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WESTERN CANADA MEDICAL JOURNAL

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ORIGINAL COMMUNICATIONS.

OPSONINS*

BY J. H. LEEMING, M.D.

Bacteriologist to the City of Winnipeg

While every new departure from recognized lines of treatment is justly regarded by the Profession at large from a somewhat conservative standpoint, it is probable that none has been surrounded at its outset by more misapprehension than the one under consideration. For this there are two reasons:—

1st. The alarm that naturally resulted from certain errors in the earlier application of the principles involved;

2nd. A resulting unwillingness to reconsider the subject in the light of later knowledge.

The principles of acquiring protection against a specific poison by introducing into the system small doses of that poison, although originated by Mithridates so long ago as B.C. 70, did not until many centuries later have any application to what may be called organized poisons. The modern method of specific prophylaxis and cure may be said to have originated from the introduction of variolation, a practice, however, which was associated with so much risk to both the patient and the community, that it had to give way to the safer method introduced by Jenner in 1797, viz., inoculation by an attenuated virus in the form of calf lymph.

*Read before the Winnipeg Medico-Chirurgical Society,

The brilliant results attained by vaccination led to attempts to prophylaxis on similar lines in other diseases.

Willems in 1850 attempted to produce protection against bovine pleuro-pneumonia with inoculation of the virus, but with indifferent success.

In 1890, Pasteur, working with pure cultures of the microbes of chicken cholera and anthrax, placed the matter on a scientific basis. In the case of rabies, also, he was able to elaborate an efficient system of prophylactic inoculations, although the virus of this disease still remains undetermined. In all cases the material used for inoculation was an attenuated virus.

In 1887 it was shown by Salmon and Smith, and others, that specific immunity can be induced by the inoculation of a virus killed by heat, chemicals, etc., and thus all risks of increase of virulence, and resulting fatal infection were abolished, and so the method became applicable to mankind.

The important discovery of antitoxin by Behring and Kitasato in 1890 led to the belief that in immune serum a panacea had been found against all infections, a belief *not* justified by subsequent investigation. In recent years therefore a return has been made to active rather than passive immunization. The method was first applied to man by Herran and Haffkine in 1892 in Asiatic Cholera. Later, protective inoculation with killed cultures was carried out in the case of enteric fever by Pfeiffer and Kolle, and by Wright and Sample with good results. The possibility of protective inoculation against Bubonic Plague has been worked on by Haffkine and others, with results that promise success in the future.

The first attempt to extend the scope of vaccination to those cases where infection was already established was made by Koch. Taking into consideration the great chronicity of many localised tuberculous lesions, he conceived that it might be possible from cultures of the tubercle bacillus to prepare a vaccine which would so raise the resistance of the inoculated subjects that they might not only gain an acquired immunity against infection, but might even, when an infection was already present, be enabled to overcome that infection. In October, 1890, at the Berlin Medical Congress, he made the announcement that he had prepared a substance which had a curative effect when injected into the subcutanous tissues of man and animals infected with tuberculosis.

The publication of this paper was immediately followed by an extensive trial being given to the new substance, both in Germany and England. Doubtless many cases were subjected to treatment which were quite unsuitable and hopeless from the first, and it was not long before cases were recorded of diseases which from being chronic became acute, and cases of localized diseases which became acutely disseminated as a sequel to the injections. The reaction of opinion was so great that by the end of 1891 practically all those who had taken up the new treatment had lost faith in it and abandoned it.

The fluid to which the name of tuberculin (now known as old tuberculin) was given was prepared as follows:—

Bacilli were grown from six to eight weeks in a slightly alkaline veal broth, containing 1% of peptone, and from 4 to 5% of glycerine. The liquid was then evaporated to 1-10 of its bulk and filtered through porcelain. This filtrate constituted the old tuberculin. It will be seen, therefore, that this fluid contained only such toxic products of the tubercle bacillus as were soluble, without disintegrating the micro-organisms, and therefore could not give rise to an active bactericidal immunity. Koch and others were now, however, working to separate from this tuberculin the active immunizing principle, and also to free it from the noxious constituents.

In 1897 Koch announced his discovery of a further tuberculin, known as the new tuberculin, or T.R. (Tuberculin Rest) which is now in common use. Its preparation is as follows:—

Cultures, grown as for old tuberculin, are ground up in distilled water in agate mortars. The first quantity of the resulting fluid is decanted and constitutes tuberculin oberer (T.O.). Fresh quantities of water are added, and the trituration is repeated until no solid residue remains. The suspension of the comminuted bacilli is known as New Tuberculin—the T.R. or Tuberculin Rest. —and 40% of glycerine is added until 1cc of the fluid contains 10 milligrammes of the dried powder. The tuberculin, therefore, in so far as it contains all the constitutents of the bacilli with the exception of the soluble exo-toxins eliminated in the T.O., should on injection give rise to the formation of active bactericidal substances. The dose of this tuberculin, which was recommended, varied from $\frac{1}{4}$ to $\frac{1}{2}$ milligramme. A fair trial was given to this

new product, but owing to the fact that the dosage was too great, and that the effects could not be determined with sufficient accuracy, this also led to disappointing results. In 1902 a fresh impetus was given to the use of vaccines in the treatment of disease by Wright. He showed that the blood of patients suffering from acne, sycosis and furunculosis is characterized by a defective phagocytic power for the staphylococcus pyogenes. He also shewed that the cure of these bacterial infections can in almost every case be achieved by the inoculation of appropriate quantities of sterilized staphylococcus cultures, and further that the cure is associated with the acquirement of an increased phagocytic power for the staphylococcus pyogenes. It was also shown that human serum exerts no bactericidal action on the staphylococcus pyogenes. It was, however, still a matter of uncertainty whether the blood fluids performed any active part in phagocytosis. Following on this, Wright and Douglas showed that phagocytes had no power of ingesting staphylococci except when serum or plasma was present; and, further, that the power exerted by the blood fluid was not a stim 'ation of the phagocytes, but a modification in some way of the micro-organisms, which made them a fit prey for the phagocytes. To the substance which brings about this modification they gave the name, "Opsonin." In 1904, the same investigators showed that the opsonic action of the blood is exerted not exclusively upon the staphylococcus pyogenes., but also upon the bacterium pestis, the micrococcus melitensis the diplococcus pneumoniæ of Fraenkel, the Bac. Coli, the Bac. dysenteriae of Shiga, the Bac. anthracis, the Bacillus typhosus, and the Vibrio Cholerae Asiaticae. And, further, they showed that the increased phagocytic power which accompanies successful immunisation against the staphylococcus pyogenes is dependent upon an elaboration of opsonins in the system of the inoculated patient. In a second paper, published in the same year, the increase of the opsonic power is again clearly shown to follow the injection of an appropriate vaccine in cases of infection with the tubercle bacillus or staphylococcus pyogenes. It was also shown that an increase in opsonic index was associated with clinical improvement, and conversely a fall in the opsonic index was associated with an exacerbation of the infection. From this time, therefore, the opsonic index has been used as a guide to the in-

oculation of vaccines, the curve of active immunity obtained being an indication both as to the suitability of dose and as to the best time for re-inoculating. By this means it has been shown that the dosage of Koch's tuberculin, as originally recommended, is far in excess of what may with safety and benefit be employed. To this fact and to the inexperience of operators may be placed the failures met with in this method of treatment.

Regarding the nature of opsonins, nothing very definite is yet known. Hektoen has shown that opsonins are distinct from other antibodies. This is indicated by the fact that by immunisation, a serum can, in certain cases, be obtained which is opsonic but not lytic, or in other cases, one which is lytic but not opsonic. Similar experiments have differentiated opsonins from agglutinins. If a virulent organism is injected into a susceptible animal, the leucocytes appear to be repelled, and to be unable to deal with the microbe which multiplies and causes the death of the animal. If, however, the suitable immune serum is injected into the animal before inoculation, the phagocytes attack and devour the invading micro-organism. The question arises as to whether this result has been obtained by the action of the immune serum on the phagocytes or on the bacteria. Wright takes the latter view, and supposes that the phagocytes play only a passive role which depends on the preliminary action of the opsonins. He, therefore, defines an opsonin as that substance or that combination of substances which, acting on bacteria, render them more easy of ingestion by the phagocytes.

Normal opsonins are non-specific, but the opsonins elaborated in response to an inoculation with a specific vaccine are highly specific. Therefore, a patient suffering from a bacterial infection should be immunised against that exact organism, when it is possible.

I now propose to indicate briefly the methods used in the preparation and standardisation of vaccines. In the case of tubercle vaccine, Koch's new tuberculin has been used almost entirely. This, as I have already stated, is prepared for the market as a solution of 10 milligrams weight of the dried tubercle bacillus powder in 1 c.c. of 40% glycerine in distilled water. Dilutions of this are then made according to the dose required, the diluting

fluid used being a O. 85% solution of sodium chloride. To O. 25%—this being as a precaution against contamination. As regards dosage, Wright insists on a small dose, especially for the initial treatment, until it is seen how the index is affected. He advocates doses of from 1-5000 to 1-2000 milligramme. Since my return from England, Wright has shown that tuberculin only contains 1-5 tuberculous material, and so dried organisms will be five times as strong as new tuberculin; he has, therefore, commenced using a bacillary emulsion.

It will suffice to describe the preparation of a staphylococcus vaccine as an illustration of the method employed in all other infections dealt with. An agar slope tube is inoculated from a young staphylococcus culture. After incubation for twenty-four hours a few c.c. of a 0.85% solution of sodium chloride are added to the tube. It is then shaken up so as to form a suspension of bacteria, and is removed into another tube and centrifuged for a short time in order to deposit any masses of bacteria. The supernatant bacterial suspension is then pipetted off into a fresh tube, and is now ready for standardisation. This is done by the method of enumeration against red blood corpuscles. As soon as the films have been made for enumeration, the end of the tube containing the suspension is sealed in a flame, and the whole immersed in a water bath at 60° C for one hour. It is then removed to an incubator standing at 37° C, where it remains for twenty-four hours. At the end of this time tubes of agar and broth are inoculated from it in order to test its sterility. Having passed this test it is now ready for dilution to the required strength according to the figures that have been arrived at in the meantime.

The diluent used is O. 85% Sodium Chloride, and O. 25% Lysol is finally added. Needless to say, these manipulations must be carried out with all the ordinary precautions used in bacteriological technique. The doses are as follows:—

Staphylococci	100-500 millions
Micrococcus Neoformans	10- 50 millions
Bac. Coli	10- 30 millions
Pneumococcus	30-100 millions
Streptococcus in chronic infections	30-100 millions
Streptococcus in acute infections	5- 10 millions

From this description it will be seen that only one tubercle vaccine has been used. The difficulties of isolating and growing the tubercle bacillus in order to prepare a special vaccine for each patient, are at present insurmountable. It would seem reasonable to suppose, however, that there are varieties of tubercle bacilli, pathogenic to man, indistinguishable from one another by methods at present at our disposal, but differing from one another sufficiently to require a specific vaccine in order to gain the best results. This supposition is based, first, on the fact that considerable variation occurs in the clinical course of apparently similar cases during treatment with Koch's tuberculin; and, secondly, on the fact that in the case of other infections the best results are often found to follow the use of special vaccines. In other infections it has been found advisable to use a specific vaccine prepared from the actual organism isolated. There seems, however, to be considerable variability in this respect, for in the case of members of the colon and streptococcus groups this factor is apparently essential, while in the case of the staphylococcus group it is not so important.

The technique employed in the estimation of the Opsonic Index is as follows.

The essentials required are:—(1) Pipettes; (2) washed corpuscles; (3) bacterial emulsion; (4) serum to be estimated; (5) normal sera or pooled sera.

The pipettes should all be of an approximate calibre, and but slightly tapering towards the point, and with a tightly fitting teat. The ends should be cut square, and the pipettes marked with a paraffin pencil about $\frac{3}{4}$ inch from the extremity.

Washed Corpuscles. The tubes for these should be of uniform calibre, weight and length. They should be rinsed out with acid, water, and citrate of soda solution. Not less than $\frac{2}{3}$ of the tube is filled with 1.5% Sod. Cit. Solution and blood is run in to fill the tube. The tube is then inverted two or three times to mix the blood and citrate solution, but must not be shaken. The tubes are now centrifuged for the minimum time compatible with the settling of the corpuscles, the supernatant fluid is pipetted off, and the corpuscles are mixed—not shaken—with sufficient O. 85% Sodium Chloride to fill the tube. After centrifuging again, for

the least period of time sufficient to bring down corpuscles, the supernatant fluid is pipetted off, and the corpuscles are ready for use.

