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THE
Montreal Medical Journal

EDITED BY

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F. G. FINLEY,

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J. GEORGE ADAMI,
G. GORDON CAMPBELL,
FRANK BULLER,
H. A. LAFLEUR,

WITH THE COLLABORATION OF

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J. M. ELDER,
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VOLUME XXX.

MONTREAL:

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THE MONTREAL MEDICAL JOURNAL.

VOL. XXX.

JANUARY, 1901.

No. 1.

Original Communications.

THE TEACHING OF CHEMISTRY IN MEDICAL SCHOOLS.

BY

CHARLES G. L. WOLF.

With very natural curiosity, the teacher is often asked by the medical student, to what end, and for what purpose, is the teaching of a mass of chemical facts, such as that given in the ordinary course in chemistry in a medical college; and it must be confessed that, on serious reflection, there is a certain amount of saneness in an apparently idle question.

In the four years that embrace the student life of the average student, much is to be learned, and much, in fact, that is of obvious and instant value, and which provokes no question. One must therefore be careful, in a purely scientific study such as chemistry, that its aims and practical bearing be brought into view as prominently as possible. At the same time, admitting that it is a strictly scientific pursuit, the other extreme must be avoided, namely, that the scientific interest should be excluded in the furtherance of the practical or clinical side.

In the medical course as given to the medical student of to-day, much time is given, and rightly so, to the study of anatomy, physiology, pathology, surgery, and medicine, and usually the time allotted to chemistry is insufficient to go over the ground which the student is expected to cover. Two remedies for this state of things may be advanced. Either the time given to more purely medical work should be curtailed, which is highly undesirable, or a previous knowledge of chemistry should be exacted from the student on entrance. The latter is the ideal way, but it, too, unfortunately, has its disadvantages, which are more patent to the teacher than to others. Among these are, that the chemistry taught in some of the higher schools is to say the least superficial and unsatisfactory. For lack of other assistance, the teaching is done by men who have not themselves received a proper training and are, therefore, even with the best of intentions, not in a position to lay the proper foundations for the work to be followed out in the medical college. It is here

that the work of the medical teacher is rendered doubly difficult, as his work is then one, not only of upbuilding, but of undoing. This does not apply in most instances to those who have received their training in colleges and universities, as there the work done is of necessity of a higher grade.

In speaking of medical chemistry in this connection, may be mentioned the department of medical physics, to which it is so closely related. Here also, the need of a sound preliminary training is felt, so that the work of the teacher might be that of demonstrating the medical application of principles already learnt, rather than the inculcation of elementary laws which should have been thoroughly mastered before entrance to a medical school.

On the part of the teacher, it should be the constant aim to see that all the facts presented to the medical student are placed in the strictest correlation with those taught in the other branches of medicine. This would appear to be an obvious necessity, but from a somewhat careful examination into the methods of teaching which are followed out in many of the medical schools, both here and abroad, one is led to believe that either the necessity is not felt in many instances, or, is lost sight of in the press of routine work. For this reason, it is undesirable in a large university that the teaching should be done by men who have not had the opportunity of a medical training. In many cases the subject is taught with great thoroughness from a chemical standpoint, but in this thoroughness, the relation, and the intimate connection between the physiological and clinical process and the chemical fact, is not insisted upon. It has been an interesting matter of experiment with the writer, on pointing out such a relation, that a chemical fact difficult to remember and harder to understand, has been bound up with a clinical experience in such a way that both have been remembered and understood.

In the chemical work of the last decade and a half, no branch of the science has made such strides as physical chemistry. It was thought that at one time, organic chemistry would be the solution of many of those physiological problems which have been the subject of work by physiological chemists since the time of Wöhler. That this has not been so, subsequent events have proved, and the questions of physiology, although furthered, have not been solved through its agency. It is too early to say what will be the fruits of work done in physiological chemistry, working along the lines of physical chemistry, but one may be assured that the work done in digestion and in metabolism generally, will receive its greatest help in this direction.

For this reason, therefore, the subject of chemistry should be approached with the medical student from the physical point of view.

The theories of dissociation, osmotic pressure, and the connection of these with electrical phenomena and equilibrium should be fully taken up. A careful consideration of these relations would be of infinitely more value than the dreary testing for unknown salts which occupies so much of the valuable time of the student. In the allotment of time to the study of chemistry, at least a part of three years should be given, very especially if it be taken for granted that, in a large percentage of cases, the student come in with no preliminary training in the subject.

In the first year of the medical student's work, the time should be devoted to the examination of simple chemical reactions, and it is at this point, at the very outset, that the method of looking at these reactions from a physical-chemical standpoint should be taught. With weekly sessions of two hours each in the laboratory and sufficient didactic work besides, the subject may be reviewed in a satisfactory manner. Too much time should not be taken up with analytical processes, which are after all but a very special branch of chemistry, whose aim is but little understood by the student, and less made use of in his subsequent career as a practitioner. This does not by any means imply that the analytical part should be entirely neglected, but that it should not be made the be all and end all of a course in chemistry.

In the second year work a chemical examination of physiological processes will occupy an equal amount of time. The work in this department has grown so heavy that a proper, though elementary review will fully take up the amount of time given, without entering into the clinical side of the work. The laboratory course should be essentially one devoted to the examination of physiological processes from the chemical side, and the effect of varying conditions on the course of the reaction and of the products formed.

In the third year the course should be distinctly a clinical one, and should have to do more particularly with the clinical examination of the various fluids of the body which are met with in the hospital laboratory, and at the bedside. At this stage in the student's course he is in a strong position to appreciate the full clinical significance of the chemical reactions which he performs. He has seen and followed the cases, and he knows the clinical meaning of a change in analytical results.

It may be objected to this division of the chemical course into three parts, that the time is more than can be allowed under the present conditions. This may be answered by assuming that the course in the third year does not take up the entire year, as indeed it need not, and more importantly by contending that the results in aiding the study of physiology, pathology, and medicine, will fully justify the extra time expended.

Cornell Medical College, New York, Department of Chemistry.

A CASE OF SPINAL TUMOUR.*

BY

F. MORLEY FRY, B.A., M.D.

On July 9, 1900, there came to me Mrs. F., aged 63, *complaining of* incontinence and increased quantity of urine, weakness, swelling of feet, shortness of breath, lumbago, slight staggering, and burning sensation in the soles of the feet.

Her *personal history* is that of a well educated French woman who taught singing and the French language for years and who has recently managed two large clothing establishments. She thinks she escaped scarlet fever and diphtheria. Neither she nor her family give any history of syphilis, tuberculosis, rheumatism or neuropathy. She was married in middle life, never pregnant, and enjoyed good health until two years ago, when she nursed her husband through a long illness, which caused her most extreme fatigue and anxiety and ended in death from cancer of the neck.

Present illness dates from her husband's death, since when she has been weak and poorly. She gives no very definite account of the onset of symptoms, but her weakness, shortness of breath, and swelling of feet go back a year or two, while her incontinence, backache, feeling of heat in the feet and staggering, go back only several months. There has never been any difficulty in controlling the evacuation of the rectum. Lately she has been eating large quantities of fruit daily and excessive amounts of candy (chocolate creams, one pound a day).

Present Condition.—She is a well nourished woman of large frame, very pale in the face, lips and conjunctivæ of fair colour; muscles are very large and soft; fat is abundant; skin is smooth, warm and moist; tongue slightly coated; slight constipation, slight œdema of the feet and shins. Temperature 98.2-5° F.; pulse 80, small, regular, of moderate tension; respirations 20., quicken markedly on slight exertion. *Lungs* normal, no hydrothorax. *Heart*—abundant fat renders inspection, palpation and percussion unsatisfactory; no enlargement could be made out; there is no thrill; the sounds are feeble perhaps but clear and sharp cut, rhythm normal, no adventitious sounds. As the pulse is small, heart sounds weak, and œdema of the lower extremities and dyspnoea present, there is probably an inefficient myocardium. *Digestion* and appetite excellent, no stomach symptoms, no enlargement of liver, bowels slightly constipated. No enlargement of spleen or lymph nodes. *Urine*—pale,

* Read before the Montreal Medico-Chirurgical Society, Dec. 14, 1900.

clear, sp. gr. 1010, no albumin (to cold nitric and picric acid tests), no sugar; microscopically, no crystals, casts, or any formed elements. Quantity much greater than previously.

