of the trachea and larynx as elsewhere. There is no more difficulty here than elsewhere in controlling hæmorrhage and preventing suppuration; and if this is so, wherein is the danger of blood or pus getting into the air passage?

Of course proper care must be exercised in the application of sutures, and strict attention must be given to the general state of the wound before inserting them. The patient should be anæsthetized, and all even small bleeding parts secured; scrupulous cleanliness of the parts must be obtained by the usual aseptic and antiseptic means. Then the cut edges of the wind-pipe should be adjusted by fine silk sutures, which should not penetrate the mucous membrane. The sutures should be applied close enough to one another to prevent any portion of the edges of the wounded air passage from flapping or swaying backwards and forwards with the ingress and egress of air. The sutures should pass through or around the rings of cartilage if necessary. Then the divided edges of the fascia covering the trachea or larynx should be united with separate sutures. This is a very important step in the procedure, and great care should be given to it, because the close union of this fascia affords additional security to the closure of the air tube, and helps in preventing any escape of air between the sutures uniting the edges of the wind-pipe. Next, in the same way, the infra-hyoid muscles, the deep fascia overlying these muscles, and the skin respectively, must be properly joined. A small drainage-tube may

be inserted between the edges of the skin on each side near the outer extremities of the superficial wound, but not near the middle line of the trachea. Finally, it is very necessary to keep the head sufficiently flexed, and the head and neck very fixed, during the period requisite for firm healing of the wound. In applying the sutures bear in mind the fact, that the muscles, fasciæ and air tube have a stronger tendency to retract than the skin, so that these structures must be sought for and drawn up from below and behind the cut edge of the skin. Great care should be exercised in accurately closing the air tube, and if not sure that at any part it has been made air tight, then at this part special care should be taken to bridge it over with the deep layer of fascia. Surgical emphysema may occur from insufficient and improper suturing, but this is no more an argument against the use of sutures in cut-throat wounds than is extravasation of fæces into the peritoneal cavity from a similar cause an argument against the complete and water-tight suturing of the two ends of recently divided intestine. Mr. Morris doubts very much if a tracheotomy tube is ever really needed. If a tube is used it should be introduced through a newly made vertical incision, and not through the suicidal wound in the air passage.

# HYGIENE AND PUBLIC HEALTH

IN CHARGE OF

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Professor of Hygiene in the University of Toronto; Surgeon to St. Michael's Hospital;

ASSISTED BY

J. W. SMUCK, M.D.

## REPORT OF PROVINCIAL BOARD OF HEALTH FOR OCTOBER.

Total number of municipalities in the province, 745; total making returns for October, 509, or 68%.

*The total deaths* returned from the several contagious diseases for a population of 1,352,886 were 216, or at the following rate per 1,000 for municipalities which made returns, calculated on a per annum basis. (Total population of the province, 2,233,117.)

	Population and % of whole.	No. of deaths from and rate per 1,000 per annum.						Total.
		Scarlet Fever.	Diphtheria.	Measles.	Whooping-Cough.	Typhoid fever.	Tubercu-losis.	
Cities reporting.	388,116 (77%)	0	7 (0.2)	0	2 (0.06)	13 (0.4)	60 (1.8)	82
Towns and vil-lages reporting.	294,648 (67%)	0	11 (0.4)	1 (0.04)	1 (0.04)	10 (0.4)	22 (0.9)	45
Townships re- porting.....	670,122 (68%)	0	26 (0.4)	0	5 (0.09)	22 (0.4)	36 (0.6)	89
	1,352,886 (66%)	0	44 (0.39)	1 (0.009)	8 (0.07)	45 (0.39)	113 (1.00)	216

## REPORT OF PROVINCIAL BOARD OF HEALTH FOR NOVEMBER.

Total population of the province 2,233,397.

Total population reporting 1,380,956, or 62 per cent.

Total number of municipalities in the province, 745; number making returns for November, 563, or 75 per cent.

Table showing total deaths returned from the several contagious diseases for a population of 1,380,956 were 221, or at the following rate per 1,000 for municipalities which made returns, calculated on a per annum basis.

	Population and % of whole.	No. of deaths from and rate per 1,000 per annum.						
		Scarlet Fever.	Diphtheria.	Measles.	Whooping Cough.	Typhoid Fever.	Tuberculosis.	Total.
Cities reporting.	408,178 (85%)	2 (0.06)	14 (0.4)	0	2 (0.06)	16 (0.4)	51 (1.5)	85
Towns and vil- lages reporting.	238,564 (59%)	0	11 (0.45)	2 (0.08)	5 (0.2)	9 (0.37)	29 (1.2)	56
Townships re- porting.....	683,214 (83%)	3 (0.05)	18 (0.3)	1 (0.02)	2 (0.03)	9 (0.16)	47 (0.8)	80
	1,380,956 (75%)	5 (0.04)	43 (0.4)	3 (0.02)	9 (0.08)	34 (0.3)	127 (1.1)	221



## Editorials.

### NURSING-AT-HOME MISSION.

RECENT discussions on district nursing have helped to give prominence to the fact that we have in our midst in Toronto a modest charitable institution which is doing a vast amount of good in a very economical way. "Katherine Leslie" published a very interesting article in the *Toronto World*, January 7, which gave a good description of the work that is being done by the nurses of the "Nursing-at-Home Mission."

The object of the mission is to help the sick poor in their homes when they cannot be sent to any of the hospitals or other charitable institutions in the city. The nurses always act under the directions of regular medical practitioners, and are particularly careful not to interfere in any way with ordinary hospital work. They visit a large number of patients afflicted with chronic diseases, such as cancer, etc., and apply the proper dressings, and look after the proper administration of the remedies prescribed by the physicians.