Bacterial Emulsion. With the exception of tubercle, which is made from a dead, dry or moist culture, the emulsions are made from fresh live cultures. The age for the coliform organisms and the non-gramming cocci may be from four to ten hours, the younger the better. Gramming cocci may be as old as twenty-four hours. The diluent employed is 1.5% salt solution for tubercle, micrococcus neoformans, and the non-gramming cocci; for all other organisms O. 85% salt solution is used. Usually a loopful of the culture from an agar tube is placed in a small volume of diluent in a watch glass, and the mixture is emulsified by being alternately sucked into and forced out of a stout pipette, which is firmly held at right angles to the bottom of the watch glass. The thickness of the emulsion varies. As a rule, bacillary emulsions require to have a thicker appearance to the naked eye than coccal ones, the latter being but slightly opalescent. It is advisable to put up a "trial trip" to test the strength and condition —as regards clumping—of the emulsion.

A more elaborate method is necessary in order to obtain a satisfactory tubercle emulsion. A portion of dried or moist bacilli from a recent culture is rubbed up in an agate mortar, at first alone, and then 1.5% salt solution is added drop by drop. In this way a paste, and subsequently a thick emulsion, is made. The excellence of the final emulsion depends on the smoothness of the paste and emulsion at this stage. The latter is then sealed up in a test tube. On inverting the tube and allowing it to stand for some time, the clumps will settle into the drawn off end, and may be removed en masse by cutting off that portion of the tube. For use a small portion of the resultant emulsion is centrifuged until the upper layers are fairly opalescent only. These layers are pipetted off and thoroughly mixed, and the emulsion should then be free from clumps. A "trial trip" will now show whether there be any need for further dilution. If necessary, the dilution is made, the tube is sealed and sterilized and the emulsion is ready for use.
Strepto cocci may be advantageously rubbed up similarly in a mortar with O. 85% salt solution and centrifuged.

The serum for examination is usually contained in a recurved capsule. Usually there is no difficulty in obtaining the requisite volume of serum without interfering with clot, but sometimes centrifuging is necessary to make the serum more easy of extraction. Care should be taken that clotting has occurred and not mere settling of the corpuscles, for if plasma be taken instead of serum, clotting will take place in the subsequent corpuscular mixture. This is more likely to occur in the cold weather.

Controls. Tubercle indices are worked out against the phagocytic counts of two or more normal sera, most other indices being calculated from the count of a pooled serum of four or more normal sera.

We have now the three necessary factors for estimating the opsonic index, viz., washed corpuscles, bacterial emulsion, and serum. A volume of each of these in the order given is taken into a pipette, and thoroughly mixed on a clean slide; the mixture is taken up into the pipette again, the end is sealed off in a pilot flame, and the pipette is placed in the opsonizer—coliform organisms and the non gramming cocci for not longer than eight or ten minutes, tubercle bacilli and other organisms for fifteen minutes, more or less, according to the strength of the solution.

The contents are then blown out on to a slide, roughened with emery paper, and cleaned with a duster, and a film is made by means of the edge of a broken slide with a slightly concave edge. If the film is well made it will have a square edge, and in the edge will be found practically all the polymorphonuclear leucocytes. The films are then fixed in saturated corrosive sublimate solution for two or three minutes. Tubercle films are then stained with carbol—or aniline—fuchsin, heated until steaming takes place, decolorized in 2.5% sulphuric acid, treated with 4% acetic acid to dissolve the erythrocytes, and counter-stained with a ½% solution of Methylene Blue made up with ½% Sodium Carbonate. Most other films are advantageously stained with Carbol-thionin (¼% Thioni, 10% Carbolic Acid) in the cold.

A minimum number of fifty polymorphonuclear leucocytes are now examined, and their microbic contents enumerated. If fifty cells be counted, the total number of bacteria multiplied by two and divided by one hundred, gives the average phagocytic con-

tent, or phagocytic count. Normals or pools require the enumeration of at least one hundred leucocytes and the phagocytic index of the pool, or the average of the phagocytic indices of a series of normals divided into the phagocytic index of any serum gives the opsonic index of that serum.

Normal sera should not differ from one another, in a Tubercular Opsonic Index, by more than 10%.

We have now arrived at the stage for the consideration of treatment, and the all important rule to be borne in mind is that all treatment, whether at the initial inoculation or subsequently, must be guided and governed by the index. Following an inoculation with the requisite vaccine, there is first a drop in the opsonic index—the "negative phase," then, depending on the size of the dose and the re-acting power of the individual there comes a rise of the index—the "positive phase,"—or a continuation of the negative. If the first inoculation has been properly gauged, there is a brief negative phase followed by a positive phase of some days' duration. As this positive phase gradually drops, another inoculation is given, and the effect on the index is watched. If the index drops markedly and rises but a little the dose has been too large. If the negative phase is slight, and the positive phase is slight and transitory, the dose has been too small. With proper dosage, the negative phases are generally small, and the opsonic index is kept fairly well above normal. Hand in hand with this goes an improvement in the clinical symptoms. Inoculation is best done at the end of the positive phase when the index becomes constant. The important fact to remember is that an inoculation must not be given during the negative phase. It is a mistake to inoculate early in the positive, i.e., when the index is high. Inoculation may well be done in general when the index is normal or below.

(To be continued in March)

INJURIES TO THE KIDNEY, WITH REPORT OF A CASE

BY A. W. LINCOLN, M.D.

CALGARY, ALTA.

H. L. C. Male, aged 28, mail clerk. Personal and family history not important. History of present illness.—At 3 p.m. on May 3rd, 1907, patient was driving when he saw a heavy dray coming towards him at a rapid rate. His horse became frightened and patient stepped out to take it by the head, when he was struck and knocked down, the dray passing over his body. He was picked up and conveyed to the hospital and I saw him a few minutes later. He had not lost consciousness and was complaining of severe pain across the small of the back, also of an urgent desire to pass water and passed a pint of bright red fluid.

Examination showed a condition of extreme shock, face pale, anxious and covered with cold perspiration. Temperature could not be registered. No pulsation of the radial, temporal or facial arteries, slight pulsation of the carotids. Heart sounds very faint and blurred, 108 to the minute. No tenderness over or irregularity of the vertebral spines, extreme tenderness over the three lower ribs on the right side, no crepitus. Tenderness in the right loin but no swelling or mass. No irregularity or tenderness of the pelvic bones. Rectal examination was negative. A catheter was passed without difficulty and a pint of bright red bloody urine withdrawn from the bladder, irrigated with boric solution and full amount of solution injected returned. Abdomen quite flaccid, no tenderness. Careful examination of the chest showed no abnormality, bases quite clear. Slight abrasion on the nose and a larger one on the outer and upper part of the right thigh. Simple almost transverse fracture of the left radius and ulna three inches above the wrist joint.

Diagnosis—Rupture of the Right Kidney. Fracture of the three Lower Ribs on the Right side, and Left Radius and Ulna.

On account of the extreme shock and profuse hemorrhage, the injury to the kidney was thought to be extensive, but the low con-

dition of the patient rendered an operation out of the question, and treatment was directed to overcoming the shock. Heat was applied to the body, rectal salines, strychnine and brandy; also a small hypodermic of morphine to overcome the pain.

At 10 p.m. the patient was still pulseless and forty ozs. normal saline were given intravenously, which so far improved the patient's condition that the pulse could be counted at the wrist. Catheter passed and bladder irrigated and a good deal of dark blood removed. Bowels moved naturally and contained no blood. Patient vomited slightly and had developed a good deal of muscular rigidity over the right side of the abdomen extending to nearly the middle line. This caused some fear of a peritonitis, but as there was no pain, tenderness or distention, it was considered to be reflex which subsequent events proved to be true. Next day patient was considerably improved, pulse 100 and fairly strong, temperature 99 2-5, tenderness over right loin but no mass. Lungs negative, rigidity of abdomen had disappeared.

Urinary History—During the second day, patient passed 16 oz. of deeply blood stained urine, acid s.g., 1028 albumen in abundance. Microscopically blood cells and debris but no casts or kidney epithelium. For the first three days patient only passed 15 oz. per day, then it began to increase, reaching the normal amount on the fifth day. The amount of blood gradually decreased until the thirteenth day when it was quite absent. Examination at this time showed urine to be clear, pale color, acid s.g. 1010, albumen 1¼ gms. to litre. Microscopically a few granular casts, a few pus cells and kidney epithelium quantities of pus in the urine and this persisted for several weeks but gradually disappeared under the administration of urotropin. The albumen and casts have also decreased and at present the urine is normal.

Patient continued to improve and on the seventh day he was given chloroform and his arm placed in plaster. Improvement continued, temperature becoming normal, tenderness in side decreasing. No mass.

On the ninth day he complained of extreme pain in the right lower axilla, increased on inspiration. Slight dyspnoea but no cough. On examination a well marked friction rub was heard in the lower axilla. No signs of consolidation or fluid. Side strap-

ped with adhesive which relieved the pain, but the temperature gradually began to rise until it reached 103 on the fifteenth day. Signs of fluid had developed at the right base extending up to the angle of the scapula. Exploratory puncture gave a clear, bloody fluid apparently not purulent so that it was thought advisable to simply aspirate in the hope that this would be sufficient and oz. 16 of a bloody fluid withdrawn, having a slight disagreeable odor. S.G. 1020. Microscopically red blood cells with leucocytes 32000 a large number of polymorpho-nuclear leucocytes were present. This seemed to produce the desired effect, the temperature becoming normal and patient progressed favorably for several days, when the temperature again began to rise and to become more septic in type. There were also signs of reaccumulation of the fluid in the pleural cavity and the advisability of resecting a rib was being considered.

On the morning of the twenty-third day of the disease, it was found that the patient had had a bad coughing spell during the night and was expectorating bloody material. He had experienced no pain and very little dyspnoea. Temperature 103, pulse 140, respiration 30. On examination of the chest the right side was found to be bulging with a filling in of the intercostal spaces. Expansion decreased. Vocal fremitus absent at right base and lower axilla. Percussion gave a high pitched tympanitic note over the right base and extending as high as the angle of the scapula and around in front to the anterior axillary line. It also extended somewhat lower than the normal boundaries of the lung. Extending above this for three inches was an area of dullness. The tympanitic area changed its position with the position of the patient. Breath sounds very distant, and voice sounds of a metallic character. Coin sound well heard. No metallic tinkling or hippocratic succussion.

Diagnosis of Pyo-Pneumo-Thorax made and operation advised. Under chloroform anæsthesia, a portion of the eighth rib in the posterior axillary line was resected. On opening the pleura a large amount of air and malodorous pus escaped. Drainage tube inserted. On examination of the pus it showed a pure culture of colon bacillus. A week later patient had a small friction rub in the left lower axilla, but this disappeared with no further

developments. Patient made a slow recovery, pus continuing to discharge for many weeks but eventually closed. Case was also complicated by the formation of an abcess underneath the abrasion on the leg, but this on being opened soon healed. The fracture of the arm was also slow in uniting owing to his weakened condition, but has eventually united and to-day he is enjoying his usual health. The sequence of events to my mind was a rupture of the kidney with an extravasion of blood into the perinephritic tissue and this burrowed up under the diaphragm entering the pleural cavity, and then opening later into a bronchus allowing escape of air.

It seems to me worthy of note that a patient can suffer from two such serious conditions as a rupture of the kidney, where, according to Morris the mortality is 50%, and a pyo-pneumothorax where according to West the mortality is 70%, and yet eventually make a good recovery.

The rarity of these conditions may be seen when we consider that in 7,005 autopsies, made by Herzog at Munich, only seventeen showed injuries to the kidney, and of 9,500 surgical patients admitted to the St. George Hospital, London, between the years 1874-79, only nine were suffering from injuries to the kidney. They may be divided into:

1. Subparietal, or those where no open wound communicates with the kidney.
2. Incised or punctured wounds.
3. Gun shot injuries.

In the case of incised and punctured wounds and also in gun shot injuries, the diagnosis is usually not difficult and the indications for treatment are well marked, so that I shall deal only with subparietal injuries. These vary in degree from a simple contusion attended with few symptoms, to complete rupture or even complete maceration of the kidney.