Nervous System.—She locates the backache in the lumbar region at the level of the twelfth dorsal or first lumbar *vertebra*. It is generally referred to the median line but soon radiates bilaterally across the back and frequently encircles the trunk, giving her, as she says, the painful feeling of a tight belt. With the incontinence of urine there is no scalding nor marked frequency of micturition. When lying or sitting she can control the vesical sphincter, but on walking or when tired, urine trickles away. There is no deformity in the spine, no tenderness on pressure or on standing. *Motion*—Resisted flexion and extension of all the joints of the lower extremities fail to elicit any certain weakness, the power being quite as much as one would expect, and there is no appreciable difference between the two sides.

Sensation.—Tactile sensation and sensation of pain normal on abdomen and lower extremities. There was on one occasion during an attack of back pain, a zone from a-half to one inch wide just above the umbilicus, which was hyperæsthetic. *Reflexes*—Patellar difficult to elicit but always obtainable. *Cranial nerves*—First: distant vision as good as ever, pupils react to light. Second: smell normal. Third, fourth and sixth: ocular muscles all act normally. Fifth: sensation on the face normal, masticatory muscles act well. Seventh and eighth: there is no facial paralysis and hearing is normal. Ninth, tenth, eleventh and twelfth: taste, deglutition and phonation normal, heart, lungs, and bowels well innervated, muscles of neck act normally, tongue moves normally. All cranial nerves, then, perform their functions well. *Eyes*—Distant vision about 6-12, myopia 3 D., almost neutralizes her presbyopia of 4 D., so that + 1 D. gives her normal reading power though she is 63 years old. Pupils react to light and to accommodation. Fundus normal in each eye, discs normal colour, vessels of normal size and distribution. *Romberg's sign*—She stands normally when feet together and eyes shut.

Diary—Hoping it was a case of mere constipation, chlorosis and general muscular weakness, I decided to attack the constipation and support the muscular system, while reducing the amount of urine. I ordered rest, prohibited the candy, and gave fl. ext. cascara sagrada, m. x and tinc. nuc. vomicæ, m. xv, t. i. d. Twelve days later (July 21) she was better and I now gave nux only. On August 1st, dyspnœa and œdema being present still, I gave tonic doses of digitalis and strychnine, under which she recovered from these, but all the cord symptoms were increasing. I feared she had pernicious anæmia with cord symptoms, but

an examination of the blood showed red cells, 5,020,000, no poikilocytosis whatever, no leucocytosis, lymphocytes 14%, transitionals and splenocytes 16%, polymorphonuclears 70%, eosinophiles 1%, *i.e.*, normal, and amply excluding pernicious anæmia.

An elderly woman with incontinence of urine, slight staggering, and perverted sensation in the soles of the feet certainly suggested tabes, but the pupils, kneejerks, and optic discs being normal and Romberg's sign absent, prevented such a diagnosis being made. I now pushed strychnine and succeeded in giving her complete control of her bladder even while walking. This, however, slowly disappeared on withdrawing the drug, and the pain in the back and other nervous symptoms increased. A feeling of coldness over the lumbar region was now added.

Within a few weeks (in August) I was twice called to her on account of the most severe pain in the back, cutting in nature, localised at times, and at times encircling the trunk, and requiring morphine $\frac{1}{2}$ grain by the mouth. I now decided there was a cord trouble. While alleviating and trying to clinch my diagnosis, I gave arsenic in increasing doses. Steadily and slowly, through several weeks, the pain diminished considerably, till on October 25th, I found her practically free from it and she resumed her work, suffering only from incontinence of urine, for which I again pushed strychnine. I have not seen her since.

To sum up:—Here was a woman whose dyspnoea, œdema, and weakness, due to myocardial insufficiency, were cured by rest, digitalis, and strychnine. There remained, however, incontinence of urine, perverted sensation in sacral and plantar regions, slight ataxia, violent pain about the lumbar cord with painful girdle symptoms, all of which had to be explained. A rapid diagnostician would exclaim: Tabes! But this could not be diagnosed yet at least when marked ataxia, Romberg's sign, Argyll-Robertson pupil, and optic atrophy, were all absent; while kneejerks were present, and severe pain dominated all. Pernicious anæmia is excluded by the normal number and form of the red cells. Transverse myelitis is probably excluded by the normal motor power of the legs and good control of the rectal sphincter. Absence of paralysis and of atrophy exclude anterior poliomyelitis, and absence of deformity and of tenderness on pressure or on standing, excludes caries. What about hysteria, which accurately simulates every symptom which flesh is heir to? The patient finds the incontinence of urine extremely unpleasant, she is very active and will not consent to take to bed, but goes twice a day to her factory when her strength permits, and she has no symptoms or signs suggesting hysteria. The dominating pain is typical of one condition which explains the other symptoms, and this condition I have diagnosed, *viz.*, tumour (in its broadest sense) on the spinal cord. Be-

cause the cord transmits motor and sensory impulses and performs its functions in reflexes, I think the tumour is not in the cord, nor does it more than slightly press upon it; because the pain is so severe and encircles the body, I think the tumour involves the nerve roots.

The symptoms subsided before I put the therapeutic test for syphilis, and I am ignorant of the nature of the tumour. There is no evidence of its being syphilitic, tuberculous, or malignant; perhaps it is fibroma. What a victory for iodide had it been prescribed early!

GENERAL EMPHYSEMA COMPLICATING MEASLES.*

BY

DAVID J. EVANS, M.D.,

Lecturer in Obstetrics, McGill University.

Harry, aged four years, was admitted to the isolation ward of the Montreal Protestants' Infant Home on July 7, 1900, suffering from measles. The rash was apparent on face and chest. His temperature at noon was 102° F., respirations 30, and pulse 148. His general nutrition was fair; there was no evidence of rachitis. Examination of the chest revealed the presence of moderate bronchitis, and the heart was normal. He had a discharge from the left ear, which had been present for some weeks before admission. The disease ran a moderately severe course; the cough, while troublesome at times, was never severe or paroxysmal.

Five days after his admission, the respiration became rapid and shallow but no pneumonic areas could be detected in the chest. On the sixth day the nurse called my attention to a diffuse swelling, which had appeared that morning in the left supraclavicular region. On palpation the tumour was soft, not crepitant and evidently painless. There was no discolouration of the skin. No swollen glands could be felt in the neighbourhood, so that I was at a loss to account for the nature of the swelling. It was noticed that the child had lost his voice. Next morning the swelling was found to have extended in all directions, though chiefly downwards over the sternum as far as the fourth rib. On palpation distinct crepitation was obtained. The child's respirations were rapid and shallow, his face swollen and somewhat cyanotic. Movement of the left arm seemed to give rise to pain. Crepitation could be obtained over the whole head, back, abdomen, and left arm, and extended down the left thigh as far as the knee. By percussion a hyper-resonant note was obtained over the chest and back. It was impossible to hear the breath sounds on account of the crepitation when the stethoscope was applied to the skin. The child seemed anxious and devoted his whole attention to breathing. He took small quantities of liquid nourishment at short intervals, and beyond a slight diarrhoea, there was no evidence of intestinal derangement. His temperature varied between 102° and 104°. The treatment consisted of strychnine and whisky.

On the eleventh day of his illness the general condition of the child was somewhat improved though the emphysema remained unchanged.

* Read before the Montreal Medico-Chirurgical Society, Nov. 30, 1900.

As the general condition improved the emphysema gradually disappeared, and on the thirteenth day of illness the child's voice returned, though crepitation could be obtained in various areas some days later. The child eventually recovered and is in good health at present.