We quote as follows from Katherine Leslie's article: "One of the greatest evils against which doctors have to contend is the gross ignorance of the care of the sick which prevails among the poor and illiterate, and here these nurses, who work for sweet charity's sake, are of great assistance; they show those to whose homes they go how to keep the patients clean, how to make poultices, to make nourishing food. As a matter of fact, these nurses practically do the work which the Victorian Order proposes to do. They carry with them sheets, pillow cases, towels, night gowns; supply baby clothes, bed clothing, and the like. So great has been the help and assistance of the mission work to the doctors, that at their urgent request the mission has entered on a new plan of work for the benefit of those who are not able to engage nurses at the quite properly high fee which trained nurses charge. There are those whose means are very limited, but who, in case of sickness, can afford to pay from \$2 to \$5 per week for a nurse to look after the patient in the house. This, of course, is quite distinct from the nursing of the destitute

poor, who will be gladly nursed and cared for without charge the same as usual."

We have before referred to the admirable work that has been done by this noble charity, and are very glad to find that the more we learn with reference to details in connection with the acts of its nurses the better we like them. We can assure the charitably disposed that they can give to this home with every confidence that their funds will be well placed. One of the best features of the mission is that it has an investigating committee which sees that no unworthy people get any of its benefits. This committee intends also to guard against pauperizing people by refusing to nurse for small fees people who are able to pay for trained nurses.

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### THE AMERICAN SOCIETY OF SUPERINTENDENTS OF TRAINING SCHOOLS FOR NURSES.

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**T**HE fifth annual convention of this society will be held in Toronto, February 9 and 10, 1898, under the presidency of Miss M. A. Snively, of the Toronto General Hospital. The first session will begin at 10 a.m., Wednesday, February 9, when it is hoped a short opening address will be delivered by the Honorable G. W. Ross, Minister of Education.

Papers will be read on the following subjects :

- (1) How to Obtain Greater Uniformity in Ward Work.
- (2) Practical Diet Kitchens as part of a Uniform Curriculum.
- (3) Hospital Diet from the Standpoint of the Hospital Superintendent.
- (4) Hospital Laundries.
- (5) How far Training Schools are Responsible for Lack of Ethics among Nurses.
- (6) The Superintendent of Nurses.

After the close of the convention members of the association will spend some time in visiting the various city hospitals and other places of interest in Toronto.

Toronto feels honored in being chosen as the city in which this association will hold one of its regular annual meetings.

The society was organized in Chicago at the World's Fair in 1893. The following year the convention met in New York, then in Boston, then in Philadelphia, and last year in Baltimore. It is expected that representatives will be present from all the large American schools—about eighty delegates in all. The completed programme will appear later.

## MEDICAL HEROES IN WAR.

MEDICAL officers in British wars have very frequently distinguished themselves in various ways, and especially in the matter of bravery. There is nothing surprising about this when we consider that one of the main characteristics in our physicians is courage in the face of the worst and most virulent diseases. Our average physician is not perfect in all respects; but, when danger threatens in the shape of serious epidemics, he seldom shows the "white feather." The *London World* contains the following paragraph: "Letters from the Indian frontier speak in the highest terms of the services rendered by the officers of the Army Medical Staff. To such an extent, in fact, have many of them distinguished themselves that general officers in command have brought their names specially to notice, and it is more than likely that three, if not four, will receive the Victoria Cross for acts of heroism which come well within the terms of the warrant governing that honored distinction."

The *British Medical Journal*, in referring to this paragraph, says: "Not the medical profession alone, but the army of which they are so essential a part and the nation which they serve so faithfully, have reason to be proud of the officers of the Army Medical Staff. In proportion to their numbers they have among them, we believe, more holders of that coveted distinction, the Victoria Cross, than any other branch of the service—a circumstance which makes the persistent discourtesy of certain officers of high rank in treating them as 'not soldiers' but 'camp followers' all the more remarkable. To insist on the fact that a class of men who seem to have greater opportunities than any other of winning a decoration which is awarded specifically 'for valor' are 'non-combatants,' appears to show that the military mind is somewhat wanting in a sense of humor, if not of fairness."

We in Canada can scarcely understand why the profession of Great Britain in their connection with army service should be treated with such scant courtesy as to be placed on a lower level than officers in other departments. To say that officers of the Army Medical Staff should be considered simply as "camp followers" is so decidedly, and so needlessly offensive, that we could scarcely conceive it possible if abundant proof of the statement were not supplied. The leading British Medical, and some lay, journals have protested very vigorously, during recent years, against the gross injustice done to military medical officers, and we sincerely hope that better counsels will prevail as to their proper treatment in the near future.

# Meetings of Medical Societies.

## TORONTO MEDICAL SOCIETY.

A REGULAR meeting was held December 2, 1897.  
Dr. C. R. Dickson was elected a member of the society.

### PSEUDO-HYPERTROPHIC MUSCULAR PARALYSIS.

Dr. B. E. McKenzie presented a man, aged 26, suffering from this condition. Patient's grandmother suffered similarly, and he had one brother who, during his life of six years, was never able to walk. Patient himself has suffered from birth, his condition gradually getting worse, although at times it seemed to be stationary. The calf muscles are markedly enlarged and hard; the gluteal muscles less so; while those of the thigh are wasted. The infraspinatus is hypertrophied, the lower portion of the great pectoral atrophied. The muscles are much weakened. The patient rises from the prone position in the pathognomic manner. There are no disturbances of sensation. The knee-jerk is absent.

Dr. MacMahon agreed with the diagnosis.

Dr. McKenzie proposes to do what Gowers recommends in that case—to advise the constant use of systematic exercise. Drugs were of no service.

Dr. G. H. Carveth described a case in which the disease seemed to be stayed; for the patient was about forty-eight years of age. He was unable to say what treatment had been followed.

### ANÆSTHESIA.

Dr. J. F. W. Ross made some remarks on anæsthesia. Regarding the choice of anæsthetics, the speaker said he had changed his opinion several times; at one time he favored chloroform, at another ether. He referred to an old book on the subject in which the arguments pro and con had been presented. Much of this appeared foolish to us now, but some of the ideas presented were dominant now-a-days. The doctor's preference in all good subjects

is for chloroform. He understood now from experience the force of Tait's statement, that deaths from chloroform call for a coroner's inquest; those from ether do not. Deaths from chloroform occurred on the table, while those from ether took place some time after. He referred to three cases he had, where death had occurred subsequent to the administration of ether from acute nephritis. The clinical features of these cases were described. Regarding the nauseating effects of the two remedies, he had found one about as bad as the other, notwithstanding the use of vinegar, nitro-glycerine, etc., to prevent it.