Etiology crushes and direct *blows* on the abdomen, loin, or lower part of the thorax are the usual causes, also falling from a height, and occasionally muscular action in the forcible flexion of the trunk; either antro-posteriorly or in a lateral direction. The exact manner by which the injury to the kidney is produced is not clear, but probably the hydraulic pressure acting through full

blood vessels is an important factor, causing the organ to burst along lines radiating from the hilus. Experimentally it has been shown that blows and crushes on the flank when the vessels are not filled with blood produce very little injury. It is also probable that the lower ribs take some part in the injury; cases are on record where a broken rib has punctured the kidney.

Influence of Sex is very marked and this is due to the greater exposure of the male sex to injury. In ninety cases collected by Edler only six occurred in females.

Age—It is found principally from twenty to forty on account of the greater exposure of men to injury at these ages.

The Right Kidney appears to be somewhat more frequently injured than the left. In 272 cases collected by Kuster 172 cases were on the right, 118 on the left, and 12 bilateral.

Pathology—As you can readily understand, owing to the depth at which the kidneys are placed, traumatism sufficient to produce injury to these organs must seldom be uncomplicated. The general shock and damage to other important and remote parts of the body is often extensive. Injury to the kidney itself is varied and I shall briefly enumerate some of the more common conditions, with the various structures involved.

1. *Injury to Outer Fatty Capsule*—This may occur without injury to the kidney, and is marked by an effusion of blood, not usually very extensive, and subsides rapidly without treatment; but occasionally remains as a cyst, or may become infected and lead to abcess formation.

2. *The Peritoneum May be Torn* and thus blood may escape into the peritoneal cavity. This accident adds greatly to the mortality, not only on account of the liability of causing peritonitis, but also to the greater freedom given to hemorrhage through the rent into the peritoneum, than into the resisting perinephritic tissue when the peritoneum is intact. This accident is much more frequent in children under ten years of age, because before this age the perinephritic fat is not developed and the peritineum lies in close apposition to the kidneys.

3. *Separation of the Fibrous Capsule with Sub-Capular Haemorrhage*—This is a somewhat rare occurrence, but occurs more frequently than is supposed on account of the difficulty in

diagnosis. It is produced by slight injuries, or by muscular effort and is attended by a good deal of pain and tenderness, slight hæmaturia, chills and fever.

4. *Laceration of the Parenchyma*—This varies with depth and number of fissures. It may take place in any direction, vertically, obliquely, transversely, or a combination of these. It is more frequently transverse or radiating from the hilum to the convex border; the kidney substance giving way in the direction of the tubules not across them. Sometimes the laceration is superficial and limited to the surface only, sometimes there are several lacerations of different depth and length.. One end may be completely separated, or a rupture may extend through the centre of the organ separating it into two halves.

5. *Rupture into or Injury to the Pelvis of Kidney*—This usually occurs in extensive injuries and. in some cases may occur without damage to the kidney substance. It is accompanied by extravasation of urine and usually followed by sepsis. In laceration of the parenchyma unless the pelvis or large calices are involved there is no extravasation of urine, and sepsis is less liable to occur. When there is an injury to the pelvis there is also frequently an injury to the larger vessels and this is attended by rapid and usually fatal hemorrhage.

6. *Total Destruction of the Kidney*—The kidney is sometimes literally torn to pieces or reduced to pulp. Hemorrhage is often not severe owing to the early occlusion of the vessels and there is no extravasation of urine owing to the total destruction of the secreting tissue. The shock is usually marked and it is almost invariably followed by sepsis.

Symptoms—These are somewhat similar to those of injury to other abdominal organs and supervene at once, sometimes proving fatal rapidly before anything can be done. In some cases they do not occur at once. Cases are on record where a complete rupture of the kidney has occurred, yet the patient continued his ordinary occupation for several hours before feeling any effects.

The first symptom noticed is usually *collapse or fainting*. This may be mild and of short duration, but is usually profound and may last for several days. The condition of the patient is often alarming and will tax the utmost capacity of the physician to

overcome it. Vomiting frequently occurs and where this extends beyond the period of collapse and reaction, it may be attributed to irritation of the peritoneum by blood effused into its cavity or behind it pushing it forward.

Ecchymosis—This may be observed and of various extent in the kidney region, but of course is no conclusive evidence of injury to the kidney as it is usually produced by injury to soft parts. The evidence of deep hemorrhage, which occasionally shows itself at a later date is of more value. It has been noted in the region of the external abdominal ring and around the root of the penis.

Pain—This is unreliable as a symptom. It is frequently due to superficial injury and therefore does not indicate much.

Tenderness is also of uncertain value on account of injury to soft tissues.

Tumor may develop at once or may be postponed for several weeks. It may of course co sist of blood, urine or both. The rapidity of its occurrence depends upon the vessels injured and thus its onset is of some value in diagnosis and prognosis.

Haematuria—This is a very common symptom, yet is not invariably present. As you can readily understand, there may be considerable injury to the cortex without breaking into calices or pelvis, and this would not give blood with urine. The ureter may also become plugged with clot and thus prevent passage of blood, and on the other hand blood in urine following a blow on the side does not necessarily mean rupture or serious injury to kidney, as it may be caused by:

1. *Simple Contusion without any Lesion of Kidney Substance.*

2. *Temporary Character* may be caused by embolus or thrombus within renal vessels and this may be associated with sudden muscular strain.

3. May occur from a temporary congested kidney.

4. Simply as a result of shaking the kidneys. This of course is more marked in the presence of reual calculus or gravel. Conversely injuries to the kidney predispose to reual calculus.

5. It is also caused by such conditions as villous growths, Bright's disease, renal angioma, or malaria, which may have passed unnoticed until the accident called attention to the kidneys.

As a rule the bleeding occurs at once and may be profuse. In other cases it is slight at first and increases later, or it is delayed several hours or days before making its appearance. It usually persists for a varying interval depending upon the nature and extent of the injury; sometimes keeping up for weeks or even until death.

Microscopically blood casts of the uriniferous tubules are occasionally found, and sometimes a complete cast of the ureter is passed. Albumenuria frequently persists for some time after injury. Variation in the amount of urine is common. There is usually a decrease varying in amount and length of time present. Sometimes there is complete suppression, and occasionally polyuria. In any injury to the kidney, the surgeon should be upon his guard for any of the following conditions in addition to shock.

1. *Continuous and Excessive* extravasation of blood leading to death by syncope within a few hours or a day or two.

2. *Peritonitis* either as the direct effect of violence or of the tension and ulceration of the peritoneum due to the accumulation of blood behind it.

3. *Inflamation and Suppuration* of the perinephritic tissue.

4. *Occlusion* of the ureter by blood clot and the retention of urine within the cavity of the kidney and its attendant effects of hydronephrosis, pyonephrosis, pyelo-nephritis renal abcess of renal atrophy.

5. *Simple Traumatic Nephritis.*

6. *When the Renal Plevis* is opened so as to allow the escape of urine and blood into the peri nephritie tissue, a vast tumor may be found which may have burrowed extensively.

Diagnosis—Pain, tenderness and swelling in the region of the kidney, together with hæmaturia, are usually sufficient to make the diagnosis. The mistake is perhaps most frequently made of concluding that pain and hæmaturia following an injury means a ruptured kidney, when in the majority of cases it means nothing more than a slight contusion, or in some cases it may not come from the kidney at all but from the bladder. Points of importance are the amount of shock, the extent of the hæmaturia, and presence or absence of a mass. In those cases where hæmaturia is absent it is most difficult to say from the pain or swelling

whether it is due to an injury of the muscles and extravasation of blood into the perinephritic tissue or to a lesion of the kidney itself.

Prognosis—As has been stated, owing to the depth at which the kidneys are situated for the most part under the shelter of the costal arches and in close proximity to the vertebral column, injury to the kidneys is seldom uncomplicated and the damage to the other and remote parts of the body tell conspicuously in the prognosis.

The prognosis should always be guarded, keeping in mind that the condition is a serious one; statistics of a large number of cases show a *mortality of fifty per cent.* A fatal result may be brought about by collapse, hemorrhage, or peritonitis, and at a later date from sepsis. An occasional cause of death is uremia from atrophy or blocking of the ureter. The most fatal periods are during the first twenty-four hours and at the end of the third week. In sixty-seven fatal cases collected by Hester, five died from shock, thirty from hemorrhage, twenty-seven from sepsis, three from chronic nephritis, and two from calculus and œdema of lungs. From this we see that the two great dangers are hemorrhage and sepsis. The two principal elements upon which recovery depends are escape of the peritoneum and the large branches of the renal artery and vein.

Treatment—Shock is frequently profound and prolonged and requires very energetic treatment, but in no wise differing from treatment of shock in other conditions..

Hemorrhage—Many internal remedies have been recommended, but it is doubtful whether any of them are of service. Ergot is probably the best and should be given in full doses, a dram of the liquid extract every two hours for four doses, but time ought not to be wasted when operation seems indicated; and this should be promptly carried out, when the hemorrhage is profuse and does not decrease rapidly. Pain should be overcome by an injection of morphine, which will also allay the peristalsis of the colon overlying the affected organ. Should the large bowel be filled with fècal matter, it should be removed by an enema, otherwise the bowels should be kept at rest for several days; as cases are on record where a sharp hæmorrhage has been set up

by the passage of hardened fecal matter along the colon and thus across the surface of the injured kidney. In order to prevent the formation of hardened fecal matter the diet should be light, preferably of liquids. Vomiting and all straining is to be prevented and the patient kept absolutely at rest. An ice bag or Leiters coil to the side may be of some benefit.

The question as to when operative interference is demanded is an important one, and it may be said in general that more lives could be saved if timely operations were judiciously performed. In comparing the statistics, the mortality is found to be much less among the operative than the non-operative cases. In cases of severe hæmorrhage and shock with the presence of tumuor, it is better to make an exploratory incision, and do it at once provided the patient's condition will bear operation. By this method the exact amount of injury can be estimated and appropriate treatment carried out. If the kidney is ruptured, but the pelvis and main vessels intact an effort should be made to save the kidney. Bleeding from the kidney substance can be controlled by packing or mattress sutures. When the pelvis is distended with firm clot it had best be opened and packed with gauze. More extensive injuries call for nephrectomy, but in some cases it may be advisable to simply apply a clamp to control hæmorrhage and wait for an improved condition of the patient before proceeding further. Only a portion of the kidney may be removed provided the remainder is intact and connected with the hilum and vessels. The best incision is an oblique one, carrying it well to the front, so that any injury to the peritoneum can be repaired at the same time. Should peritonitis arise, it calls for its own treatment. Collections of blood, or urine, at a later stage, demand opening and drainage. The subsequent development of hydronephrosis, pyonephrosis, pyelo-nephritis, traumatic nephritis, or calculus, require their own treatment and hardly falls within the scope of this paper.

CLINICAL MEMORANDA

A Case of Cerebral Tumour.

W. R., a laborer, Aet. 26, seen for the first time 8 p.m., August 28th, 1907.

Complained of gradual loss of sight since January, increasing weakness and frequent "fits."

History. Two years ago he was working in a gravel pit and whilst seated on a barrow a fellow workman, with whom he was having an argument, struck him a severe blow on the top of the head, knocking him senseless.

Shortly after this the fits began and have got steadily worse except when he has been taking medicine (Bromides).

First noticed loss of power in left arm eighteen months ago. Sight began to fail in January and at the end of April was told by Dr. Wells, oculist, that the nerves were atrophied.

Has suffered much from headache and has had frequent attacks of vomiting.

He is always conscious of an approaching convulsion and sometimes if he grasps something firmly the fit passes off.

Has never had syphilis or any disease. Always steady and temperate. No family predisposition to tubercle and no other member of the family ever had "fits."

Examination. Almost complete paralysis of left arm and hand. Marked paresis of left leg. Paralysis of the muscles of the upper part of face on left side and partial paralysis of buccinator, orbicularis, and levator anguli oris.

Reflexes on left side exaggerated. Sensation practically normal. Eyes rather prominent, especially the left—but this may be only apparent from the loss of power to close the lids. Pupils sluggish. Oculist's report shows well marked double optic neuritis.

No tender spot to be found on the skull. Pain from headache mostly in the front and upper part of the head.