On turning up the text-books I find but very little reference to general emphysema. Fowler, in Allbutt's System of Medicine, reports seven fatal cases, all associated with tracheotomy for laryngeal diphtheria. Guillard (*Jour. des Pract.*, Nov. 25, 1897), reports three cases of subcutaneous emphysema complicating measles occurring in one family. Holt states that the condition may occur in connection with whooping-cough and in connection with laryngeal stenosis. Cotton (*Arch. Pediat.*, Sept., 1900), has reported a fatal case in a child aged seven and a-half years. The patient had an attack of measles in July, which left her with a chronic bronchitis. The following March, after a severe fit of coughing, a ridge appeared over the right clavicle, which gradually extended in all directions. The general conditions and symptoms in this case corresponded very closely to the case I report, except that the general cutaneous distension in Cotton's case was more marked. Wrinch reports a case where the condition appeared consequent upon a cough without severe paroxysms, and post-mortem revealed a condition of miliary tuberculosis. Wrinch suggests that this condition may be differentiated from lesions due to the bacillus *aërogenes capsulatus* by the fact that in the latter the emphysema increases post-mortem.

With regard to treatment, Cotton suggests that "from the apparent fact that the condition is intensified by coughing or deep inspiratory movements the indications would seem plain to relieve the cough and restrict respiration by any means in our power." He also suggests puncture or incisions, with the insertion of drainage tubes, in severe cases.

The occurrence of this complication is probably dependant upon a congenital weakness of the pulmonary vesicles, especially those situated close to the trachea.

VESICAL HÆMORRHAGE DURING LABOUR.*

BY

GEORGE A. BROWN, M.D.,

Physician to the Montreal Dispensary.

Mrs. A. B., aged 46 years, multipara, has had eleven children and after each labour has had some complication, usually post-partum hæmorrhage.

On Wednesday evening, December 5th, patient had a fall. On Thursday, she complained of pain in her left hip, which did not prevent her from sleeping Thursday night. At six o'clock the following morning she awoke with pain in her bladder and a desire to urinate, but was unable to do so. At times she had a bearing-down sensation which gradually developed into labour pains. On seeing her I catheterized her and drew off about half a pint of bloody urine which, on microscopical examination, contained nothing but blood.

At two o'clock in the afternoon I was again called, as the membranes had ruptured and the pain in her bladder and the desire to urinate had returned. I catheterized her again and drew off some more bloody urine. On making an external examination I found the child in the fourth position (dorso-posterior) with the head in the upper zone and the breech presenting. The vaginal examination was rather puzzling, as I could not find the external os and the anterior vaginal wall descended into the vaginal passage, just like a large tumour, which was more marked during her pains.

During the afternoon the pains were irregular and the patient complained of their peculiar tearing character, as if her bladder was being dragged out of her. After the pain became regular there was no progress, as the pressure of the breech came on the anterior vaginal wall. I then decided to keep her in the knee and chest position until the external os dilated, and at the same time during every pain I held the anterior vaginal wall away from the breech as it was forced against the os. After the os was dilated, the child was extracted in the usual way.

On December 8th, I catheterized the patient again and drew off another half pint of dark bloody urine.

On December 9th, the patient could not make her urine in the evening, although she had been able to do so in the morning and on the previous evening. I then catheterized her again, drawing off about a pint of ammoniacal urine, which was still bloody; and as I withdrew the catheter she passed some small clots. I placed her on urotropine gr. $\frac{1}{2}$, three times a day. On December 10th, she was able to make urine and passed a few more clots. The odour had begun to disappear, and on the 11th the urine was normal.

* Read before the Montreal Medico-Chirurgical Society, Dec. 14, 1900.

TWO CASES OF TUBAL PREGNANCY—OPERATION— RECOVERY.*

BY

A. LAPHORN SMITH, B.A., M.D., M.R.C.S., Eng.,

Gynaecologist to the Montreal Dispensary ; Surgeon-in-Chief of the Samaritan
Hospital for Women.

My eleventh and twelfth cases of tubal pregnancy were reported to this society on the 19th December, 1898, and were published in the MONTREAL MEDICAL JOURNAL on the 15 February, 1899. All of these twelve cases were operated upon, some before and some after rupture, and all recovered. Since then I have had two others, and although cases of tubal pregnancy are not rare I think they are always interesting, especially when they recover.

Case I.—For my thirteenth case I was indebted to Dr. Arthur Johnstone, assistant surgeon to the Samaritan Hospital, who also supplied the following history. He was called on the 22nd May, 1899, to Mrs. H., 39 years of age, who had been married since the age of 17 without ever having been pregnant. She had never had any menstrual trouble until six weeks before the doctor was called, when, for the first time in her life, she missed a period. Three weeks later she jumped off a car and began to have a good deal of pain in her right side so that she sent for her lodge doctor who had to give her morphine to relieve it. As she was not getting any better, she then sent for Dr. Johnstone, who on examining her found a mass on the right side of the pelvis. She was suffering so much that the morphine had to be continued, but after the doctor had examined her every day for a few days and found the mass growing, he decided that he had a tubal pregnancy to deal with and asked to have me in consultation. At this examination I did not feel sure enough of the condition to operate at once. Next day she felt somewhat better and insisted upon getting up, but was immediately taken with the same severe pain in her right side. As her pulse began to go up a good deal Dr. Johnstone called me again about three or four days after my first examination, and then I had no hesitation in agreeing that she had a ruptured ectopic gestation.

She was accordingly sent at once to the Samaritan Hospital in the ambulance and, as soon as preparations could be made, her abdomen was opened, just six weeks from the date that her menstruation should have come on. There was about a quart of free blood in the abdominal

* Read before the Montreal Medico-Chirurgical Society, Nov. 30, 1900.

cavity and several large handfuls of clots. Nature had made some effort to wall off the blood, but had been unable to do so. As the bleeding was actually going on, my first care was to put a ligature on the ovarian artery, but as this did not quite arrest the hæmorrhage, another was put on the uterine artery near the cornu, which proved effectual. A partly macerated fœtus, estimated to be about six weeks old, was found among the clots. The ruptured tube was about the size of an orange. The left tube and ovary were also removed to avoid future accidents, and the abdomen was washed out with sterilized salt solution and about two quarts of this liquid were left in the peritoneal cavity. Apart from a little trouble in getting the bowels started the patient made a good recovery and is now in better health, she says, than she has ever enjoyed in her life. I think that Dr. Johnstone deserves great praise for his prompt diagnosis of a condition which is always obscure, but the early recognition of which is a matter of vital importance. I regret that I cannot show this specimen as it was lost during the summer; but I have here the specimen from my next case.

Case II.—My fourteenth case of tubal pregnancy was Mad. J. D., aged 38, referred to me by the kindness of Dr. Jeannotte. She was married at the age of nineteen; has had eight children, the last of which was born three years ago, and has always had normal deliveries. She has had two miscarriages, the last one six years ago at three months pregnancy. Last winter she was two months late with her period and this was followed by a profuse flow, but there was no sign of a miscarriage. She was then regular until June, since which time she has had a period every three weeks. On the twenty-third of August she was taken with a pain in her left side, after having passed a month and a half without a period, and a little flow began at the same time. Every two or three days she would have a pain in her left side so severe that she would cry out, and the doctor would have to give her morphine. The flow consisted apparently of venous blood. She had great difficulty at times in passing water and emptying her bowels. She had no morning sickness, which she was accustomed to have with all her pregnancies. During the last two months she has passed through the hands of four physicians, the last two of whom including Dr. Jeannotte, diagnosed tubal pregnancy and urged her to submit to immediate operation.

On examination I found a mass continuous with the uterus and completely filling the pelvis, extending an inch below the cervix and rising a little above the pelvic brim. It could not be moved because it was so firmly wedged in the pelvis. The sound entered nearly five inches forwards, thus eliminating the possibility of a retroflexion. On opening the abdomen a coil of intestine was found lying across the tumour which

latter appeared almost black through the transparent empty bowel. The intestine was carefully dissected off with the finger, and then the mass was seen to be different from the uterus although firmly glued to the latter over the whole extent of its posterior surface as well as being adherent to the left broad ligament. Before it could be extracted it was necessary to cut the tube free from the uterus. The uterus was then attached to the abdominal wall to prevent it from falling back into the large cavity left by the removal of the tumour. The time of operation was twenty-two minutes; and the quantity of A. C. E. mixture used was one and a-half ounces.