Dr. McKeown said he had had about 540 cases in which he had produced anæsthesia. In most of these he had given chloroform, which was his choice, although he had only given ether some 26 times. He described one fatal case from chloroform. For stimulating respiration he liked traction on the tongue. He got much information from the condition of the pupil.

Dr. J. N. E. Brown said he favored ether, which he had recently been giving in preference to chloroform in most cases. From having seen two deaths under careful anæsthetists and having heard directly of a number of others, and from having seen many close calls he believed that chloroform was very dangerous as given in the ordinary way. His practice was to give by the drop method on an inhaler. He thought pouring it on in quantity was fraught with danger. With ether he felt much safer and had not seen any bad effects from its use. He had had one case recently in which the patient had choked up with mucous, although atropine had been given, when he was obliged to change to chloroform. He strongly recommended those who had not used ether to give it a trial. He referred to the experiments of Leonard Hill and Waller, which went to show the very much less toxic effect of ether than chloroform.

Dr Rudolph called attention to Lawrie's criticism of Waller's paper, showing that although the vapor of chloroform was some nine times as strong as that of ether, yet it was to be remembered that chloroform was used only in drachms, while ether was used in ounces. Leonard's experiments went to prove that the primary effect of chloroform was on the vaso-motor centre, producing a fall of blood pressure, the secondary effect of which was the stoppage of the heart, and respiratory failure. It was noted that by putting a bandage tightly around the abdomen there was an immediate rise of blood pressure, and the chloroform then could be increased greatly in quantity without serious result.

Dr. Webster reported having had a case of nephritis following chloroform administration. He gave the drug recently for a dentist, in which he found it almost impossible to get the patient under, as the respiration would stop.

Dr. William Oldright thought medical men should be careful how they made pronouncements to the laity as to which drug should be used. He had seen chloroform given many times by Dr. Roseberg without seeing any fatal result, whose custom was to use the gulletine method, commencing with thirty drops a minute, increasing to sixty. Dr. Oldright spoke of the necessity of pure air. The patient should not be allowed to inhale air contaminated with organic matter or  $\text{CO}_2$ . One objection he had to the use of ether was that with the Clover inhaler the patient was re-breathing his own exhalations. He called attention to a case he had recently where the anæsthetist had commenced with ether, but was obliged to change to chloroform on account of the bronchial tubes filling up with mucous. He deprecated the practice of whispering or talking while the patient was going under. The anæsthetist should be left severely alone and not be spoken to.

Dr. G. H. Carveth, who had given anæsthetics many times, said he had four suggestions to offer: (1) Consult the wishes of the patient as to the anæsthetic to be used. (2) Disinfect the patient's mouth and the apparatus used. (3) Have a fresh full bottle of the anæsthetic for each case. (4) In giving an anæsthetic, if the heart stops, stand the patient on his feet for a moment, then flat, and commence artificial respiration.

Dr. F. N. G. Stair said he was glad that while the speakers had recommended that the eye should be watched, they had not referred to that objectionable practice of scratching the cornea. He believed we should use the most recent and most scientific method of administering anæsthetics. He had seen chloroform given recently in London by means of an apparatus which allowed the patient to breathe the full amount of air customary, and which had a rubber bulb attachment by which a certain measured quantity of chloroform could be given. Full anæsthesia could be induced in from 10 to 20 minutes. Besides there was a complete absence of any unpleasant symptoms.

Dr. Ross closed the discussion.

The Society then adjourned.

## TORONTO CLINICAL SOCIETY.

THE forty-first meeting of the society was held December 8, 1897. Dr. A. A. Macdonald occupied the chair.

Fellows present: McDonagh, Peters, Parsons, Boyd, Garratt, Temple, Ryerson, Primrose, Wright, Macdonald, Fenton, Murray, Bingham, King, Oldright, Grasett, Hamilton, Cameron, Fotheringham, Brown. Dr. Graham Chambers was elected a member of the society.

Dr. Fotheringham reported a case of hysteria in a girl aged 10. Three years before he saw the patient she had an attack of diphtheria, which might have given rise (in the opinion of those who saw her) to the paraplegic symptoms which appeared on November 31, 1895, disabling the child from feeding herself for ten months. One eye was closed for three months, and the movement of the other was impaired. Some weeks after there were twitchings of the arms and legs, but not spastic. For a time there were rhythmic movements of the head which were carried on in a rotatory fashion against the fists. The paralysis disappeared during sleep. There was no tendency to bed sores; and there was no marked wasting. At first there was some headache and some insomnia. The patient was hyperæsthetic in the presence of the mother; less so when the doctor was in. There were two sensitive spots over the two upper lumbar vertebræ. Under purely suggestive treatment there was a complete cure. The doctor then discussed the differential diagnosis. The diagnosis of hysteria depended upon the following facts: The interval between the diphtheria and the onset of the paralysis; the distribution of the paralysis and its disappearance during sleep; there was no active atrophy; the absence of bed sores; the increased knee jerk; the position of the legs—that of simple helplessness; the rhythmic spasms; the twitchings; the hyperæsthesia, more marked in the mother's presence; and the hysterical stigmata.

Dr. Bingham referred to a case in which he had operated for empyæma. Although complete recovery took place the child would not allow its mother to touch the affected side.

Dr. Wm. Oldright said that it was stated that there was an absence of the faucial reflex in these cases.

Dr. Fotheringham said that he did not think that this was so. In certain cases the fauces might be one of the anæsthetic areas.