Diagnosis. A tumor of the right motor area, either solid or cystic.

With all the classic symptoms of a Cerebral Tumour, namely, headache, vomiting, epileptiform convulsions, optic neuritis, and progressive paralysis, the diagnosis became solely a question of localization. The mode of onset of the paralytic symptoms, in the left extremities and the left facial muscles and the absence of Hemi-Anæsthesia pointed strongly to a lesion, in the upper half of the two convolutions bounding the fissure of Rolands on the right side. The important fact of an injury, the history of which was not obtained till afterwards, gives additional weight in favor of this conclusion.

Prognosis. In the event of the tumour being encapsuled or its being a hydated or other cyst, complete removal would be possible and would give great relief to the patient's condition.

But more probably the growth is diffuse and not capable of thorough extirpation, in which case the most that can be hoped for is an amelioration of the symptoms caused by pressure.

The mere fact of opening skull and dura will probably cure the convulsions, vomiting and headache.

Treatment. Patient was admitted to the General Hospital, Friday, August 30th. On Saturday he seemed cheerful and hopeful and operation was fixed for Tuesday morning. Monday to be devoted to marking out the scalp and purifying it. The operation to be performed in two stages.

On visiting the patient at noon on Monday I found him comatose. This was a sudden development, for he was conscious and able to make considerable objection to the necessary shaving at 9 a.m.

It was therefore decided to give the man what chance he had by operating as soon as possible.

At 4 p.m. his pulse was 40, respiration 10 and jerky. Coma profound.

Dr. Biggar gave the anaesthetic, very little being necessary; Dr. Farquharson assisted and Dr. Campbell was present as a spectator. A small cicatrix over right paricta eminence was observed.

The area of bone to be removed over the motor area was marked by four drill holes through the scalp into the skull. A rubber tube was tied round the skull from the root of the nose to the occiput, but it was not found efficacious in lessening the bleeding.

A horse-shoe flap, which was planned so as to have the posterior temporal artery in the middle of its base, and which included all the tissues of the scalp down to the pericranium, was rapidly dissected up and thrown down. Hæmorrhage was free and required a large number of pressure forceps. The bleeding having been checked, the pericranium was incised crucially and reflected.

By means of two small trephine holes at opposite angles a two inch square of bone was removed by de Vilbir's forceps.

The dura was tremendously tense and bulged prominently into the skull opening. Now we were on the horns of a dilemma. It was clear that with that amount of intra-cranial pressure unrelieved the man would surely die. A free incision into the dura would likely be followed by an enormous Hernia Cerebri, and it was also probable that if one proceeded to complete the whole operation at once he would succumb to the additional shock and hæmorrhage. Therefore, with a view to relieve tension without prolonging the operation, two incisions, each about an inch long, were made through the dura. Great care was taken to avoid wounding the Brain. A fine nick was made by picking up the membrane on a hook, a director was then passed and the dura slit up with blunt pointed scissors. Some reddish colored material, looking like debris of cerebral tissue, immediately protruded. A piece of protective, dipped in 1-20 Carbolic lotion was placed over the opening and the reflected scalp was stitched in place by several interrupted sutures. Respiration 20 and regular pulse, 72. Time 1½ hours in all.

A considerable oozing of cerebro-spinal fluid took place, and during Tuesday the Coma seemed a little less profound. Nourishment was swallowed, urine was passed and reflexes, though slow, were present. The pupils which before the operation were inactive and dilated, reacted normally to light. This improvement, however, was only temporary, for the pulse failed at midnight, and the patient died on Wednesday morning, forty hours after the operation, and approximately forty-six hours after the onset of Coma.

Autopsy by Dr. Farquharson and myself. Immediately beneath the incision in the dura mater was found a smooth walled cavity

on the cortex. It contained some reddish, softened material, some of which had been extruded by intra-cranial pressure through the opening in the dura. It was situated near the upper part of the ascending frontal convolution and was about the size of a pigeon's egg. There was red softening also at a corresponding point in the ascending parietal convolution just beneath the surface.

On removing the Brain, the whole of the Temporo-Sphenoidal lobe on the left side was found to be occupied by a hard nodulated growth which had caused marked depressions in the bone on which it lay. The dura and bone were densely adherent.

There was much serous fluid beneath the arachnoid, constituting œdema of the Brain, which was doubtless the cause of death. The rest of the Brain was healthy.

Microscophic Sections have carefully been prepared by Dr. Biggar, and the growth proves to be a Sarcoma.

Microscopic examination of the tumour shows it to be of a markedly cellular character, the cells being for the most part embryonal in appearance—mostly small, though some are large and slightly irregular—with fairly chromatic small round nuclei.

The intercellular ground substance is exceedingly scanty, but a considerable number of bloodvessels are to be observed, some of which present no definite wall.

The sections contain a few multi-nucleated giant cells, neither very large nor with very many nuclei, and a very occasional spindle cell.

No definite boundaries to the growth can be outlined.

H. B.

Remarks. The sequence of events was, in all probability, as follows: The blow on the vertex caused a contusion or even perhaps a laceration of tissue on the cortex, and a much more severe injury at the base. A tumor, in the Temporo-Sphenoidal lobe giving no symptoms save those of intra-cranial pressure, is not one which can be localized. The only sign, so far as I can ascertain, that may be expected is "word deafness" on the affected side. The smaller lesion in the motor area was responsible for the paralytic symptoms, and the development of the paralysis was very characteristic of a lesion in t[illegible] situation. The epileptiform convulsions were probably of the Jacksonian type. Coincidently

with the development of the symptoms due to the lesion in the motor area a rapidly growing tumour was forming in the Tempero Sphenoidal lobe no doubt being largely responsible for the pressume symptoms, especially the optic neuritis.

The patient was seen independently by two oculists, Dr. Wells and Dr. Condell, in April last. Both have kindly placed their notes at my disposal, and the reports agree that there were well marked signs of double optic neuritis, more advanced in the right eye than in the left.

Academically speaking, it may be questioned whether the operation on a comatose patient held out any chance of a successful issue. I certainly am of opinion that it did. Cases are recorded where the relief of tension has resulted in either an immediate return to consciousness or a return in from one to three days, and cided amelioration of the symptoms has in some cases taken place cided amelioration of the symptoms has in some cases taken place and lasted for many months.

BY C. N. COBBETT, M.D. (EDIN.)

EDMONTON.

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EDITORIAL

THE CONTROL OF PUBLIC HEALTH

"The health of the Public ought to be one of the chief considerations of a Statesman."—*Disraeli.*

A country developing as rapidly as this and being populated by so many different nationalities should take steps to secure that the nation being built up is a strong, healthy one.

Probably the assumption that the most important department is that of agriculture has arisen from the fact that the country is an agricultural one and as so much is heard of our granaries, little wonder some forget that the nation's wealth, here as elsewhere, is the nation's health, and the best asset Canada can point to is healthy citizens. Health can bring wealth, but wealth cannot bring health once irretrievably lost. Probably few notice that while the Law has the Chancellor and Attorney-Generals and the Church, the Archbishop (men from their respective profes-

sions, to direct matters from headquarters) that the man fulfilling the office in medical matters need have no medical knowledge, and yet in his hands is the direction of the preservation of the Health of the nation. Being Minister of Agriculture, his first thought must be agriculture, and this is shown in the reports where we find first comes wheat, then diseases in animals, and lastly vital statistics and hospital reports. Of course we are told he has an *Advisory* Board, but surely always the Head should be fully capable to advise his subordinates, or how can he know the measures they propose are practical and best. Just now in England there is a movement to get a Minister of Commerce. Imagine the result of appointing a man who has to be advised. regarding commercial conditions! Such a state of matters is manifestly wrong and must have arisen from an oversight and allowed to continue because those best qualified to point out the error have been so busy looking after the *individual,* that they have forgotten the *welfare of the community* is also their work. Other professions have more time for public work, and so, no doubt, have from the beginning seen that matters were placed on a proper basis. The tenure of office of Medical Health Officials in Canada is dependent on the length of the Administration. This manner of holding office alone does not conduce to the best work, as unless he were a "Vicar of Bray," he knows he may at any moment, for no fault, be suddenly dismissed. Those best able to appreciate the results of neglect of hygienic laws should surely have the care of the community in such matters. We grant that Health and Education are the two most important factors for the *success* in the life of an individual. Then, if that, certainly, too, in the life of a nation.

At the present there is a consensus of opinion throughout the English speaking world that Public Health should be guarded by a specially constituted Ministry of Public Health. As matters stand to-day, the Director-General of Public Health is subservient to the Minister of Agriculture at Ottawa. It is obvious that at present the Health of the citizens is not sufficiently guarded. Many reasons can be given to prove this. Take the immigration laws and the way they are enforced. We read of immigrants being admitted and allowed to travel from coast to coast, and at the *end* of their journey being found incapable and liable to be-

come a public charge, so they are deported. This should not occur under strictly carried out supervision—if they are as stated *already they may have harmed the health of the community;* and allowing them to spend probably all their money for transportation, probably, too, losing work they had in their own country means commercially our country is harmed by the slur cast on our honesty and efficiency.

Although a smaller amount is always appropriated for Health matters by the Government than for others, still, small as it is, much must be wrongly expended and so wastefully through lack of expert knowledge. Many dangers to Health in a land can only be recognized at first by an expert, such as that pointed out by Dr. Thornton, of allowing excreta to be deposited along railway tracks. Lawyers and laymen can never draw up laws to protect lives and health, nor the good name of the profession.. At present the work of the Medical Health Officer is most arduous and disheartening, greatly because he is controlled by laymen, also because he is so often prevented by economic, social and moral forces from doing his duty. His position should be one of authority. We are always reading now that real progress should be the lessening of death rate, sickness, misery and suffering. There are said to be four great wastes going on: (1) preventable death; (2) preventible sickness; (3) preventable conditions of low physical and mental efficiency; (4) preventable ignorance. In the Middle Ages they had the "Black Plague," of which we read with horror, forgetting that we have in our own midst a "white plague" much more deadly, for the prevention of which, except in B.C., little has been done in the West by the Government. The work done has been mainly voluntary. Yet, if we have anthrax or glanders among animals or rust in the crops, at once the country is stirred and a large appropriation of public funds is made by the Department to eradicate such conditions. How much do we see appropriated to the care of infants—the nation's best asset Health laws touch one part of a district and not another, so that evasion is often easy, We read of the difficulty Vancouver has in prosecuting offenders in the milk supply. The powers of the City Health Officer only extend to the city limits, but milk from outside can be brought

in and sold, and so on. This could not happen with a Department specially qualified for the care of Health, and whose *sole* duty was its preservation in the nation. One cannot wonder if there is neglect, as it must be quite impossible for a Minister of Agriculture in an agricultural country rapidly developing to attend thoroughly to the agricultural interests and yet have time left for consideration of the Health of the consumer. As has been pointed out in a contemporary, the proper control of Public Health would result in: (1) the more rapid progress of society; (2) the prevention of preventable disease; (3) the lengthening of productive years of life; (4) the lessening the burden of sickness and criminality on the nation.

The rate of infant mortality is considered one of the best tests of sanitary conditions of a district, but at present statistics are not reliable, and often not obtainable. This is to be regretted, as properly kept statistics show where diseases are prevalent, their nature and contagiousness. Their spread by timely warnings can be often prevented.

No doubt the present position of affairs has arisen from the small part our profession is taking in public life. The way to convince the public is to get in touch so that matters of mutual importance may be discussed. There is little doubt when the necessity for such a Department is *seen,* we shall have it. In Europe medical men have been high in the nations' Councils—M. Clemenceau, Premier, and Virchow, in the Reichstag—to give only two instances. There are signs that the medical men are now taking an interest in medical politics. In the House, the other day we read that it was moved that something should be done towards a Department of Preventable Disease—a beginning! The medical men in the Government should soon educate the legislators and the public, and so get their co-operation. At present it seems as if the most educative forces were epidemics, as seen at the present time by the number rushing for vaccination, fearing the small pox. Increase knowledge of the possibilities of preventive medicine and we get public sanitation. Our railroads, public service corporations, churches and tramcars would then be compelled to conform to sanitary laws. There would be *compulsory* frequent medical examination of men in responsible posts, whose

neglect might mean accident and death to others. All this and much more would soon lessen the death rate. Certainly, it would mean at the start more taxation, but later the gain would be to the Government—simply a case of spending money to make money—and the objection would be the "penny wise and pound foolish" policy, for the decline of a nations health means all decline.