Dr. Macphail supplied me with the following notes on the condition: "A tumour was handed to me by Dr. Laphorn Smith on the 12th November for examination. It weighed nineteen ounces, was cylindrical in shape with rounded ends, length $5\frac{1}{2}$ inches, diameter $3\frac{1}{2}$ inches. One end was free and regular in form, the other showed three irregular cysts, one the size of an egg, the other two of the size of chestnuts. Projecting between these cysts was an irregular body with all the characteristics of an ovary, with cut arteries several in number. The whole tumour was in a definite capsule but the covering of the cysts was very thin and dark in colour. Two of the cysts were continuous with each other and all had common communication with the central mass. They were filled with a number of clots, brown in colour, firm in texture, and each of the size and shape of a beechnut. The main mass when cut into consisted of blood uniformly clotted, which was easily turned out of its shell. The lining membrane was shreddy in appearance and, upon examination, proved to be chorion in an advanced stage of fatty degeneration. The tumour is one of the Fallopian tubes and due to extra-uterine fecundation."

I wish to say in conclusion, while it is a great gratification to be able to report fourteen cases of tubal pregnancy (they have all been reported and most of the specimens have been shown in this society), and while it is still more gratifying that I am able to say that they all made good recoveries, I do not claim any great credit for this result, which was very largely due to the skill of my friends in general practice who discovered them for me and to their energy in insisting upon the patient submitting to immediate operation, very often much against her will. Apart from the small merit of carrying out a rigorous asepsis and thorough hæmostasis, I only claim the credit of bringing the idea of tubal pregnancy frequently before their minds by reporting to the society such cases as have fallen into my hands as I have done in the above cases.

FRACTURE OF THE PELVIS.*

BY

J. ALEX. HUTCHISON, M.D.,

Lecturer in Clinical Surgery, McGill University; Surgeon to the Montreal General Hospital.

Case I.—E. G., aged 22 years, was crushed between an engine and car on December 15th, 1898, and was admitted to the Montreal General Hospital the following day. On examination, a large mass was found filling the right iliac fossa, extending towards the umbilicus, with ecchymosis over the whole area and extending into the right scrotum.

The patient stated that an attempt had been made soon after the accident to pass a catheter. With difficulty, and by the aid of my finger in the rectum, I passed a catheter and drew off a large quantity of bloody urine. There was no apparent diminution in the size of the tumour. No crepitus could be made out. The patient's general condition was good, temperature 100° F., pulse 86. The bladder was washed out at regular intervals during the following 6 days; urine free from blood.

As there was some elevation of temperature and pain over the mass, under ether *zæsthesia*, I made a long incision and found an extensive hæmatoma, extra-peritoneal, communicating with an oblique impacted fracture of the horizontal pubic ramus.

On turning out the blood clot at the bottom of the wound, there was seen a rent in the side of the bladder. This clot closed the bladder wound, and explained why urine was held in the organ. The cavity was irrigated, and a large rubber drain introduced into the bladder and surrounded by iodoform gauze. A soft rubber catheter was introduced into the urethra and tied. As the fractured ends were in good position, wiring was not thought necessary. Culture reported to show atypical bacillus coli. The patient continued to improve and was thought to be almost out of danger, when he died somewhat suddenly, 24 days following the injury. No autopsy. I thought death was due to pulmonary embolism.

Case II.—McK., aged 24 years, was admitted to my ward October 26th, suffering from compound, comminuted fracture of both legs. Rupture of the bladder. Fracture of pelvis was not recognized. Death followed in a few hours.

Autopsy, specimen exhibited by Dr. Johnson. (See page 59).

Case III.—C. L., aged 21 years, was admitted to the Montreal General

* Read before the Montreal Medico-Chirurgical Society, Nov. 30, 1900.

Hospital, March 24th, 1900, under Dr. Armstrong, having been crushed between two cars the previous day. Suprapubic cystotomy was performed immediately as attempts to pass a catheter were unsuccessful. Three days later an incision was made in the median line exposing a fracture of the horizontal pubic ramus on the right side. The fragments were wired with silver wire. There was a rupture of the bladder opposite the fracture, which was closed by sutures, a rubber drain being left in the upper part of the bladder. The cavity leading to the fracture, after thorough irrigation, was packed with iodoform gauze. The patient did very well for some days, but eventually died 24 days subsequent to the accident. Autopsy did not show any other injury than that already described. Death was due to septicæmia.

Case IV.—An elderly woman fell from a gallery, and died shortly after admission to the hospital. (Dr. Elder's service). Autopsy showed fracture of the pelvis with laceration of the iliac veins.

Case V.—A. V., died shortly after admission to the hospital, having fallen down an elevator shaft. Fracture of the pelvis with protrusion of the head of the femur through the acetabulum, bladder not ruptured.

Great violence, usually direct, is necessary to cause this form of fracture owing to the strength of the bones. The importance of the injury is due to the fact that there is frequently associated with it extensive injury to neighbouring soft parts. The peritoneum has been opened, the pelvic vessels and nerves torn, and the rectum injured. Three of the five cases cited were complicated by injuries to the bladder and urethra, and form a class of great clinical interest.

Rupture of the bladder may be due to the violence offered, or to puncture by a fragment of bone. The injury to the urethra is usually in the membranous or bulbous portion. The extravasation of urine into the large pelvic space leads to a rapid septicæmia, and in almost all cases to a fatal result. Text-books, with one or two exceptions, do not give the reader a due appreciation of the gravity of the condition.

I am indebted to Dr. Armstrong for permission to quote case No. III., Dr. Elder for case No. IV., and to my House Surgeon, Dr. L. M. Murray, for notes of the cases.

[For discussion on these cases see page 59.]

MENINGITIS COMPLICATING PNEUMONIA.*

BY

J. R. SPIER, M.D.

I take the liberty of presenting this case to you thinking it may prove interesting, as one presenting to my mind a true case of meningitis (cerebral) due to infection by the pneumococcus, and also presenting some rare features. The correctness of the diagnosis is a question, also, which may give rise to some discussion.

E. P., female, aged five years, of mixed negro and white blood, was suddenly taken ill on the morning of November 26th, 1898. I saw her immediately after her recovery from a prolonged chill on that morning. Temperature, 103° F.; respirations, 36; pulse, 120. The child's general condition was good with no evidence of mental disturbance. Examination of the lungs showed slight dulness over the apex of the lower lobe of the left lung. Harsh breathing and a few crepitant râles were heard over this area.

Diagnosis.—Lobar pneumonia.

Treatment.—Rest, cotton wool jacket, a mixture of liquor ammon. acet. and liquor strychnina.

Previous History.—She had been a somewhat delicate child, suffering considerably from gastric troubles, but had never been seriously ill. For a period of over a year, six months before the present illness, she had been the subject of an extensive psoriasis which had been totally cured in a couple of months by the use of thyroid extract.

Family History.—Entirely negative.

November 27th.—At 2 a.m., the child had several short convulsions and became delirious and unconscious. T., 104.1°; R., 40; P., 152, weak and irregular. Her extremities were cold and the circulation extremely bad. She was ordered ice to the head, cold spongings, stimulants and frequent doses of bromides and digitalis.

During the day her condition remained unchanged; several severe convulsions occurred; the pulse became almost imperceptible. R., 36 to 45; temperature continually above 104°. The child was very restless, violently throwing herself about. The head was retracted, eyes divergent, pupils reacted slowly to light and varied somewhat in size. The lower lobe of the left lung was markedly dull; the breath sounds over this area weak, and only an occasional râle was heard.

In consultation with Dr. Springle it was decided to try opium to calm

* Read before the Montreal Medico-Chirurgical Society, Dec. 14, 1900.

her and at the same time to strengthen the heart. It was used hypodermically in conjunction with strophanthus.