Dr. Primrose presented a child aged 7, who had come to the children's hospital with a psoas abscess. The treatment consisted

of opening the abscess, curreting with the finger-nail, injecting a 10 per cent. solution of iodoform and glycerine, stitchings and sealing up with collodion. Healing took place by first intention.

Dr. Bingham presented a child, upon whom he had done an œsophagotomy, for a button at one point had begun to ulcerate through, which made him pleased he had not persisted with the forceps in trying to extricate it prior to operating. The case was doing well.

Dr. Parsons related having assisted at removing a set of false teeth from the œsophagus. The wound suppurated. It was a difficult matter to keep such wounds from being contaminated.

Dr. E. E. King reported having had two cases of foreign body in the œsophagus—in one case it was a cent, in the other a piece of oyster shell. He was able to locate the cent with the X rays. He was able to remove them by the probang.

Dr. Garratt reported a case he had seen with Dr. Harris. A cent had lodged in the œsophagus, which they were able to locate with the X rays. They introduced a bougie and shoved it into the stomach.

Dr. McDonagh reported a case where a child had swallowed a small tin whistle, which became lodged in the œsophagus. He was able to reach it with an ivory-pointed bulb, and removed it with a pair of forceps.

Dr. A. Primrose read a paper on "The Physics of Surgical Dressings." This was the review of a paper by a Russian medical man who holds that the success of the treatment of wounds by the Listerian method depends not so much upon the antiseptic qualities of the dressings as the allowance for drainage and evaporation from the wound, in the stream of which the germs would be carried.

Dr. Cameron, Dr. Oldright and Dr. Parsons took part in the discussion.

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#### PATHOLOGICAL SOCIETY.

A MEETING of the Society was held on Dec. 29th, 1897, Dr. H. B. Anderson in the chair.

Dr. Adami, Professor of Pathology, McGill University, Montreal, was the guest of the evening.

In addition to the members of the Society a large number of invited guests were present, about 100 in all.

Moved by Dr. Wishart, seconded by Dr. Reeve, that the minutes of the previous meeting be taken as read and adopted Carried.



Dr. Wm. Oldright exhibited a patient with syphilitic enlargement of the tibia in a man of seventy years.

Dr. Parsons read a paper on "Suppurative Cholangitis," and presented a specimen.

The chairman then introduced the guest of the evening, Dr. Adami, who read a paper on

#### THE OMENTUM AND ITS RELATION TO ABDOMINAL INJURY.

The historical interest of the omentum, he said, dated back to the days of Hippocrates, and some quaint examples were given to prove its function as understood at that time, such as the gladiator whose omentum protruded in part through an abdominal wound, and sloughed away. The sensations of chilliness in the abdomen experienced later by the man were taken to explain the function of the organ as an apron, keeping the intestines warm.

Until quite recently little or no interest has been taken in the omentum and its function, but of late the positions in which it has been found, and its adhesion over various lesions of the peritoneum and abdominal viscera, have been such as to suggest a compensatory influence in such conditions. The speaker gave a detailed account of the findings in some 150 autopsies made by him, referring to the rolling up of the membrane, and its constant measurements being rarely reduced, but sometimes increased.

Adhesions over inflammatory area had been frequently noted, as over perforating gastric ulcer, the string of an amputated uterus and inflamed gall bladder, and in one remarkable instance of pus formation at the origin of the mesentery, where the omentum had dipped down between the intestines and become firmly attached to the peritoneum overlying the pocket of pus.

It is impossible at present to speak decidedly as to the meaning of these phenomena, as there are so many cases of a similar nature showing no such action on the part of the omentum. They are, however, very suggestive.

Dr. Adami thanked the Society very warmly for the invitation to present this paper, and for the reception he had received.

[We regret that the paper cannot be published in full, but hope to publish a full report subsequently.]

Dr. Reeve moved that a vote of thanks be tendered Dr. Adami for the valuable and instructive paper presented to the Society. Dr. Adami is recognized by us all as the valued professor of Pathology of one of our greatest and most progressive teaching bodies. To-night we do not greet him so much as professor of a teaching

body, but as Dr. Adami, a medical man, who has won for himself the highest distinctions and a most desirable position in the profession. We know that among his many works is that on inflammation, recognized as one of the most important extant. Dr. Fotheringham seconded the motion. Not only had a valuable paper been enjoyed by the Society, but Dr. Adami's presence among us was an evidence of good-fellowship and freemasonry existing between the medical faculties of the east and west. Unanimously carried.

The vote of thanks was presented by the president to Dr. Adami.

Dr. A. A. Macdonald said he had been greatly interested by the paper. He had come as a listener, and not to discuss it. There were, however, one or two points that occurred to him. He had had more experience in opening the abdomen in living than in dead subjects, and in his experience the malposition and tucking up of the omentum is seldom seen in abdominal work. The omentum has frequently been used in stitching over sutured portions of intestines or other organs for its plastic and patching effect.

Dr. Grasett: There is a great deal of difficulty in obtaining full discussion on a subject such as this, and of which so little is known. There are some points about it that we know, and it is useless to repeat them, and any others new to us we must think over before we can intelligently discuss them. I should like to ask if the omentum be found to exert any influence in preventing adhesions between the intestines and laparotomy wounds.

Dr. Anderson referred to a paper by Durham, and some points brought out in it. He asked if there be any relation between the form of disease and the tucking up of omentum; also as to the power of the omentum to take up bacteria in peritoneal infections.

In reply, Dr. Adami thanked the Society for their vote of thanks, also for their cordial invitation. He had endeavored to give them a subject for discussion worthy of the Society.

In answer to Dr. Grasett's question, he thought the omentum may be of use in preventing adhesions between intestines and abdominal wounds by itself adhering, by its outer layer, to the wall. It is, however, impossible to say anything certain.

To Dr. Macdonald: Abdominal surgeons have already made use of the patching and plastic use of the omentum in some cases; but its utility is applicable only in certain situations, for the strangulating effect of omental adhesions under some conditions must not

be lost sight of. Habershone has brought out this point, and the possible relation between such adhesions and abdominal pain.