What should be the qualification of such a Minister? Without question, his proficiency should be above reproach, so that he may be an *authority,* independent in character. In England and South Africa it has been necessary for some years to hold a Diploma of Public Health for such offices. The D. P. H. testifies to a thorough knowledge and training in Sanitary Science. One great work would be the education of the people on the laws of hygiene. We are apt to forget that "Doctor" means "teacher of health," and one of the chief parts of our office should be *advising* our patients and the community—teaching them the rules of health and prevention against disease. Such a Department would prepare (as is done occasionally now) readable scientific pamphlets on tuberculosis, venereal diseases, typhoid and other destructive forces that can be stamped out by proper regulations. These would be distributed among the people, who would then understand the *reasons* for such regulations, and they would also counteract the baneful influence of literature distributed merely as advertisements for harmful treatments and preparations which are only a means of extorting money from ignorant people. The very fact that the public send for and read the latter shows that they are greedy for any information on the preservation of health. This Department would see that the criminally indifferent and wilfully ignorant are compelled to conform to health laws. Times might even arise when such a Minister would restrain trade temporarily for the public weal and the ultimate good of commerce. Being the supreme arbitrator on health matters, he could also check lawyers who, by a legal twist on behalf of an individual, had forced a way round the barrier erected for the safety of the public, and would bring to book all the negligent in the medical profession. Statistical returns would at last be a matter of course, as compulsion would be brought to bear. At present Health laws are often a farce owing to the political factor. Be-

sides, when offenders are prosecuted, the penalties inflicted in many cases are nothing in comparison with the seriousness of the danger to public Health caused by the offence. Possibly a special Court for Health prosecutions, presided over by a magistrate *qualified both in medicine and law* and unhampered by political considerations, would be the ideal Court.

Is there any reason for making the medical profession subservient to that of law? Certainly not. The social, financial and intellectual status of those taking both for careers is similar—but often the requirements for proficiency in medicine are more exacting, so that many take law because they say it is cheaper and gives quicker returns. Then as to who has the best right to the *trust* of the people? All we can say is that the medical profession when trusted at all is trusted with the dearest possession—life.

Having such a Department in both Provincial and Federal Government would certainly raise the status of the profession, because the public would then recognize the part Health plays in the Welfare of the nation. That it *will* come is certain. When the public realize that preventive disease is caused by carelessness and ignorance, they themselves will insist the Government give great attention to this matter of ensuring the national health by a properly equipped Department, with a qualified Chief and Staff.

CORRESPONDENCE

To the Editor.

Dear Sir:—I have just read, with pain and surprise, the letter of Dr. James Donald, in the January Journal.

Any or all the Provincial Legislatures and the Medical Councils by them created cannot deprive Dr. Donald of his right to practice medicine or surgery in any part of His Majesty's Dominions.

I believe this question was first fought out in Canada in the early seventies, when the late Dr. Mallory, then of Warkworth, Ont., compelled the Ontario Medical Council to register him without examination. The Ontario Council then set to work to have the Imperial Act so amended as to give the Council the power to compel all the Young Graduates to take its examinations. In this it succeeded in 1886, the amendment coming into force in June, 1887, and barring 150 Students, then in the two Medical Schools of Toronto, from the advantages of a trip abroad, for most of them could not afford the expense of both the trip and the examination.

The British Columbia Council was established about 1886, and said that everybody wishing to practice in B.C. *must* take its examinations. This held good until 1893, when the late Dr. S. A. Metherell carried the question to the Courts and compelled the B.C. Council to Register him without examination, and I am ashamed to say that the Council never had the grace to register his degree and school—his qualification was always given as "Ordered to be registered by the Court as being a British Graduate according to the Imperial Act."

I had hoped that the members of the profession in the new Provinces were intelligent enough to know that no Provincial legislation can nullify an Act of the Imperial Parliament; but according to Dr. Donald's statements, those of Alberta are not.

I do not know whether or not Dr. Donald can succeed in Appeal against the Magistrate's decision, as by entering upon

practice before he was registered, I presume that, technically, he placed himself in the wrong; but, if the Doctor is financially unable to fight the Council on the main issue, and the Council will not register him without a fight, make an appeal to the members of the profession through the Journal, and I think he will receive sufficient support to gain his rights.

E. C. ARTHUR, A.M., M.D.

To the Editor.

Dear Sir,—Will you through the columns of your valuable journal answer two questions for me?

1. Was there a meeting of the College of Physicians and Surgeons of Manitoba in January? If so, why were not the proceedings published in your journal?

2. Is there any provision made for the licensing of midwives in Manitoba? If not how are women prevented from falling into the hands of ignorant female quacks without any knowledge of Aseptic or Antiseptic Midwifery?

SUBSCRIBER.

Answers to Correspondents

1. No. The meeting should have been held at the beginning of last month, as there is a by-law requiring a quarterly meeting, which it is the duty of the Registrar to call.

2. No. Dr. McConnell, of Morden, when on the Council some time ago tried to obtain protection for the public against unqualified midwives, but the Legislature did not see the great importance of this matter to the public.

PROCEEDINGS OF THE WINNIPEG CLINICAL SOCIETY.

January 7th, 1908.

The president, Dr. Milroy, was in the chair. The minutes of the last meeting were read and adopted.

Dr. Hughes presented a case, male, suffering from a gummatous condition of the nose who had been under antisyphilitic treatment for two years, which had terminated six months ago. An interesting point in the early history of the case was that the first signs of the secondary syphilis were severe vomiting and diarrhoea, which rapidly subsided under mercury.

Dr. Young asked what relation the appearance of the nose had to the treatment?

Dr. Hughes said it was a frequent occurrence to see late syphilides in patients who had undergone a thorough course of antisyphilitic treatment. In this case he had experienced great difficulty owing to the patient's persistent use of alcohol and tobacco. He was at present going to put him on large doses of potassium iodide and red iodide of mercury.

Dr. D. S. MacKay presented a case seen by him first on April 8th, 1906, male, complaining of a cough, sleeplessness, due to the cough, night sweats, loss of weight and strength, and a feeling of chilliness at times. On examining his chest, it was found to be rather flat, a narrow sub-costal angle and very poor expansion, particularly in the left sub-clavicular region. His family history was negative.

On percussion, anteriorly he found dullness in the left sub-clavicular area, posteriorly the chest was clear with the exception of the left scapular region which gave a dull note. The posterior part of the chest did not move on respiration. There was evidence of a cavity in this region. The heart was normal, apex-beat not visible but was heard best in normal position. On April 14th, examined a specimen of his sputum and found tubercle bacilli and elastic tissue. The patient was put on outdoor treatment, and made to sleep with both windows of his room open. He improved, gaining slightly in weight and the cough almost disappearing. He went to Virden and come home in the following September. The cough having ceased there being very little expectoration, and gained nineteen pounds in weight. He got several specimens of sputum from time to time but failed to find any Tubercle Bacilli or elastic tissue. The patient got along splendidly until last July when he noticed that he was getting short of breath. Dr. MacKay now examined him and found that the apex-beat was 2½ inches to the left of its normal position, being in the fifth interspace 5½ inches to the left of the medium line. He again examined the sputum but failed to find either Tubercle Bacilli or elastic tissue. Breath sounds were present over the affected area but diminished. The heart was apparently pulled over to the left side. He thought he could distinguish a murmur. He put the patient on a tonic containing iron and arsenic and he improved, but he thought he could still hear the murmur at times.

In reply to Dr. Watson, Dr. MacKay said that the patient was not running any temperature at the present time and had not done so for

over a year. He diagnosed the case as one of Tuberculosis. He thought the patient had gone in too strongly for athletics. His weight was now about normal.

Dr. Hunter presented a male patient suffering from aortic incompetence. He pointed out that over the aortic cartilage the sound one heard loud and sharp was the second sound, and at base the sound one heard loud and sharp was the first sound. In plain mitral stenosis, also, the left ventricle does not enlarge. The point he wished to insist on was, that at the apex, the sound one heard loud and sharp was the first sound; whereas, towards the base and down the sternum, it was the second sound that was loud and sharp.

Dr. Tees presented a patient who had come to him about the 19th of January, 1906, suffering from Acute Rheumatism. About the second week he developed endocardial symptoms; his pulse dropping quite suddenly from 110 to 120 to between 40 and 50, becoming markedly irregular with diffuse impulse. At the present time he was showing a very marked systolic murmur and very little hypertrophy. Owing to the involvement of the mitral valve, he had not been able to determine any lesion at present. At one time he thought there was a presystolic murmur as well, showing aortic stenosis, but there was no murmur at the present time. He thought it was a straight case of mitral regurgitration.

Commenting on Dr. Hunter's case, Dr. Rorke said the case was one of a systolic murmur, with a history of rheumatism. There was a fairly plump apex beat and perhaps, on some occasions, one could get a slight evidence of a thrill. The heart dullness, except on the left side, was fairly normal and on listening to it, he thought one could hear the systolic murmer, with increased first and second sounds.

In connection with Dr. Tees' case, Dr. Chestnut thought that the presystolic murmur was a later development than the systolic murmur. He thought that the mitral stenosis was very small, if mentionable. There was no cough or expectoration such as was often found when there was continued high pressure for any length of time. When mitral stenosis became more advanced, the second sound was entirely absent. This might lead them to think it was a case of mitral regurgitation instead of mitral stenosis. He thought that the stenosis was not serious at the present time but that it might be progressive and usher on a very serious condition.

Dr. Hart said he fancied he had found a thrill in Dr. Hunter's case. Dr. Hunter said that when he saw the patient his heart was beating about 100. He suggested that he should take things easy and put him on arsenic and iron. About a month later, his heart was beating more slowly and he was feeling better. About ten days ago, however, his heart was about 130 and he thought there was the beginning of an aortic diastolic murmur developing. He then went to the hospital for five or six days and had been out for about a week now. It was not easy to make out either of the murmurs, except when the patient was lying down quietly.

Dr Chestnut—"What condition do you think the mitral orifice is in at the present time? Do you think there is much stenosis?

Dr. Hunter—"I think there is some evidence of an increased presurse of the pulmonary circuit. Over the third and fourth interspaces on the left side, I have previously distinguished the sound of a little wave. The second pulmonic sound, I think, is decidedly accentuated. I am unable as yet, readily, to form the prognosis. He was formerly working in a construction camp. I advised him to take up light

work. The man is young; there ought to be plenty of powers of compensation in that heart, provided the stenosis does not increase."

Dr. Young inquired whether Dr. Tees thought there was any evidence of myocarditis in the case he had presented.

Dr. Tees stated that he thought the very sudden change in the condition of the pulse, which was fairly regular and rapid, first from 110 to 120, and then dropping quite suddenly to between 40 and 50, and remaining there for several days with very marked irregularity; showed that there was some myocardial involvement. The impluse, too, was very diffuse and there were symptoms of dilatation.

Dr. Young wished to know if there was any digitalis used at the time. He would himself have put it down at this stage as a case of rheumatic endocarditis.

Dr. Tees stated there was what might be called a closer diastolic murmur than really a presystolic murmur. There was no digitalis used.

Dr. Hunter said he could not now hear the murmur. The change in the condition of the pulse and the appearance of the patient was very staggering. He had become deeply cyanosed and he thought he would likely go off in a day or two.

Dr. Rorke, in referring to Dr. Mackay's case, said there was considerable dullness and lack of expansion over the left lung. He could not say as to the breath sounds being very well marked at the base. The apex-beat was considerably outside the nipple, lying in about the fifth space and it showed a good deal of drawing in of the spaces between the ribs.

Dr. MacKay said that he had found that the heart would not move when the patient was lying down but he had found that it was gradually going over to the left. He had never inserted a needle at the base of the lung. He had never been able to establish any evidence of a pleuritic effusion.

Dr. Rorke thought that the lung was gradually shrinking up. He was not sure of the murmur.

Dr. MacKay said he had heard the murmur three months ago. The pulse was then intermittent and the most displacement took place at that time. He was not sure of the murmur now.

Dr. Rorke—"If the heart is bound down to the left lung, there must be some inflammatory condition which might give a sound similar to a murmur, which it would be difficult to distinguish from the real thing."