November 28th.—No further convulsions. Patient quiet under continued small doses of opium. Otherwise her condition was absolutely unchanged. Treatment unchanged.

November 29th.—Condition unchanged except for a slight strengthening of the pulse. Absolutely no physical signs in the lungs, except dullness and weakened breath sounds. T., 104° ; R., 32; P., 148. Tuberculosis was suggested as being present.

November 30th (fifth day of the disease).—Fall in temperature which ranged between $102\frac{1}{2}^{\circ}$ and $103\frac{1}{2}^{\circ}$. R., 32 to 40; P., 140 to 148, decidedly stronger. Patient was conscious and resting quietly. Eyes natural. Examination of the affected lung showed dullness, loud blowing breathing, and numerous moist râles. Discontinued the opium and strophanthus.

December 1st.—T., 103° ; R., 40 to 48; P., 140 to 148, decidedly stronger; her general condition the same.

December 2nd.—Crisis occurred. T., $98\frac{1}{2}^{\circ}$ to 99° ; R., 32 to 36; P., 120 to 126; condition of the lungs unchanged.

The following day the fever rose again to $100\frac{1}{2}^{\circ}$ and fell again on the next to 99° , a purgative having been given. From this time on for a period of three weeks the temperature ranged between 99° and 101° , being somewhat higher in the afternoon. The child during this period, however, became notably stronger in muscular and mental power, but gradually became more emaciated.

Change occurred in the lung with remarkable slowness, a gradual increase in the resonance being noted until, at the end of this time, only in the apex and base of the affected lobe could any signs of disease be detected, the breath sounds being slightly harsher over these areas and small moist râles also being present. Cough remained very troublesome with slight expectoration. At this time the sputum was examined for tubercle bacilli with negative results.

On December 23rd, twenty-one days after the crisis occurred, the temperature was normal in the evening for the first time to my knowledge, and remained so from this time to the close of the case.

Early in January the apex of the affected lobe had cleared up, but the base still presented the signs above mentioned. The child, however, was now regaining flesh. Towards the end of January, the only defect to be noticed was the presence of a few small moist râles at the outer side of the base on forced inspiration. The child though still delicate was rapidly increasing in weight.

In the early part of March, I again saw her. The affected lung was

apparently free from disease, the only change noted being a slight weakness in the respiratory murmur. The child was apparently in perfect health with the exception of being troubled with occasional headaches, where before her illness she was not.

The first question to arise in discussion of this case is whether a true meningitis existed, or whether simple congestion, an effect of the high fever, was the cause of the nervous phenomena as is the case in many acute diseases of childhood. I consider the case to be one of meningitis for the following reasons:—

The convulsions set in on the second day of the disease and not, as is usual, ushering in the attack, and they were accompanied by a further rise in the temperature. They were followed by other symptoms namely profound unconsciousness, retraction of the head and what seems to be of the most importance, strabismus and sudden collapse as shown in the history of the case evidencing interference with the cranial nerves. This also shows that the meningitis was basal.

Considering then meningitis to be present, I may here point out the extreme rarity of this complication by referring to the few authors I have had the opportunity to consult.

Fagge makes hardly any reference at all to nervous complications in this disease. Nearly all American authors discuss at some length these nervous symptoms.

Holt mentions that meningitis was present in two of his cases, the convulsions as in this case coming on in the course of the disease. Nervous symptoms may be so severe as to simulate meningitis or cerebro-spinal fever but there are no local paralyses as in this case unless meningitis be present.

Osler favors the idea of the infection of the meninges by the pneumococcus. In eight out of one hundred fatal cases meningitis was found to be present but it was cortical in situation, and on this account seldom recognized until the post-mortem. He regards meningitis as a very fatal complication.

Various authors under the headings of cerebral pneumonia bring into prominence the severe nervous symptoms which may accompany pneumonia, but without regarding them as being complicated by meningitis.

Menot in Keating's Diseases of Children, regards meningitis as a very rare complication indeed.

As regards the diagnosis, I may say that cerebro-spinal fever complicated by pneumonia, and tuberculous meningitis, were thought of during the attack. The latter seemed very probable but was disposed of by the fact of recovery. As regards the former, it is true that all the symptoms were present of an attack of cerebro-spinal fever of a short

and moderately severe type, but the pneumonia had been present for a day without any nervous symptoms, and the onset of the meningitis was accompanied by a further rise in temperature, showing decidedly that the pneumonia had the right of priority. Also, as far as I can learn, cerebro-spinal fever is very rare, if present at all in this city for many years.

Osler mentions that it is impossible in sporadic cases of cerebro-spinal fever, where the diagnosis is open to doubt and complicated by pneumonia, to say whether the pneumonia is a complication of the fever or whether the case be one of pneumonia with meningitis. He mentions, however, that most cases of meningitis in pneumonia are cortical.

Holt describes a secondary meningitis in connection with pneumonia, and also says that most cases are cortical and fatal. Most authors unite it stating the pneumococcus to be the most common exciting cause in meningitis.

Other points of interest in this case are:—

(1) The relative proportion between the pulse and the respiration which in health is one to four and in which in pneumonia is generally altered to one to two or three. It remained in this case much the same as in health, especially after the onset of the meningitis. The cause of this is not apparent, considering the large area of lung involved.

(2) The favourable effect of the use of opium and strophanthus in quieting the patient and strengthening the heart's action in a short time, may be noted.

(3) The long-continued low fever accompanying the absorption of the inflammatory products and also the remarkable slowness of this process. The almost complete absence of expectoration may in some measure explain this tardy convalescence as practically all the products of the inflammation had to be got rid of by absorption.

A possible theory that occurred to me was one depending on the effect the administration of the thyroid extract had on the psoriasis that was present some time before. The thyroid gland is admitted to have a great influence over the metabolism of the body. The effect the administration had on the psoriasis, may show that there was lacking a sufficiency of the products of this gland so much as to impair the recuperative powers of the patient. So strongly was I impressed with the theory, that I began giving her thyroid extract late in December. Whether this had any effect in hastening absorption I cannot state.

A CARDIAC CASE FOR DIAGNOSIS.*

BY

G. GORDON CAMPBELL, M.D.,

Lecturer in Clinical Medicine, McGill University; Assistant Physician, Montreal General Hospital.

The case which I bring before you to-night is of interest because of the difficulty of harmonizing the physical signs either with any of the usual forms of heart disease or with the more commonly met with congenital malformations. The notes of the case are briefly as follows:—

V. II., female aged 13 years, first came under notice as an out-patient at the Montreal General Hospital in April, 1899, when she was brought to my clinic complaining of weakness and difficulty of breathing at night.

Personal history, as given by her mother, was negative as regards rheumatism, chorea or any of the infectious diseases. She had never suffered from any illness of any sufficient moment to be remembered by her mother. The present condition for which she sought relief had come on gradually, and no definite date could be fixed for its onset.

On examination, she was found to be a rather undersized girl, intelligent, and suffering from no pain or discomfort. There were no evidences of rickets or of congenital malformations about the body. The mucous membranes were pale. She had not menstruated.

Thorax.—There was considerable bulging of the chest wall corresponding to the outlines of the heart. The cardiac impulse was heaving and visible over a large area of which the centre was about the nipple. A thrill could be felt in the second left interspace about one inch from the sternum; it was alternate with the impulse. Cardiac dulness extended from the second rib above and from one inch to the right of the sternum to the left reaching to the anterior axillary line. On auscultation, the first sound at the apex is short and weak preceded by a faint rumbling murmur, heard only over the apex and presystolic in rhythm. At the base the second sound was reduplicated, of normal intensity at the aortic cartilage, but extremely loud over the second left interspace at about an inch from the sternum. It was accompanied by a loud rough diastolic murmur, of maximum intensity at the second left interspace at the border of the sternum and propagated to the left and down the left border of the sternum. This murmur was apparently not associated with the aortic second sound as its intensity gradually diminished towards the aortic cartilage.

* Presented before the Montreal Medico-Chirurgical Society, Nov. 16, 1900.