To Dr. Anderson: Bacteria, as well as small particles of other substances, may be taken up by means of the stomata, of which the organ has a large number. It has an undoubted absorbing action, and may also have something to do with the exudation of fluid by reason of its great vascularity, which is quite out of proportion to the usefulness of the organ as far as is known. Absorption may take place by the vessels as well as by the lymphatics.

Dr. Hamilton read a paper on "Notes of a Case of Carcinoma of the Stomach with Multiple Subcutaneous Metastasis." (See page 10.)

Dr. Graham: The case was interesting to me—I saw the case only once. It looked to me much like sarcoma, but the nodules were slower in their growth, and smaller than might have been expected in sarcoma. The question of sarcoma in the posterior abdominal region, with secondary growth in the stomach and elsewhere, was discussed. Such subcutaneous nodules are commonly found in the abdominal wall, but rarely in the limbs.

Dr. Fotheringham: The case is interesting by reason of the metastases.

In Thomas' recent work three different ways of distribution are spoken of: by the lymph channels, by the nerve sheaths, and by the blood stream. As an instance of the second, he quotes a case of epithelioma of the lip, the metastases travelling by means of the ductal canal. In the case of infection by the blood stream the organ must be very vascular as shown in cases of cancer of the penis or infection from the stomach by the portal vein. The cancer germ, whatever it may be, is probably small enough to pass through the capillaries, but mature cells are evidently too large to do so. He asked if the arrangement of the nodules in the case presented was such as to suggest any particular means of distribution, as by blood vessels or nerves.

Dr. Pepler asked if there were any nodules in the omentum, or sign of infection in that way.

Dr. Hamilton, replying, said: The organs sent him were the stomach and a small portion of the liver. He could not speak as to metastases in liver, lungs, or omentum.

Dr. Graham said there was no arrangement of the nodules to suggest any particular method of metastasis.

Dr. Reeve showed specimens of glaucomatous eyes by means of the projection microscope. The preparations demonstrated very clearly the fitting of the disc due to the increased intraocular tension.

The hour being late, it was moved and seconded that the remaining papers be postponed.

The meeting then adjourned and refreshments were served.

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### LONDON MEDICAL ASSOCIATION.

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The regular monthly meeting of the London Medical Association was held in the Medical College on the evening of December 13, the following members being present: Dr. Wishart, the president; and Drs. Roome, J. B. Campbell, Macarthur, Eccles, Moorhouse, Hodge, Hotson, Ovens, Thomson, Ferguson, Meek, Balfour, Henderson, H. A. Stevenson, W. J. Stevenson, W. S. Macdonald, Kingsmill, and English.

Dr. Wishart opened a discussion on the treatment of appendicitis, referring briefly to twenty-one operative cases which had come under his care during the past seventeen months.

In regard to the gynæcological work done during the past two and one-half years at the London Asylum, the following resolution was unanimously carried:

“Resolved that the London Medical Association, recognizing the humane and effective operative work being done at the London Insane Asylum, for the physical relief of inmates of that institution, and appreciating especially the benefits, mental as well as physical, which have resulted from gynæcological operations among the insane—

“The association hereby solicits the attention of the Provincial Government to the claims of that work, and urges the duty of providing better facilities for its prosecution.”

It being the annual meeting, the following officers were elected for the ensuing year: President, Dr. F. R. Eccles; vice-president, Dr. R. Ferguson; recording secretary, Dr. W. M. English; corresponding secretary, Dr. W. S. Macdonald; treasurer, Dr. J. Macarthur.

## Book Reviews.

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A TEXT-BOOK OF THE PRACTICE OF MEDICINE. By James M. Anders, M.D., Ph.D., LL.D., Professor of the Practice of Medicine and of Clinical Medicine in the Medico-Chirurgical College, Philadelphia; Attending Physician to the Medico-Chirurgical and Samaritan Hospitals, Philadelphia, etc. Complete in one handsome octavo volume of 1,287 pages. Fully illustrated. Price, cloth, \$5.50 net; sheep or half Morocco, \$6.50 net. W. B. Saunders, Philadelphia. Canadian Agents: J. A. Carveth & Co., Toronto.

Professor Anders has given us a very useful and reliable text-book. Only one who is a successful teacher himself could arrange the matter so well. Special attention is paid to differential diagnosis, and fifty-six helpful diagnostic tables are scattered throughout the work. It is the misfortune of every writer of a text-book of medicine to-day that his work comes into competition with that of Professor Osler, which is so deservedly popular as a text-book in England as well as in America. If the brilliant Canadian had not occupied the field Prof. Anders' book would enjoy a greater popularity than we now can venture to predict for it. But it is an excellent book, nevertheless—thoroughly up to date, and a reliable guide to the general practitioner. The typography, printing, paper and binding are all first-class.

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A TEXT-BOOK OF PRACTICAL THERAPEUTICS. With especial reference to the application of remedial measures to disease and their employment upon a rational basis, by Hobart Amory Hare, M.D., B. Sc., Professor of Therapeutics and Materia Medica in the Jefferson Medical College, Philadelphia; Physician to the Jefferson Medical College Hospital; Laureate of the Royal Academy of Medicine in Belgium, of the Medical Society in London; corresponding fellow of the Sociedad Espanola de Hygiene of Madrid; member of the Association of American Physicians; author of "A Text-book of Practical Diagnosis," etc. Sixth edition enlarged and revised: Lea Brothers & Co., Philadelphia and New York, 1897.