Dr. Munroe said there was very marked displacement of the apex-beat to the left. There was no indication of valvular trouble or hypertrophy. He thought there was evidence of marked bronchial breathing in the left lung, indicative of consolidation, probably due to some fibroid change in the lung. He thought there was evidently a breaking down of the lung at some time. He diagnosed it as a case of displacement of the heart to the left, that had been brought about by a contraction of the lower part of the left lung.

Dr. Watson said that from a casual examination he was inclined to believe it was a case of fibrosis of the lung. He could not make out any murmur of the heart, nor could he say as to the prognosis.

Dr. Young said he thought there was no doubt about the heart being thrown over, without very much hypertrophy. He was sure he got resonance to the right of the heart, showing that the right lung had expanded to fill in the space left by the heart in being drawn over. The vocal sounds were very distinct with spoken words and much less distinct with whispered words, so much less distinct that he

did not think there was any reason for suspecting a cavity there. As the breath sounds were so faint over the whole of the lung and the tissue evidently so much diseased, he did not think there was any wonder that they did not get more marked bronchial breathing. He did not catch the bronchial breathing that Dr. Munroe mentioned. He thought the explanation lay in the consolidation of the lung. The weak powers of contraction would account for the absence of bronchial breathing. He thought a simple explanation would be that it was a contraction of the lower lobe drawing the heart over by means of the adhesions which they would likely find in such an extensive case, and the result would be a great strain on the heart. When he first examined the patient he thought the heart sounds were those of a weak ventricle and that the sounds were as though the muscles were stretched a little. It seemed as though the extra force on the valves made almost a ringing sound. Later, this conditions did not seem nearso evident.

Dr. Hunter asked Dr. McKay if it was necessary to assume that there was an adhesion. He thought that the theory was that in the condition presented that is was more a push over on the part of the sound lung than any other special draw-over on the part of the affected lung.

Dr. MacKay replied that he thought it was common to have the healthy lung push the heart over where there was a cavity formation or where a diseased lung was beginning to shrink. The heart was passing over and there was distinct resonance to the right and left of the sternum which, he thought, indicated that the right lung had passed over the middle line. He could not say whether or not it was a case of adhesions or pushing over.

Dr. Hunter—"Where was the cavity demonstrated?"

Dr. MacKay—"In the subclavicular region on the left.

It was remarked that there was no great evidence of emphysema in the right of the chest. Dr. Hunter stated that Dr. MacKay had mentioned that the right lung was traceable behind the sternum to the left side. He did not see why there should be the presence of emphysema when the heart was pushed over or the absence of it if the heart was pulled over.

Dr. MacKay stated that on the right side of the chest the interspaces were not drawn in but that on the left side he had noticed for the last three months that they were distinctly drawn in.

Dr. McGreer asked if here were contractions with adhesions in which direction would the lung contract. If there were adhesions would one get the heart in the position it was in at that time: that was pretty low down and well over to the left.

Dr. MacKay replied that he thought that the adhesions were generally drawn towards the root of the lung. He thought the lung was contracting internally posteriorly and not towards the left. He thought at first that the cavity extended downwards and that the heart had dropped back into that cavity. He did not think the tubercular disease of the lung was progressive, but that there was a marked fibroid change taking place. He had found no tubercle since May, 1906.

Dr. Hughes wished to know if he had tried the tuberculin test that Dr. Lachance had brought up last time. Dr. MacKay replied that he had not yet had an opportunity of doing so.

Dr. Sharpe mentioned three cases in the hospital in which the tuberculin test had been applied. In two of them there had been a typical reaction and the result was negative in the third case. Dr.

Lachance would read a paper on the subject at a later meeting.

Dr. Milroy said that he thought the meeting had fully demonstrated the usefulness of the society and the discussions elicited in each case. He thought it would be a good plan to bring forward a certain class of cases at each meeting and to compare different cases where pathological conditions prevailed in the same organs. The instructive character of the discussion that night, he thought, suggested that the idea was a good one, and he would recommend that in future they have certain nights for the discussion of certain classes of cases.

Dr. Lachance moved and Dr. Carscallen seconded the motion that the internes of the Winnipeg General Hospital and St. Boniface Hospital be made members of the society without payment of fees.

The meeting then adjourned.

January 21st, 1908.

The Winnipeg Clinical society met in the Medical Library, January 21st, the president, Dr. Milroy, occupying the chair.

Dr. Hutchinson presented a case: Italian, male, exhibiting a diffuse case of Psoriasis. Patient had had the disease since he came to this country three years ago. The case had been previously seen by Dr. Hughes, who, in outlining the history, said that the patient's grandfather and grandmother on both sides, his father and mother, his uncle on his father's side, three brothers and two sisters, all had the disease. This raised the question as to whether it was hereditary or infectious. Dr. Hughes had prescribed creolin baths and had put him on diet. He considered the latter very important, and was of the opinion that gastric symptoms were frequently overlooked in such cases.

Dr. Hunter questioned this latter statement, being of the opinion that the gastric symptoms, if any, were extremely obscure. He could not recollect one case in which gastric symptoms were present. He thought that in the average case of Psoriasis the patient was remarkably healthy otherwise, and had never heard diet specially insisted on before.

Dr. Hughes thought that the absence of diet consideration was a common mistake. He did not agree with the theory that Psoriasis patients were healthy otherwise. He thought that most of them suffered from constipation and from gastritis, and was surprised at the number of cases that had come under his notice during the last four months. Many were hard to treat owing to the inability to control the diet unless the patient was in a hospital, farinaceous foods should be avoided. Under proper conditions an attack cleared up in two weeks.

Dr. Kenny—"For how long can you cure it?"

Dr. Hughes—"Well, that is a great question. I don't think there is an absolute cure."

Dr. Hutchinson thought that diet had a great deal to do with the disease in some cases, but that it had no effect in others. He usually cut off meats and nitrogenous foods largely. He also doubted whether Psoriasis could ever be entirely cured.

Dr. Lachance said that he had heard several authorities speak about Psoriasis and they had always pointed out that the disease occurred in extremely healthy people. The cases that had come under his notice were remarkably healthy. Regarding its infectiousness, he

thought it was generally believed that every case was probably infectious and authorities warned students against scratching the spots.

Dr. Hughes remarked that he had seen a case in Winnipeg in which the husband had it and the wife contracted it after a period of ten years. He was still sceptical as to the infectiousness of the disease.

Dr. Bond said that the whole question of skin disease in this country was very interesting. There seemed to him to be more here, in proportion to the population, than elsewhere. He wished to know if anyone present had any well defined views upon the subject in relation to climate. It seemed to him that there was a great deal more Lupus than there should be.

He had come to the conclusion that Lupus in the face was the result of frost bites in the winter and the irritation of the hot sun in the summer. He had two cases that seemed to him to bear out that theory very clearly indeed. It was the parts that were most exposed that seemed to develop these Lupus spots. There was certainly a great deal of Psoriasis here, and he wondered if it was due to any similar acting cause. In the two cases he had mentioned, he had tried the X-ray with fairly satisfactory results. It was difficult to apply the X-ray all over unless the patients made up their minds to remain with the treatment.

Dr. Sharpe had also remarked the prevalence of Psoriasis during the last three months. A patient he had treated recently, stated that in the summer time his skin was perfectly clear, but that in winter it broke out again as badly as ever.

Dr. Kenny wished to know the relative merits of salicylic acid and chrysarobin in the treatment of the disease.

Dr. Hughes thought that creolin baths were of the most importance. In reply to Dr. Bond, he mentioned that Dr. Hyde of Chicago had taken a great deal of interest in the question of the effect of light in producing Psoriasis, Lupus and Carcinoma, and had averred that Psoriasis was due to light hunger.

Dr. Young presented a male patient whom he had seen on account of severe pain in the muscle of the back neck and knees, on January 7th. He showed considerable Purpura about the legs two days later. He had had no fever at any time, but had had Small-pox. He decided that it was a case of Rheumatic Purpura. Twenty-seven years ago patient had specific trouble. He had Rheumatism twenty-one years ago, with good recovery. Patient had also had Pneumonia eight years ago, and Arsenical Neuritis six years ago in Liverpool. He had used alcohol for twenty-three years. Eighteen years ago he passed a stone from the bladder, about the size of a pea, with blood after it. When he first saw patient, he had severe pains in the muscles about the knees. He put iodine on his knees and the pains were considerably relieved. There was no fever, tender points, swelling or rash. Two days later, the rash developed and his legs became practically covered with purple spots, slightly raised above the rest of the skin. On January 13th, it was definitely a haemorrhagic rash; the temperature was then 100 2-5 and similar rises recurred with each crop of papules. Three days after the onset of the pain there were petechiae quite bright red and these filled later with blood. After that, crops came out at various times. Church mentions that this may occur in ordinary rheumatism. He tried aspirin and had changed to potassium iodide and calcium chloride in five grain doses, three

times daily. He did not perceive any effect. He thought he should have perhaps confined the treatment to salicylates.

Dr. Hunter wished to know if Dr. Young was not aware that Purpura Haemorrhagica had not some definite nature. He did not know that Purpura Haemorrhagica was especially associated with actual acute rheumatic attacks.

Dr. Young—"I was very much in doubt, of course, about the case and would be quite open to conviction, but I cannot see that there is anything but a rheumatic basis for this case. He had an acute attack of rheumatism which started in with very marked and general tenderness of the whole body, and later of the jaw. I came to the conclusion that rheumatic purpura could assume this appearance. It is just the doubt that makes the case more interesting."

Dr. Campbell had seen one case where there was a rash in rheumatism but it faded off in about three days. It began with regular symptoms of rheumatism. There was no raised edge.

Dr. Young—"What diagnosis would be put on it if it were not rheumatic?"

Dr. Milroy—"I may say that I have had a good many cases of a similar nature. I used to look upon them years ago as rheumatic in character, but it is doubtful whether they were cases of rheumatism or Purpura Haemorrhagica. I am now inclined to think they are not rheumatic and I believe that authorities on this subject are coming to the same conclusion. You get them with symptoms of rheumatism but I am inclined to think that it is some vicious condition of the system—some toxic condition—which manifests itself in purpuric form. I usually give salicylates and when the patient improves under them, you naturally conclude that the condition is rheumatic. Possibly they do have some good effect."

Dr. Lehmann—"I remember the case of an Indian boy who had a discharging tuberculous bone lesion, where there was almost an extensive rash. The boy was not very sick before it appeared. He became seriously ill and died in two days. It seems to me there must have been some acute infection which no doubt tends to prove that What Dr. Milroy has said may be true."

Dr. Hunter—"Re the raised edge condition; in ordinary Purpura Haemorrhagica is not that unusual? Is there not some mixed condition that gives that raised edge?"

Dr. Young had known authorities mention that this condition might be present.

It was suggested that the pain in the lower jaw was evidence that the case was rheumatic but Dr. Milroy did not think that that was conclusive.

Dr. Bond wished to know if the arsenical poisoning had any relation to the present condition of the patient.

Dr. Young stated that the poisoning occurred some years ago and he could not connect the present attack with that. He thought that the immediate prognosis was a continuance of the present condition, although it might be possible that this might be just a manifestation without any further rheumatic trouble. He intended to put the patient in the hospital. He did not see why the condition should recur. There was a heart condition which might increase.

Dr. Milroy thought the prognosis in such cases was unusually favorable. He did not know whether it was frequent to find heart complications in such cases.

Dr. Lachance then read a paper on the Ophthalmo-Tuberculine test, and presented seven cases in which the test had been applied and its efficiency demonstrated. (The paper will be published next month.)

Dr. Hutchinson wished to know in how many actual tuberculous cases the tuberculine test had given a positive reaction.

Dr. Lachance replied that in two cases that were not well marked tuberculous cases there had been a positive reaction. In another case although there was no expectoration, there was marked dullness at the apex of the right lung and a family history of tuberculosis. He felt sure that tuberculosis was there but had had no reaction. He could not say why. He considered that in all the cases under consideration the tuberculine test had given good results with one exception.