The left lung was possibly slightly less resonant than the right. A few dry râles could be heard over the larger bronchi, and the breathing was noted to be somewhat harsher in the left than the right lung. The pulse was small, but normal in character and noted absolutely free from any water-hammer character. There was no capillary pulsation.

The patient was put upon an iron mixture and continued to attend the clinic at intervals of about two weeks until August 10, 1899. The anæmia diminished very much, and the symptoms for which she sought advice disappeared.

The notes taken at the time were necessarily brief as the back of the patient's prescription card was utilized for the purpose.

On October 11th, 1900, the patient was again brought to the clinic by her mother who stated that she had had a convulsion the previous night. On enquiry it was found that the patient had had seven or eight in all of these attacks which from the description given were apparently dyspnoeic attacks with more or less cyanosis but no convulsive movements.

Present Condition—Inspection.—The cardiac impulse is visible over an area extending from the second to the sixth rib, and from the left border of the sternum to one inch outside the nipple line. The upper part of this area seems to rise while the lower is retracted at each beat of the heart, giving a tilting motion to the præcordia. There is slight retraction of the second right interspace at each beat. The whole of the sternum is bulged forwards, the greatest prominence being at the junction of the fifth left cartilage with the sternum, giving a roughly conical appearance.

Palpation.—The heart's impulse can be felt over the same area in which it is seen but there is no definite point of maximum intensity (apex beat). Over the first, second, and third left interspaces there is a well marked diastolic thrill, alternate with the impulse.

Percussion.—The absolute dulness, woody in character, extends from the upper border of the third rib above, and from the left border of the sternum to half an inch outside the nipple line, measuring two and three-quarter inches transversely. The relative dulness extends from the first space at the left border of the sternum above, and transversely, at the level of the fourth interspace, from half an inch to the right of the sternum to the midaxillary line, seven inches. The relative dulness is roughly triangular with the apex at the second left cartilage.

Auscultation.—The first sound is weak, and accompanied by a soft systolic murmur, heard at the fourth interspace just inside the nipple line. The first sound at the aortic cartilage is weak and somewhat roughened; it is not heard at the pulmonary cartilage. The second

sound at the aortic cartilage is faint but at the pulmonary cartilage it is extremely accentuated and sharp. It is followed by a loud, rough, diastolic murmur audible at a short distance from the chest wall, heard all over the cardiac area, but most intense in the second and third spaces about an inch from the sternum. The murmur is propagated towards the left along the first, second, and third interspaces.

Lungs.—The right lung is clear in front, the liver dulness beginning at the seventh rib in the nipple line. The left lung is resonant to the base. Behind, the area of pulmonary resonance is normal. The breath sounds are somewhat exaggerated in the right lung. In the left lung behind there is cog-wheel respiration with harsh expiration. There are no adventitious sounds.

I will reserve my opinion of the nature of the case until the members present have had an opportunity of examining it.

[For discussion on this case see page 48.]

SUDDEN DEATH IN INFANCY AND CHILDHOOD.*

BY

ALBERT E. VIPOND, M.D.,

Physician to the Montreal Dispensary.

This subject is one of very great importance and one which receives very little attention in text-books on Diseases of Children. The literature on the subject is scanty, but I am pleased to say that Dr. L. Emmet Holt, in his work on Diseases of Infancy and Childhood, has devoted some space to the various causes of sudden death. I am sure that the gentlemen here to-night can call to mind many such cases occurring in their practice. It is imperative for the practitioner to know when and under what conditions sudden death may take place; he must recognise the earliest signs, and thus by proper means he may be in a position to combat it. It is important to know the cause of sudden death in a given case. In the adult, when sudden death takes place, as a rule we have little difficulty in deciding what caused it; probably we have the history of a failing heart, diseased arterial walls producing aneurysm or angina pectoris, or when death takes place from diabetic coma, you will find sugar in the urine, or where the patient died suddenly from uræmic poisoning, albumin and casts will likely be present. If we experience difficulty in deciding what caused death in the adult, the post-mortem examination generally clears it up. In the adult the machinery is at fault and usually lies in one of the vessels or in the heart. In the child it is different; it may be perfectly well one hour and dead the next from spasm of the glottis or from some other cause, and on making a post-mortem examination, we may find nothing to help us. A mother may find her baby dead by her side in the morning; an inquest is held and the verdict is "death due to overlying;" the poor mother is blamed by herself and by others. The result is that she is heart-broken. The question arises: is she to blame? I can safely say that in most instances she is not to blame, for death from overlying is extremely rare, although it is generally supposed to be an extremely common cause of death. As a rule, death in these cases is due to some other cause which has not been suspected, as an enlarged thymus gland, convulsions, etc., and I think that in every such case a post-mortem examination should be made.

Take another instance, a mother may be accused of smothering her child, but most likely it has died from some form of pulmonary congestion. Pulmonary congestion may occur in the illegitimate child shortly

* Read before the Montreal Medico-Chirurgical Society, Dec. 14, 1900.

after birth, from exposure, and death may take place in a few hours time. The poor girl is arrested and tried on a charge of murder. On examining the lungs in these cases we may find all the signs of asphyxia, the lungs may be full of froth and also show subpleural hæmorrhages, but in some cases of longer duration, we may find patches of pneumonia. However, the only sure test is to squeeze the lung tissue between the fingers and muco-pus will exude from the divided ends of the bronchi. So you can see how important it is to be well acquainted with the causes of sudden death in infants, from a medico-legal point of view.

In London, Dr. Charles West, in 1854, collected 672 instances in which sudden death took place suddenly. Of these, 236 were in children under one year of age, and only 36 in children from one to five. There may be two reasons why sudden death is more frequent in the infant than in the older child. The first and most important is the great irritability of the nervous system, while, at the same time, the inhibitory power of the cortical centres is slight, and we get convulsions, laryngismus stridulus, and other spasmodic conditions; but as the child develops, this plus irritability becomes less and less, and the minus inhibitory action of the higher centres becomes greater. The next cause is the frequency with which the infant is attacked with pneumonia and other forms of pulmonary congestion. As I said before, as the child grows older its nervous system becomes more stable and is not so liable to shoot off a motor discharge from a slight irritation, and the inhibitory centres are beginning to wake up to their part of the work; so that if a child reaches two years, its chances of dying suddenly are remote.

The causes of sudden death in the child are numerous, and for the most part are the same as in the adult; but sudden death from inhibition and from convulsions and laryngismus stridulus are most frequently found in the child. I found it difficult to decide how to classify the causes of sudden death; I think, perhaps, the best plan to adopt would be to take each system separately, with a last class of the acute specific fevers and the accidental and rare conditions, including death from poisons. I will not do much more than enumerate the causes of sudden death which are common to both the child and the adult, but I will lay special stress on death occurring in diphtheria and other acute exanthemata as well as in convulsions.

(1) *The Nervous System*.—The most common and most important cause is in connection with convulsions. They are responsible for the majority of sudden deaths under the one year of age. They may be due to one of many causes, peripheral irritation playing the most important part. Ninety per cent. of convulsions occurring in children are due to stomach or intestinal irritation. It is common for the acute exanthe-

mata or pneumonia to be ushered in by a convulsion, which may be followed by a scarlet fever or measly rash or you may find a patch of diphtheria on the tonsils. As we all know, the convulsion in the child takes the place of the chill in the adult. Rachitic children are peculiarly liable to have convulsions as well as laryngismus stridulus, facial irritability, tetany, and head-nodding. One convulsion predisposes to another. These children generally inherit a nervous instability. The smile on the sleeping infant's face, which delights the young mother, is often an indication of an overloaded stomach and may be followed by convulsions. Peripheral irritability increases from the fifth to the ninth month. From this age on the centres become more stable.