This work on Therapeutics has been so well received by the medical profession that six editions have been issued in as many years. The author has, by adding the newer well recognized remedies to each new edition, kept the book abreast of the times. The volume is divided into four parts. Part I. deals with general Therapeutical considerations such as modes of administration, dosage, absorption, strength, incompatibles and a classification of drugs under their different Therapeutical heads. We are of the opinion that this part of the work is altogether too brief, and forms the principal fault of the whole volume. We think that more attention should be given to Pharmacology, as we believe that there is only one way of obtaining a good knowledge of Therapeutics

and that is by studying the modes of action of drugs, as well as their antagonistic actions. In part II. all the drugs in general use are arranged alphabetically, and each drug is described as to sources or preparation, Physiological action, Therapeutic, toxic properties, and methods of use. Part III. is devoted to medical measures other than drugs, and includes articles on lavage, transfusion, rest, care, heat, cold, antiseptics, enteroclysis, foods for the sick, climate, springs, counter-irritation and acupuncture. The concluding portion of the book is principally devoted to applied Therapeutics. The diseases are arranged alphabetically, and the treatment of each disease is carefully described. We recommend the work to every student of medicine, but, we believe, that it is among graduates that its most useful sphere exists.

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A MANUAL OF MEDICAL JURISPRUDENCE. By Alfred Swaine Taylor, M.D., F.R.S. Revised and edited by Fhos. Stevenson, M.D., London; F.R.C.P. London; Lecturer on Medical Jurisprudence and on Chemistry at Guys; Examiner in Forensic Medicine at the University of London; External Examiner in Forensic Medicine in the Victoria University; Official Analyst to the Home Office. Twelfth American, edited with citations and additions from the Twelfth English Edition, by Clark Bell, Esq., LL.D., President of American International Medico-Legal Congress of 1889 and 1893; President of Medico-Legal Congress of 1895 (New York); Honorary Member of the Medico-Legal Society of France; Ex-President of the Medico-Legal Society of New York. In one handsome volume of 832 pages. Publishers: Lea Bros. & Co., New York and Philadelphia. 1897.

Since the issuance of the last edition in 1892 a strong impulse has been given to Forensic Medicine by the International Congress of Medical Jurisprudence, by the Congress of Medical Jurisprudence of New York in 1895, and by the special development of Medico-Legal Surgery in various societies. The increasing frequency of damage cases renders this department of Medico Legal Surgery of growing importance."

The appearance of a new edition of "Taylor's Medical Jurisprudence," the standard work on this subject, is always looked forward to with interest. The arrangement is all that can be desired. Each topic is considered in a varying number of chapters, each of which is again subdivided into paragraphs, which under a distinct heading deals with some feature of the topic under discussion. A book with this plan is read with comfort, and when in addition we have an excellent index, reference is a very easy and expeditious matter. In the index we have first a list of cases referred to by the English editor, then a list of cases referred to by the American editor, and then the general index, which is a satisfactory one.

In looking over the book, the first subject of interest that catches the eye is that of medical secrets. In British Medical Jurisprudence there are no medical secrets in the eyes of the law. The American editor, in commenting on this, states that in New York State, and in many other states of the Union, physicians, solicitors, and clergymen, are all

placed on the same footing, and are not allowed to divulge secrets even in a court room. He calls on physicians to protect the honor of their patients at all hazards and to trust to the better sentiment of the judge and of public opinion to support them. Full reference is made to the case of *Kitson vs. Playfair*

Another interesting subject touched on is the duty of physicians where they suspect that a patient is being slowly poisoned. His advice is—be sure that you have good ground for your suspicions and then communicate them to the patient, or to a reliable friend, or to a magistrate.

Nineteen chapters (175 pages) are devoted to poisons. Almost every poison thinkable is mentioned and some particulars given, while the common ones are discussed fully. Symptomatology, post-mortem conditions, dosage, chemical analysis, are all fully treated. Chemical analysis is especially full, and directions are given for the detection of the poisons as salts or acids in organic liquids, and in the organs removed post-mortem. Clark Bell points out that Wormley, of Philadelphia, demonstrated the fallacy of Reinsch's test for arsenic by showing that octahedral crystals could be produced by this method from antimony, exactly identical in appearance to those produced from arsenic. Strange to say, not a word is said about the use of arsenic in embalming fluids and the difficulties that may arise from this in medico-legal investigations. With this exception, and that of the scant space devoted to carbolic acid, which has become such a common poison on this side of the Atlantic, the subject of poisons is dealt with in a very satisfactory manner. More space might profitably have been given to the subject of ptomaines. Additional matter, however, is given by Clark Bell with a system of classification and tests. An interesting chapter is that on "Noxious Animal Foods."

Fifteen chapters (145 pages) are given to "Wounds and Personal Injuries." The chapter on the examination of blood-stains is exceedingly good. Space will not allow me to dwell on this too long. Directions are given for dealing with all sorts of contingencies that may arise in this connection. In differentiating human blood from that of mammalia, this position is taken that all the medical expert is justified in saying is "that the appearance of the blood in question is quite consistent with that of human blood." I believe that this is the correct position to take. Eight plates, from photo-micrographs of blood of man and of some of the lower animals, are given to show their differences and similarities.

Chapters are devoted to death by drowning, hanging, strangulation, suffocation, etc., and one whole chapter to poisoning by carbonic oxide and other gases (25 pages).

Electricity as a method of inflicting the death penalty is dealt with in one chapter, and full particulars with post-mortem reports are given of the death by electricity of the four murderers in New York in 1891. Although death did not occur instantaneously from a current of 1,485

volts, it is supposed that unconsciousness did. Rigor mortis set in a few moments after death.

Sixty pages are taken up with the subject of "Infanticide and Live Birth," and to the reviewer no part of the volume was found of greater interest. The discussions centre around the hydrostatic test, pointing out its value and the sources of error that may arise. Much new matter is introduced, and reference is made to the closure of the ductus arteriosus and of the foramen ovale, and proper value is assigned to these conditions.

Altogether the book is a satisfactory one. References to cases are short and concise, thus differing from the old English two-volume edition, in which reports of cases were so numerous and so full as to be tedious.

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Books received :

A TEXT-BOOK OF THE DISEASES OF WOMEN. By Henry J. Garrigues, A.M., M.D., Professor of Gynæcology and Obstetrics in the New York School of Clinical Medicine; Gynæcologist to St. Mark's Hospital and to the German Dispensary, New York City, etc. One handsome octavo volume of 628 pages, containing 335 engravings and colored plates. Price, cloth, \$4 net; sheep or half Morocco, \$5 net. W. B. Saunders, Philadelphia. Canadian Agents: J. A. Carveth & Co., Toronto.