Dr. Lehmann presented a case: The patient came to him and stated that eighteen months ago he had a severe injury which damaged his ulnar nerve just below the muscular branches. His hand showed a good deal of characteristic contraction of ulnar paralysis and atrophy of the interosseous muscles, preventing extension of the phalanges. On cutting down he found the nerve was tied down by adhesions. He removed about two inches of the nerve and brought it together within an inch and a half, putting in a catgut splice. The next day, the man could extend his hand. He thought the explanation was that the ulnar nerve was an irritative lesion, sending impulses to the motorial area and from there stimulating the muscular supply of the ulnar and also the median, and upon removing this irritation, the ulnar nerve acted normally and the man could extend his hand. He did not think that at the present time there was a union of the ulnar nerve at all. When he came up two months ago, the man claimed that a hook would be of more use to him and today he had a hand which was functionally perfect. He still had atrophy and anesthesia. Whether he would recover that, was doubtful, and of comparatively small importance. He thought that the irritation of the ulnar nerve causing a contraction of the muscles supplied by the nerve, was rather a rare condition.

Dr. Milroy thought that the question of the irritation conveying impulses to the motive centre was a very interesting point.

Dr. Bond congratulated Dr. Lehmann upon the successful result of the operation. The matter of the recovery of nerve power was sometimes a matter of many months but it came back eventually.

Dr. Nichols,—"I agree with Dr. Lehmann that regeneration of the distal end of the ulnar nerve cannot as yet have taken place. His explanation is somewhat interesting as to the proximal end of the ulnar nerve causing an irritation of the central nervous system, so as to produce contraction taking place down the median nerve. It brings to mind some of the ideas we used to hold about hysteria—about certain contractions taking place as a result of irritation of those areas. That is now somewhat exploded, but still the theory fits in."

Dr. Sharpe remarked that there was also a bulbous termination of the proximal end of the nerve and quite a number of sutures had been put in. He was greatly surprised at the speedy and successful results that had been obtained.

A case brought in by Dr. Kenny the previous month then came under discussion. Dr. Hunter remarked that he thought there was a marked systolic and diastolic murmur over the aortic area and down over the sternum; the systolic diminishing towards the aortic area and

the diastolic being well marked all over. He thought that the condition showed mitral and aortic regurgitation.

Dr. Munroe said that Dr. Hunter held the opinion that the predominating lesion was an aortic regurgitant. As the speaker had before stated, he could not find those other symptoms which almost always invariably accompanied an aortic regurgitant lesion. In that lesion they had first very marked hypertrophy of the left ventricle. Then they had a pulse and very frequently found visible pulsations in the arteries, especially in the carotid arteries, which were not present in the case under consideration. At first, the patient had all the symptoms of broken compensation. He thought the diagnosis that Dr. Kenny made at that time was probably fairest; a mitral regurgitant lesion and he presumed that, as frequently occurred, there was an element of stenosis.

Dr. Rorke thought he could find an aortic regurgitant murmur, rather musical in its beginning. On laying the patient on the table it became fainter, but after walking up and down the room, it came back more markedly. He found it difficult to interpret just where the systolic murmur one heard at the apex arose; whether it arose along with the diastolic murmur, along with the aortic valve or from the mitral valve. The tenderness of the liver and the marked signs of the right ventricle that one could get at the epigastrium would indicate that the right ventricle was of a fairly good size and would lead one to believe that there might be some mitral regurgitation. He could not quite agree with Dr. Munroe. He thought there was a great deal of hypertrophy of the left ventricle. He thought that as far as the beginning was concerned, there must have been more muscular insufficiency, as well as aortic insufficiency. Probably the mitral condition then rather overshadowed the aortic.

Dr. Hunter,—"You are inclined to think that the systolic murmur is most marked at the aorta. That being the case, what do you assume?"

Dr. Rorke,—"I was assuming that probably the valves were more or less damaged and somewhat adherent towards their circumference, producing more or less of a roughening and probably a little larger space beyond the valves than just at the valves, so that you would get more or less of a fibration from eddies in the current."

Dr. Hunter,—"Yes, but you don't assume any marked stenosis?"

Dr. Rorke,—"No."

A case was presented by Dr. Sharpe: male, aged 44 years, married, carpenter from Russia. There was cyanosis of the hands. Radial pulse was visible in both arms. With every beat of the heart, his head moved. His eyes were very prominent. Dr. Sharpe was at first of the opinion that water-hammer pulse was present, although it was not present that night. The tension was 120. He believed the arterial tension of aortic regurgitation was low. In that patient they might have expected the tension to be somewhat high; at least 135. His diagnosis was mitral regurgitation and possibly aortic regurgitation. In the latter, however, one got marked pulsation in the vessels and low arterial tension.

Dr. Rorke,—"I suppose that Corrigan pulse means a large wave due to the throwing out of a large quantity of blood from the left ventricle and I think in that case, it would depend upon the leakage. If there was not a very large leak back from the aorta, the tension would not be very greatly affected, although the wave might be well marked. If you get back a certain amount of compensation, you might also get a fair amount of blood pressure."

Dr. Milroy,—"I think the question was whether the Corrigan pulse was characteristic in all cases of aortic insufficiency. I think that is one of the principal features you find in all cases of aortic incompetency. You get water-hammer pulse. You get the large pulse quickly receding. Of course, the degree of that feature depends on the amount of leakage, as Dr. Rorke says, but if there is a fair amount of leakage or regurgitation back into the left ventricle, I think in nearly all cases you get the Corrigan pulse. In some conditions, however, it is limited. In broken compensation you get a weak, flabby left ventricle. You do not get the same force. Consequently, it does not recede to the same extent. That made me feel in this case that it was not primarily a case of aortic regurgitation. When I first saw this man the murmur was most pronounced at the apex. I also found a systolic murmur over the aorta. I did not look upon that as obstructive at all. I did not know of any diastolic murmur at the base. It seemed to me that you got all the symptoms that you get in a case of a mitral regurgitant. You got too, not exactly edema in the lungs, but there was bronchitis—he was coughing. There was a large, tender liver. He had a diarrhoea for ten days. That stopped the moment I gave him digitalis and the gastro-intestinal symptoms became less. I admit that there is a diastolic murmur at the base at the present time. I think it is more pronounced now. I think the aortic valve shows now, perhaps, a pronounced regurgitation, which aids very much to the unfavorable prognosis you would give in this case. In the first place, he had no water-hammer pulse. You get that now, but not very marked. Had aortic regurgitation been the primary lesion too, I think you would have been almost sure to have got a decidedly Corrigan pulse, and you would have got more left ventricle hypertrophy, which you do not get. I admit there is a considerable amount of hypertrophy. That you get, however, with a mitral regurgitation. I look upon it as being a case of disease of the mitral valve primarily. I think there is considerable leakage as well, in the aortic valve."

Dr. Munroe,—"Did you elicit any history of rheumatism in your case?"

Dr. Sharpe,—"None previous to coming to the office. Tonight he told me he had pains in the shoulders."

Dr. Munroe,—"I found what I thought would be a well marked mitral systolic murmur. I could not make out any aortic lesion that would indicate any incompetency of the aortic valves."

Commenting upon Dr. Lachance's paper, Dr. Lehmann said that in a case of his there had been a positive ophthalmic reaction whereas there had been no history of tuberculosis.

Dr. Sharpe said that in none of the cases presented could he see what was considered a very characteristic reaction. In addition to that you got a slight purulent discharge. The reactions that night were certainly not nearly as positive as those seen in the Winnipeg General Hospital. He would ask Dr. Lachance if, in any of the cases, he had got a purulent discharge?"

Dr. Lachance replied that in the first case, the man with the abscess had the real ophthalmic reaction. The fact that you did not see any tubercular signs on a physical examination of your patient did not prove that there was no tuberculosis there and that was where the ophthalmic reaction was so useful. When you had definite symptoms of tuberculosis it was not necessary to try the ophthalmic reaction. He was sure that Dr. Lehmann had seen patients who had died at the age of seventy-five, with apparently no symptoms of tuber-

culosis and yet on post mortem examination you would see nodules or tubercular lesions of the lung. Hi was not trying to show that the ophthalmic reaction was specific. He was just giving the results of his experiments. He had tried it in many cases where there was no reaction at all.

Dr. Nichols—"As has been remarked, very likely Calmet does not know the limitations of this test and it is proper for us all here to make this test and observe as closely as possible and try and find the precise limitations of it. If it should come in and we are able to spot those obscure cases of tuberculosis, it would be of great material assistance to us. Dr. Lachance should be commended for bringing these cases here."

Dr. MacKay wished to know if one could get a reaction in an apparently cured case of tuberculosis.

Dr. Lachance thought that so long as the blood kept the power of reacting against the toxin or tubercular infection, they were liable to have a reaction. If there was no reaction it was because there was no infection or because the blood had lost its reacting power. The experiments he had tried warranted that conclusion, he thought, but further tests would prove that. He did not know what the result would be in a case of cured tuberculosis. They never knew when tuberculosis was absolutely cured.

Dr. Richardson wished to know the merits of the Parke-Davis tuberculine. Dr. Lachance had not used it.

Dr. Sharpe stated that the tabloids would be on the market shortly and that according to a report in the Therapeutic Gazette of December, good results had been obtained. There was a report in The Lancet about the third week in December covering the question asked by Dr. MacKay. The conclusions of the tests seemed very favorable to him on the whole.

Dr. Rorke remarked that Sigismund Cohn, an experimenter in Berlin, had a series of 300 cases. He divided the tubercular stages and found the results fairly satisfactory in about 85 per cent. of the first and second stages, but in the third stage it was found pretty unreliable. It seemed to be fairly prevalent in cases of convalescence from typhoid fever. There was no explanation given why this should be.

NOTE.—Fritz Louy, of Berlin, has found that in cases where the ophthalmic reaction had been repeated several times in a few weeks. he got a positive reaction in non-tubercular cases, that is to say, if test right eye then left and on going back to right eye again reaction frequently positive in healthy individuals.

Dr. Lachance said that in case of a third stage he had been unable to secure any reaction whatever. The test did not affect the general health in any way.

GENERAL MEDICAL NEWS

MEDICAL SOCIETIES

The Winnipeg Medical and Surgical Society met on Friday, February 7th, Dr. Davidson, the president, being in the chair. Dr. Wadge presented a case of *hydro-cephalus* and *spina bifida*. Dr. McLean showed a specimen of *hydro-nephroses* removed from a boy of twelve. Dr. Todd read a paper on "Operative Procedure in Perforating Ulcers in Typhoid." Dr. Halpenny read a paper on a case of "Cæsarean Section."

VANCOUVER MEDICAL SOCIETY met December 9th. *President,* Dr. Glen Campbell; *Secretary,* Dr. J. M. Pearson.

Five new members were elected. The officers for the ensuing year were then elected. Dr. J. S. Conklin, *President,* and Dr. Pearson, *Secretary.*

The Pure Milk question was discussed and a proposal that a model dairy farm should be established near the city met with hearty approval. The library of the Society was reported as growing in number of books and popularity with the readers.

VITAL STATISTICS

The most notable feature of the infectious diseases report of the city in January is the increase in smallpox cases. The report is as follows:

	Cases.	Deaths.
Typhoid Fever	16	....
Scarlet Fever	28	....
Diphtheria	13	1
Measles	28	....
Tuberculosis	4	2
Mumps	16	....
Scables	6	....
Erysipelas	3	....
Whooping Cough	6	....
Chicken Pox	8	....
Smallpox	33	....
Total	161	3

Vaccinations, 971; unsuccessful, 5 per cent.

JANUARY.

Winnipeg.—Births, 291; Marriages, 82; Deaths, 89.
Vancouver.—Births, 100; Marriages, 144; Deaths, 68.

Moose Jaw for 1907—
Births, 263; Marriages, 125; Deaths, 102.
Birth-rate, 35 per 1,000; death-rate, 12.6 per 1,000.

Alberta for 1906—
Births, 3,777; Deaths, 1,363; Marriages, 1,233.

Saskalchewan, January 1908—Report of Contagious and infectious Diseases :

Smallpox	6
Chickenpox	21
Scarlatina	6
Measles	43
Diphtheria	10
Typhoid Fever	3
Tuberculosis	7

MEDICAL NEWS

The B.C. Provincial Government have been asked for a resident physician for Queen Charlotte Islands. Also for a steam launch for the use of the doctor and police, and for rescue work. It is probable the request will be granted.

The Medical men of Paris have decided that Sunday visits be treated as night visits, with double charges. Patients already under treatment will be exceptions to this rule. The object of the rule is to have Sunday as a day of rest.

The druggists of Bellingham have agreed on a set of rules to be observed governing the things they will sell on Sundays. No old prescriptions for wine or whiskey will be refilled, and only those bearing current date and from a reputable physician will be sold.