Sudden death from convulsions is due to asphyxia or heart failure. If after a severe convulsion the child does not rapidly regain consciousness, or where the attacks are frequent, we need not be surprised if we get a fatal ending. Of cases of death in children under ten years of age, 8.5 per cent. are due to convulsions. Death from convulsions is more common in exhausting diseases, such as cholera infantum, marasmus, etc. Convulsions are likely due to an exaltation of the lower nerve centres or, more frequently, to a suspension of the inhibitory power of the higher cerebral centres. In diarrhœa they may be due to anæmia of the brain. They may be caused by toxic elements circulating in the blood or in acute poisoning, as in uræmia. In the health reports of the city of Philadelphia for the ten years from 1876 to 1885, 7,508 deaths occurred in children from convulsions and laryngismus stridulus. In England, in 1886, deaths from convulsions were registered at 27,431, of which number 89.5 per cent. took place in infants under one year of age. We must remember that in many cases the death certificate only mentions the original cause and not the convulsion, so that an examination of death certificates gives us no idea of the number of deaths which are caused by convulsions.

I do not think that a few points on the treatment of convulsions will be out of place here. Empty the lower bowel and, as soon as the child can swallow, give calomel or castor oil. If it cannot swallow, give chloral hydrate per rectum or hypodermically. If the convulsions are repeated, let the child inhale a small amount of chloroform, but, as Dr. George Brown of Montreal pointed out some years ago, it will be necessary to warn the parents that if the child should die under the chloroform, the death will not be due to the drug but to the convulsion. If the convulsion is accompanied by a vasomotor dilatation of the brain vessels, put the child into a warm mustard bath immediately and douche the head with cold water. On the other hand, where you get convulsions in a child suffering from diarrhœa, who has shrunken fontanelles

with anæmia of the brain, wrap the child up in a warm blanket, inject warm saline solution up the colon to fill up his empty vessels, and give brandy and a whiff of amyl nitrite. Your object in this case is not to deplete but to stimulate. I think the treatment of convulsions as a rule is of too routine a character.

Many sudden deaths in children can be ascribed to laryngismus stridulus. It is a common affection and recoveries are numerous. However, an infant who has had one attack is on the brink of a precipice. You can never be sure but that the next attack will end fatally. It is commonly associated with rickets and its other nervous complications. The most common companion is tetany. It is a spasmodic affection of the larynx, causing a sudden arrest of breathing which, if sufficiently prolonged, will cause death from asphyxia. The little patient becomes cyanosed, the fingers are pressed into the palms, and a convulsion may take place. It is a rare condition before six months or after two years. An attack may be brought on by any exciting cause, such as a sudden noise, change of posture, etc., in fact, any sudden impression on the nervous system. You must avoid any reflex irritation, correct the faulty digestion, and treat the rickets. During the attack you can use chloroform or amyl nitrite. Between the attacks treat the rickets. Although death may take place suddenly, you have warning by previous attacks, and you should inform the parents that there is a possibility that death may take place.

There are many other causes connected with the nervous system which do sometimes produce sudden death, as compression or concussion of the brain, fracture of the skull, laceration of or hæmorrhage into the brain substance. There are also various inflammatory conditions of the brain and cord, as cerebro-spinal meningitis, cerebritis, etc., and bulbar paralysis from an ascending degenerative process, although rare in the child, does occur. Or we may have a tumour in the medulla producing bulbar symptoms, or death may take place suddenly from paralysis of the respiratory muscles, or from asphyxia due to food lodging in the air passages. Rupture of an abscess in the brain may produce sudden death. Another well recognised cause is dislocation of the odontoid process of the axis, due to sloughing of the anterior ligament from caries. It may also take place in the advanced stage of pseudo-hypertrophy. It may occur in ordinary epilepsy from asphyxia due to prolonged spasm or to regurgitated food lodging in the air passages. Shock from any cause may produce sudden death.

Inhibition or arrest of function is by no means a rare condition. We are all acquainted with sudden death from slight injury (Brown Sequard). Certain regions are more susceptible than others. The epigastric region

is; for even a slight blow may cause death in a child. The solar plexus blow of the prize fighter is well known to be very effectual. A blow on the hypogastrium or over the larynx may have the same effect. This susceptibility also exists over the region of the fifth nerve. The relation of the stomach and heart exists through the vagus nerve. No doubt the blow causes the vagus to overact and we then get inhibition. Brouardel reports a case where during play a child received a blow on the larynx and death took place immediately.

(2) *The Circulatory System.*—A morbid condition of the heart and vessels is responsible for many sudden deaths in children. Congenital heart disease and foetal endocarditis occur; and you may find several in the same family affected. It is usually found in association with several other congenital malformations, as talipes, imperforate anus, naevoid conditions, etc. There may be no symptoms whatever, but on examining the heart you find a loud murmur over the cardiac area, whose dulness is increased, chiefly over the right heart. On post-mortem examination the lesion is well defined. In many cases you have cyanosis and a bruit is present with, perhaps, clubbing of the finger ends. The cyanosis may only become evident when the child cries, the lips and finger tips becoming bluish. In some cases where we would expect to find extreme cyanosis, as in pulmonary stenosis, we may find none; but a loud murmur is present, with its maximum intensity at the pulmonary region. In many cases the foramen ovale does not close at birth, and may even be found patent in the adult and give rise to no signs or symptoms. You may find no evidence of a patent foramen ovale in the child when it is well, but if it happens to develop some form of pulmonary congestion, cyanosis may come on and a murmur become evident. In this congenital handicapped condition, as well as in any acquired organic lesion, when associated with some intercurrent disease which puts increased pressure on the heart walls, death may take place suddenly.

Foetal endocarditis is rare and is generally due to congenital syphilis, and the child is apt to die when least expected. On making a post-mortem examination, we may find well marked valvulitis with vegetations. Some cases of sudden death supposed to be due to diphtheria, scarlet fever, pneumonia, etc., are really caused by a malformed heart which has been unrecognised. When a child suffers from a congenital malformed condition of the heart he should have special care, he should not enter into exercise which puts too much strain on the heart walls, and should avoid cold, etc.

Any form of cardiac degeneration or inflammation of the heart walls may cause sudden death. Simple fibrous pericarditis, according to Osler,

never kills; but where we get pericarditis with signs of effusion, as dyspnoea with rapid pulse or pulsus paradoxus, and signs of pressure or distension of veins in the neck, irritable cough and dysphagia, the patient is in a dangerous condition and death may take place at any time. In this condition put as little work on the embarrassed heart as possible. The child must have absolute rest; local bleeding by means of leeches is valuable. Counter irritation in the form of blisters to the præcordia, as recommended by Osler, should be tried. If the symptoms are very urgent you may have to resort to surgical means.

Death takes place suddenly from rupture of the heart wall or a pneumo-pericardium due to injuries, but this latter is a rare condition. Acute interstitial myocarditis occurring in connection with the specific fevers, may also cause it. Few children die of heart disease in early childhood, but at the age of puberty they begin to fail. We all know that a severe test is put on the heart muscle at this period, due to rapid growth, etc., and the heart wall dilates. It is important to keep up the nutrition of the child who suffers from cardiac trouble, and especially at puberty. Cases of myocarditis tend to end fatally.

(3) *The Respiratory System.*—In this class of cases sudden death is frequent. It may occur from pneumonia. We all know how frequently it takes place in the infant from bronchopneumonia, and sometimes in the lobar form, but not nearly so frequently as in the adult. Atelectasis, both acquired and in the new-born, may cause sudden death. In the new-born infant with atelectasis, he lies quiet, gets weaker and weaker, and suddenly the vital spark is extinguished. In the acquired form in connection with pneumonia, you must change the child's position from time to time to prevent collapse. Pressure of a large pleural effusion may cause sudden death. The withdrawal of a large amount of fluid suddenly from the chest cavity may produce a fatal syncope.