THE LOFOTEN ISLANDS AND THEIR PRINCIPAL PRODUCTS.—We have received and read with much pleasure an elaborately gotten up pamphlet on the cod industry in the Lofoten Islands. The pamphlet is illustrated freely, and the letter press contains much useful and instructive information. Messrs. Parke, Davis & Co., the publishers, will be pleased to send one of these pamphlets to physicians who have not already received one.

KING'S MANUAL OF OBSTETRICS. New (7th) Edition. A Manual of Obstetrics. By A. F. A. King, M.D., Professor of Obstetrics and Diseases of Women in the Medical Department of the Columbian University, Washington, D.C., and in the University of Vermont, etc. In one 12mo. volume of 573 pages, with 223 illustrations. Cloth, \$2.50. Lea Brothers & Co., publishers, Philadelphia and New York.

PATHOLOGICAL TECHNIQUE. *A Practical Manual for the Pathological Laboratory.* By Frank B. Mallory, A.M., M.D., Assistant Professor of Pathology, Harvard University Medical School; Assistant Pathologist to the Boston City Hospital; Pathologist to the Children's Hospital and to the Carney Hospital, Boston; and James H. Wright, A.M., M.D., Director of the Laboratory of the Massachusetts General Hospital; Instructor in Pathology, Harvard University Medical School. One handsome octavo volume of 397 pages, with 105 illustrations. Price: Cloth, \$2.50 net.



A CLINICAL TEXT-BOOK OF SURGICAL DIAGNOSIS AND TREATMENT. By J. W. Macdonald, M.D., Graduate of the University of Edinburgh ; Licentiate of the Royal College of Surgeons of Edinburgh ; Professor of the Practice of Surgery and of Clinical Surgery in Hamline University, Minneapolis, Minnesota. Octavo volume of 800 pages, handsomely illustrated with 328 engravings. Prices : Cloth, \$5.00 net ; Half Morocco, \$6.00 net. W. B. Saunders, Philadelphia. Canadian Agents : J. A. Carveth & Co., Toronto.

W. B. SAUNDERS, Publishers, 925 Walnut street, Philadelphia, announces the following books :

AN AMERICAN TEXT-BOOK OF DISEASES OF THE EYE, EAR, NOSE, AND THROAT. Edited by G. E. DESCHWEINITZ, M.D., Professor of Ophthalmology in the Jefferson Medical College, Philadelphia ; and B. Alexander Randall, M.D., Professor of Diseases of the Ear in the University of Pennsylvania and in the Philadelphia Polyclinic.

AN AMERICAN TEXT-BOOK OF PATHOLOGY. Edited by John Guit ras, M.D., Professor of General Pathology and of Morbid Anatomy in the University of Pennsylvania ; and David Riseman, M.D., Demonstrator of Pathological Histology in the University of Pennsylvania.

AN AMERICAN TEXT-BOOK OF LEGAL MEDICINE AND TOXICOLOGY, Edited by Frederick Peterson, M.D., Clinical Professor of Mental Diseases in the Woman's Medical College, New York ; Chief of Clinic Nervous Department, College of Physicians and Surgeons, New York ; and Walter S. Haines, M.D., Professor of Chemistry, Pharmacy, and Toxicology in Rush Medical College, Chicago, Illinois.

STENDEL'S PATHOLOGY. *A Manual of Pathology.* By Alfred Stengel, M.D., Instructor in Clinical Medicine, University of Pennsylvania ; Physician to the Philadelphia Hospital ; Professor of Clinical Medicine, Woman's Medical College ; Physician to the Children's Hospital ; late Pathologist to the German Hospital, Philadelphia, etc.

CHURCH AND PETERSON'S NERVOUS AND MENTAL DISEASES. *Nervous and Mental Diseases.* By Archibald Church, M.D., Professor of Mental Diseases and Medical Jurisprudence in the Northwestern University Medical School, Chicago ; and Frederick Peterson, M. D., Clinical Professor of Mental Diseases in the Woman's Medical College, New York ; Chief of Clinic Nervous Department College of Physicians and Surgeons, New York.

HEISLER'S EMBRYOLOGY. *A Text-book of Embryology.* By John C. Heisler, M.D., Professor of Anatomy in the Medico-Chirurgical College, Philadelphia.

KYLE ON THE NOSE AND THROAT. *Diseases of the Nose and Throat.* By D. Braden Kyle, M.D., Chief Laryngologist to St. Agnes' Hospital ; Bacteriologist to the Orthopedic Hospital and Infirmary for Nervous Diseases ; Instructor in Clinical Microscopy and Assistant Demonstrator of Pathology, Jefferson Medical College, Philadelphia.

HIRST'S OBSTETRICS. *A Text-book of Obstetrics.* By Barton Cooke Hirst, M.D., Professor of Obstetrics in the University of Pennsylvania.

WEST'S NURSING. *An American Text-book of Nursing.* By American Teachers Edited by Roberta M. West, Late Superintendent of Nurses in the Hospital of the University of Pennsylvania.

## Medical Items.

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DR. REUBEN PETERSON has removed from Grand Rapids, Michigan, to Chicago.

PROFESSOR WM. OSLER, of Baltimore, spent a portion of his Christmas holidays in Toronto.

DR. L. F. BARKER is President, and Dr. T. S. Cullen Secretary, of the Johns Hopkins Hospital Medical Society.

DR. T. S. CULLEN has commenced practice in Baltimore, Md. He paid a short visit to Toronto during the holidays.

DR. G. H. CLEMENS, formerly of Port Perry, after taking courses in Vienna, Berlin, and London, has returned to Canada, and located in Toronto, 1326 King street west.

Dr. A. McDiarmid, formerly Professor of Obstetrics and Gynecology in Manitoba Medical College, has removed to Chicago, and is now Professor of Obstetrics in the Post-Graduate Medical School and Hospital.