The Vancouver nominations for the Medical Council are Drs. Phillips, McLennan, Tunstall; Dr. Sutherland for Revelstoke; and Dr. Arthur, of Nelson, being supported by the Upper Country.

The Women's Trade Union League, Chicago, will supply consultation and advice to working girls who are members of Trade Unions for ten cents a year. The League has appointed Miss Rachel Harros, of Hull House, as staff physician, and she is to devote several hours three days a week for these consultations!!!

Dr. Underhill, Medical Health Officer for Vancouver, has been making vigorous efforts to improve the milk supply, but his powers only extend to the city limits. He has pointed out that the Government should do something to help improvement in this respect.

Professor Ritter von Jacksch is said to have invented a kind of shield, composed of silver plate two-hundredths of a millimetre in thickness, which is enveloped in a capsule covering of cellulose. This placed over the portion of the body to be exposed to the action of the X-rays preserves the skin from injury, while the influence of the rays upon the organs desired to be effected is in no way hindered.

Some time ago an appeal on behalf of the B.C. Sanatarium for Consumptives was made. Envelopes were sent to every householder and volunteers undertook the collection. The result has been $1,348.95. Considering that in most cases the amount was small and came from the poorer class, this is good.

The most important address on the Protection of Health, at the 79th Annual Meeting of the German Association of Scientists and Physicians, held at Dresden, in September, was that on the Treatment of Milk, by Professor Hempel. It was stated that it is beyond dispute that milk from healthy animals, collected under conditions of scrupulous cleanliness, is a better and safer food than milk heated to a point at which gern life is destroyed. In Germany, the medical men are trying to get Governmental requirements and inspection.

The Town Planning Bill before Parliament this session, in London, takes in (1) River Pollution; (2) Water Supply; (3)

Purity of Milk. There is also a Bill for the prevention of premature burial, to come up this session—and a measure to ensure for the Medical Health Officer security of tenure.

It is said that great changes are expected to take place in England in the matter of Public Medical Service. There is a plan for creating a great Civil Medical Service in England, which will embrace all medical functions performed under the Poor Law, the Sanitary Service, and School Inspection; also the Factory Acts.

A Bill is to be brought up to prohibit medical practice by Companies. It passed the House of Lords last year.

In an editorial, the B. M. J. points out the necessity for men holding posts where their sudden death or illness may mean the injury and death of others (such as signalmen, electric Tramcar Conductors, Automobile Drivers, etc, and Railwaymen) to be examined medically not only on appointment, but at frequent intervals.

The Sixth International Congress of Ophthalmology will be held at Naples, April, 1909.

The Nobel prize for the greatest benefactors to mankind by a a discovery in medicine in recent years"' was awarded to Professor Laveran, of Paris, discoverer of *hematozoon malarial.*

The Toronto Academy of Medicine is now well organized. Three sections are at work, and a fourth—that of State Medicine —has just been added.

An International Congress on Tuberculosis is to be held during the coming year in Washington, September 12 to October 12th, 1908. A prize of $1,000 for the best exhibit of a sanitarium for the treatment of tuberculosis among the working class, and various others are to be given. Secretary-General of the Congress, Dr. John F. Fulton, 810 Colorado Bdg., Washington.

The Provincial Laboratory in the Government Offices, Edmonton, is now fitted up and in operation, under charge of Dr. D. G. Revell.

HOSPITAL NEWS

An Auxiliary to the B.C. Anti-tuberculosis Society has been formed, the object of which is to assist the Board of Directors in obtaining funds and furnishings and equipping the Sanatarium generally; to do all in their power to further the success of the General Society. The membership fee is fifty cents.

The Manitoba Government have named a Commission to investigate the hospital question.

Mr. A. McGill, Chief Analyst, Dominion Government, has issued a report on the results of the latest examination of milk samples from all over Canada, which should be read by all those interested in this very important matter.

Victoria, B.C., is considering the advisability of establishing an incinerator, to cost about $54,000. The garbage destructor in the Whitechapel district, London, Eng., is said to be one of the best.

An amendment has been added to the milk by-law, Calgary, viz., that before any person shall receive a license to sell milk he must first produce a certificate from a veterinary surgeon that his herd is free from disease.

Also that all private sewer layers must be licensed and act under direction of plumbing inspector. Another recommendation was that barriers and danger signals shall be maintained on all works. No person shall keep more than two cows or other cattle longer than two hours per day in any stable within 100 feet of an occupied building unless the consent of such persons is obtained. Not more than five cows within 200 feet, and six within 300 feet.

Brandon is advertising for an Health Inspector, preference will be given to a local man if properly qualified.

At the Annual Meeting of the Lloydminster Public Hospital a resolution was adopted requesting the Town Council to take over the Hospital as a Municipal Institution.

The Ladies of Wetaskiwin have recently formed a "Hospital Aid Society." They will keep a house of six rooms as a hospital till the city hospital is ready.

The number of patients in the Home for Incurables, Portage la Prairie, for 1907, were 119 males and 68 females. Number admitted during year, 56. Number died, 28.

Calgary is said to have the best milk supply.

The report for Deaf and Dumb Institute, Winnipeg, gives 97 admissions: 55 male and 42 female; 82 in residence at end of year.

Recently a by-law has been submitted to the people of Calgary, and carried for $75,000 towards a new hospital. The City Council have been approached regarding having the city own the hospital.

A second private hospital has been opened in Wetaskiwin under the control of Dr. Dixon. The need of a public hospital is greatly felt.

Neepawa General Hospital finished the year 1907 entirely free of debt.

PERSONALS

Dr. J. A. Tierney, of St. Albert, has been appointed Coroner.

Dr. A. B. Chandler—1906 "McGill"—recently Superintendent of the Western Hospital, of Montreal, has started practice at Lanigan, Sask.

Dr. Walker, of Wetaskiwin, Alta., has been re-appointed Medical Health Officer for 1908.

Dr. and Mrs. Doyle, of Vancouver, have returned from their visit to the East.

Dr. J. Nisbet Gunn, M.R.C.S. & L.R.C.P., of Vancouver, has returned from a two and a half years' visit to England and the Continent, where he has been specially studying diseases of the eye, ear, nose and throat.

Drs. Arthur and Joy have been elected School Trustees of Nelson, B.C.

Dr. Hall has been elected Mayor of Victoria, B.C.

Dr. Doherty, Superintendent of the Provincial Hospital for the Insane is visiting the East to inspect several hospitals in the larger towns and to get furnishings, etc., for the addition to the local institution.

Dr. W. D. Brydone-Jack has been visiting Victoria, B.C.

Dr. B. F. Boyce and wife, of Kelowna. B.C., who have been visiting in the East, have returned.

Bishop Grisdale has resigned his position as Chairman of the University Council, and Dr. Low, of Regina, has been appointed in his stead.

Dr. Ernest Hall, of Vancouver, has sold his Victoria practice to Dr. Wilson, formerly of Naas Harbor. Dr. Hall will confine his work to Surgery and Gynaecology.

Dr. William E. Gomm, of Sandon, B.C., has been appointed Coroner.

Dr. E. G. Mason has been elected president of the Calgary Liberal Association.

Dr. James F. Rymer, M.R.C.S., late honorary secretary for the Brighton and Hove Branch of the Tariff Reform League, is visiting Edmonton.

Dr. Tyreman, of Prince Albert, has returned from his visit to Winnipeg.

Dr. P. D. Stewart, of Saskatoon, has returned from a trip to Ontario.

Dr. V. E. Casselman, who recently went from Winnipeg to Vancouver, has taken up residence at Westminster Avenue, Mount Pleasant.

Drs. H. J. Hazzard, of Sydney, and Samuel J. Kirk, of Oak River, have been appointed Coroners.

Dr. Thornton, M.P.P., for Deloraine, Man., has been put on the Agricultural Committee.

Dr. and Mrs. Wilson, of Edmonton, have gone on a visit to San Francisco, and from there will go to Hong Kong. They do not expect to return till about May.

Dr. Robertson, of Wetaskiwin, who is at present making a special study of surgery in England and Germany, intends staying another year.

Dr. Andrew, of Minnedosa, who has been ill with pneumonia, is reported convalescent. Dr. Rondeau, of Shoal Lake, has been taking charge of his practice.

Dr. Armstrong, of Gladstone, is at present in Winnipeg attending the session of the Legislature.

Dr. McInnes has been appointed Medical Health Officer of Neepawa, *vice* Dr. McRae, resigned.

Miss Grady, one of the undergraduate nurses of Edmonton City Hospital, is seriously ill of typhoid fever and pneumonia.

Dr. Hurlburt, of Lashburn, Sask., has been paying a short visit to Edmonton.

Dr. Harrison, who has been seriously ill of typhoid fever, is able to be out again.

Dr. Archibald, of Strathcona, has been appointed Medical Health Officer.

Dr. Brian, of Douglas, has been appointed Medical Health Officer.

BORN

PROCTOR.—Jan. 16th, the wife of Dr. F. Proctor, of a son.

MARRIED

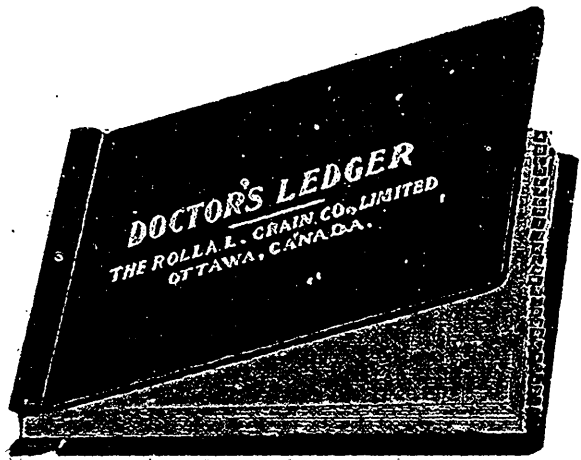
CODE-WHITELEY.—Jan. 16th, Dr. John Howard Code, of Gull Lake, Sask., was married to Miss Minnie Jane Whiteley, of Moose Jaw.

YOUNG-DAVIDSON.—Jan. 29th, Dr. William Howard Young, of Lethbridge, was married to Miss Annie Davidson Allan. of Guelph.

CANE-BULL.—At Arrowhead, B.C., Miss Florence Bull was married to Dr. John H. Cane, of Whitehorse, Y.T.

Musgrove-Cuthbert—At Pilot Mound, February 5th, Dr. W. W. Musgrove, of Winnipeg, was married to Miss Mabel Cuthbert.

Gardner-Cooper—At Montreal, January 18th, Dr. W. A. Gardner, of Winnipeg, was married to Miss Beatrice Cooper of Montreal.



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Synopsis of Canadian North-West Homestead Regulations

Any even numbered section of Dominion lands in Manitoba, Saskatchewan and Alberta, excepting 8 and 26, not reserved, may be homesteaded by any person who is the sole head of a family, or any male over 18 years of age, to the extent of one-quarter section of 160 acres more or less.

Application for entry must be made in person by the applicant at a Dominion Lands Agency or Sub-Agency for the district in which the land is situate. Entry by proxy, may, however, be made at an Agency on certain conditions by the father, mother, son, daughter, brother or sister of an intending homesteader.

The homesteader is required to perform the homestead duties under one of the following plans:

(1) At least six months' residence upon and cultivation of the land in each year for three years.

(2) A homesteader may, if he so desires, perform the required residence duties by living on farming land owned solely by him, not less than eighty (80) acres in extent, in the vicinity of his homestead. Joint ownership in land will not meet this requirement.

(3) If the father (or mother if the father is deceased) of a homesteader has permanent residence on farming land owned solely by him, not less than eighty (80) acres in extent, in the vicinity of the homestead, or upon a homestead entered for him in the vicinity, such homesteader may perform his own residence duties by living with the father (or mother).

(4) The term "vicinity" in the two preceding paragraphs is defined as meaning not more than nine miles in a direct line, exclusive of the width of road allowances crossed in the measurement.

(5) A homesteader intending to perform his residence duties in accordance with the above while living with parents or on farming land owned by himself must notify the Agent for the district of such intention.

Six months' notice in writing must be given to the Commissioner of Dominion Lands at Ottawa, of intention to apply for patent.

W. W. CORY,

Deputy of the Minister of the Interior.

N.B.—Unauthorized publication of this advertisement will not be paid for.

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