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### OBITUARY.

JAMES HEBBURN BURNS, M.D.—The many friends and acquaintances of Dr. J. H. Burns, of Toronto, were very much surprised and shocked to hear of his awfully sudden death in his office, December 20, 1897. His health had not been very good for about five years, but, as a rule, he was able to do his ordinary work in practice up to the day of his death. After completing his "rounds" in the forenoon of December 20, he went into his house, and, going to his telephone, called up central. After ringing the call he fell to the floor, and Mrs. Burns hearing the fall, ran in and found him lying senseless. The physicians, who were immediately called in, found him dead. His death was caused by angina pectoris.

Dr. Burns was born in Oshawa, December, 1845, and was therefore fifty-two years of age. He received his medical education in the Toronto School of Medicine, and the degree of M.B. from the University of Toronto in 1866. After graduating, he went to Neustadt, County of Grey, but soon returned to Toronto on account of the Fenian raid of that year. He was a member of the University Company of the Queen's Own Rifles, but when the troops were going to the front he was appointed Assistant-Surgeon to Colonel Denison's provisional regi-

ment, and, in that capacity, attended many of the wounded at St. Catharines after the battle of Ridgeway. After the raid he practised for a short time in Priceville, County of Grey, and then went to Collingwood, where he practised in partnership with Dr. Stephens for nearly ten years.

He came to Toronto in 1876, and had rather a hard struggle for two or three years. After that, however, his practice increased rapidly and he was soon recognized as one of the leading physicians of the city. In 1880, and again in 1885, he was elected as a member of the Ontario Medical Council. He became Vice-President of that body in 1887, and President in 1888. At the election for 1890, he declined to be a candidate: but, when a vacancy occurred in the Council in 1897 through the resignation of Dr. Machell, he entered the field in opposition to Dr. Spence, and was declared elected a few days before his death. At the time of his death he was also senior consulting physician to the Infants' Home, a member of the consulting staff of St. John's Hospital, and a regular member of the staff of the Toronto General Hospital.

Dr. Burns was genial, affable, and courteous—always popular among his acquaintances. He had many friends and much influence in the profession, and, of course, held the highest honor in the gift of the physicians of this province when he was elected President of the Ontario Medical Council. He earned the confidence, respect, and love of his patients through his kindness of manner and goodness of heart. Jimmie Burns, as his intimate friends knew him, will long be remembered by many who loved him well.

WILLIAM CAMERON CHEWETT, M.D.—Dr. W. C. Chewett, of Toronto, died at his late residence November 30th, 1897. The deceased was grandson of Colonel William Chewett, who came to York in 1794, and son of James Grant Chewett, who was at one time Deputy Surveyor-General of Upper Canada. He was born in Toronto in 1828, and after receiving his preliminary education in Upper Canada College, became a medical student at King's College, and was the first to receive the degree of M.D. from the University of Toronto in 1851. He never entered into active work in connection with his profession. He was the owner of the Rossin House, of Toronto.

ROBERT CHARLES KIRKPATRICK, B.A., M.D., L.R.C.S. ED.—Montreal has lost one of its most promising young surgeons through the death of Dr. R. C. Kirkpatrick, which occurred December 5th, 1897, from tuberculous meningitis, after an illness of three weeks. He will be remembered as one of the most active local secretaries at the last meeting of the British Medical Association in Montreal. He was educated at McGill, taking both Arts and Medicine. After receiving the degree of M.D. in 1887 he spent some time in Europe, and took the diploma of L.R.C.S. Ed. After his return to Montreal he acted as Medical Superintendent of the General Hospital. After retiring from this position he was appointed Assistant Surgeon, and, later, Full

Surgeon. In 1893 he was appointed Demonstrator of Surgery in McGill, and soon afterwards Lecturer on Surgery.

GEORGE M. SHAW, M.D.—Dr. George M. Shaw, one of Canada's most prominent physicians, died after a very brief illness at his home in Hamilton, January 16. On Tuesday night he went out to see a patient, and soon after his return to his house had a chill, followed by pneumonia, which caused his death on the following Sunday morning. He received his medical education in the Toronto School of Medicine, graduated in the University of Toronto in 1874, and received the degree of M.D. from the same University in 1888. After graduating he practised for about three years in Queenston, and then settled in Hamilton where he practised for twenty years. He was an active member of several medical societies, including the British Medical Association, the Canadian and Ontario Medical Associations. At the time of his death he was representative of the Hamilton Division in the Ontario Medical Council. He was long recognized as one of the best physicians of Hamilton, and was highly respected by all classes in that city. Dr. Shaw, as a student and as a practitioner, was much beloved by those who knew him intimately. He was a straightforward, honorable, and highminded man, and at the same time an honest, faithful and excellent physician. The writer, who had the privilege of knowing him for twenty-six years, feels that he has lost one of his best friends. Many others in Hamilton, Toronto and other parts of Canada, are in a similar position. We can scarcely realize as yet that he who was amongst us a few days ago, in his usual health and vigor, has gone to the unseen land. He leaves a widow and four children, who have the heartfelt sympathy of many friends for the appalling calamity which has befallen them.

WILLIAM S. TREMAINE, M.D.—Few surgeons of the United States were so highly respected by the Profession of Canada as Dr. Tremaine in Buffalo. He was born in Prince Edward Island, Canada, but spent nearly all his life on the "other side of the line." He went to Boston in his early youth, and received his medical education in the University of Pennsylvania, from which he graduated in 1861. He held various positions in the United States Army from 1864 to 1881. In the latter year he settled in Buffalo and was soon recognized as one of the leading surgeons of that city. He was one of the founders of the Medical Department of the Niagara University, in which he was professor of surgery. Although he suffered for some years from the effects of yellow fever, and cholera, contracted while in military service, he was a fairly healthy man, and his sudden death, which occurred January 8, caused a great surprise and shock to his numerous friends in all parts of America. He was sixty years of age.