Asphyxia, which may occur from various conditions, is a most common cause of death. The cause may be extramural, mural or intramural, classified in relation to the trachea and larynx. The most important *extramural* cause and probably the most frequent is an enlarged thymus gland. It is associated with lymphatism, and in this connection is more frequently diagnosed than when it occurs alone. I think that sudden death from an enlarged thymus gland is more frequent than is supposed. At birth the gland weighs about half an ounce. It increases up to two years of age to one and a-half or two ounces. Holt states that the asphyxia is due to pressure on the pneumogastric; Jacobi and others believe it to be due to pressure on the trachea in some cases. I do not think that in the cases that I have seen there was pressure on the trachea. The infant may be in perfect health apparently, and while

eating or drinking throw its head back suddenly and die without cry or movement. In Holt's cases the little patient had asphyxia, followed by convulsions and death in a short time. In other cases the child may previous to death have difficulty in breathing accompanied by a brassy cough and distended veins in the neck and head, and presenting in the lungs signs of a capillary bronchitis but with a normal temperature. You may in a case of this description be able to make a fairly definite diagnosis provided you can exclude other conditions. Dulness may be found over the upper part of the sternum, reaching as low down as the fourth rib. On making your post-mortem examination you find no signs of capillary bronchitis, but the thymus gland may be much enlarged, and Peyer's patches are found to be swollen and raised. These children are generally stout and well nourished, and usually under eight months of age. A case like this has been operated on by König, who removed part of a thymus gland from an infant aged nine weeks who suffered from severe dyspnoea, and recovery was complete.

An enlarged thyroid gland may cause asphyxia and sudden death. For a case of this description Ashby and Wright have divided the isthmus with success. Other causes of sudden death are, pressure of enlarged bronchial glands on the trachea and rupture of a tuberculous abscess into the trachea. Pressure of a new growth is a rarity. Overlying is also rare, and generally happens when the mother is in a drunken stupor.

Of the *intramural* causes, the chief one is swallowing a foreign body or rupture of a retropharyngeal abscess from caries. A polypus of the trachea may also produce a fatal asphyxia. Asphyxia from aspiration of regurgitated food into the air passages does occur, and may be caused by a large firm clot of milk, and generally takes place when the patient is lying on the back.

The *mural* causes are many, the chief one being œdema of the glottis from diphtheria; or even a simple form of laryngitis may cause sudden death. Œdema may be due to swallowing acid or any other caustic. It is fairly common for the child to put its mouth to the spout of the tea kettle, and we get a fatal œdema.

(4) *The Digestive System*.—Sudden death from gastro-enteritis is common, especially taking place in the summer months in infants from one to eighteen months of age. It most frequently occurs in babies which are fed artificially. Sudden death may take place from exhaustion or a toxic condition; as a rule the vomiting is persistent and the stools are small, frequent and foul. The child may die from symptoms resembling uræmic poisoning, and the body is not much wasted. In the other condition, where the child has large, loose, frequent stools and persistent vomiting, the little one appears to actually melt away. The condition

is easily recognised; the collapsed state with sunken eyes, drawn features, and lax limbs, are typical. The symptoms come on rapidly in some cases, in fact they resemble those of an irritant poison very closely; at any rate you are quite safe in using lavage at once. Do not temporize by giving bismuth, etc.; the child's life depends on your activity. The little one's vessels are nearly empty, and a fatal convulsion may take place at any minute, but at the same time you must push your brandy and hot water; but the most important part of your treatment is to irrigate the colon with hot salt water. Wash it out first, and then allow one or two pints to remain in the bowel. It is rapidly absorbed. Your object being to fill up the empty bowel and stimulate the heart, keep the little one warm by wrapping it in a warm blanket. I am sure that my brother and myself have saved many lives by this form of treatment, which we adopt very extensively in our practice. Death may take place suddenly from the onset of the trouble. We are all acquainted with the enormous mortality in infants from diarrhœa, especially in America, and a large number of the cases have a sudden ending.

Sudden death may occur from ulceration of the duodenum or stomach, and yet give rise to no previous symptoms. It may also take place from a hæmorrhage from the stomach, and this is especially seen in the newborn child. I had such a case in my practice some time ago.

Congenital insufficiency of the diaphragm with hernia of a part or nearly all of the abdominal contents into the thoracic cavity, may cause sudden death. It may also take place from strangulated hernia or from perforation of the intestine either typhoid or tuberculous.

(5) *Infectious Diseases*.—Sudden death is common in diphtheria and malignant scarlet fever. In the former, it may take place from paralysis or involvement of the heart. The paralysis generally comes on during convalescence, during the third and fifth weeks. It is just as common for it to follow a slight attack as a severe one. The patient may be convalescent, when he develops paralysis of one of the external ocular muscles, or the first thing noticed may be a nasal tone of voice, and, on drinking, the liquids may come through his nostrils, pointing to paralysis of the soft palate. The first sign of paralysis may be an increase of the patellar reflex, which should be looked for before the child is allowed to get up (Great Ormond Street Hospital). If this takes place, make your patient lie perfectly quiet and give strychnine. Examine the chest and abdomen carefully from time to time, to notice the first sign of intercostal or diaphragmatic paralysis. The patient may experience no discomfort from paralysis of the diaphragm alone, or the intercostals alone. Unless you examine carefully, you may be surprised to see the child go off suddenly. The signs are typical; the non-move-

ment of the chest wall when the intercostals are paralysed, and the retraction of the abdominal wall on inspiration with pushing out of the abdomen on expiration, where the diaphragm is paralysed. The child has a weak plaintive cry, nasal in character, the respirations are slow and embarrassed, and he lies listlessly unable to move. The chest is full of mucus, which he is unable to cough up. Death usually follows this condition in from one to two hours time. As a rule we get a sub-normal temperature and a cold sweat covers the body, but we may get a high temperature just before death. It is a picture which is not easily forgotten.

Another cause of death in diphtheria is cardiac failure. It is due to degeneration of the heart muscle in most cases without any involvement of the valves or pericardium. It may take place without symptoms of nerve paralysis. In most severe cases the pulse becomes feeble and rapid, at times the heart is irregular and intermittent with a gallop rhythm, or it may be abnormally slow. It generally occurs during convalescence. The patient may be sitting up in bed playing with his toys, when he suddenly utters a cry and death takes place immediately. In other cases there is pallor, vomiting, and dyspnoea on the least exertion. On examining the heart you find the mitral first sound is short and the pulmonary second sound has become loud. Sudden cardiac syncope is apt to take place. Thus a rapid irregular heart during convalescence, with dyspnoea, frequent vomiting, and a slow or rapid pulse, are signs of great gravity. In every case of diphtheria it is important to keep the child prone. The throat should be cleaned while he is on his side; he should not be allowed to get up too soon, even in the milder forms. An examination of the heart should be made at each visit; watch carefully the position of the apex beat, the character of the mitral first sound and of the pulmonary second.

Death may take place suddenly in malignant scarlet fever. My brother, Dr. Charles W. Vipond, was called to see such a case in which death took place within twenty-four hours from the time of onset. Ashby and Wright report another such case. Death is caused by heart failure due to the intensity of the poison. Death may also take place three or four days after the first symptoms appear. Some months ago I was called to see a child who suffered from scarlet fever. At my second visit she was apparently doing fairly well, but next day she died suddenly, from heart failure probably. The sudden deaths which take place in scarlet fever in the late stage are usually due to uræmia. Death is due to the plus pressure put on the already malnourished cardiac muscle from the enlarged kidneys.

Sudden death may take place in typhoid fever from parenchymatous

degeneration of the heart muscle, intestinal hæmorrhage, or perforation of the intestine. It may take place in whooping-cough from spasm of the glottis or from swallowing the tongue in young infants.

(6) *Accidental and Rare Conditions* including death from *poisons*. The accidental cases are many. Hæmorrhage from different parts of the body especially from removal of tonsils, also division of a large vessel, sunstroke, gunshot wounds, excessive cold, etc.

Fat embolism may cause sudden death. It occurs in connection with fracture and it is believed by Brouardel that the emboli may be formed by colonies of putrefactive organisms. The various poisons may cause sudden death, especially hydrocyanic acid and inhalation of chloroform, but this is extremely rare in the child. A rare condition is hæmorrhage in the suprarenal capsule occurring in the apparently healthy child. Asthenia is a cause of sudden death; life goes out for want of nervous power to keep the vital functions in activity. Death may be due to prolonged labour, prolapse of funis during delivery, from forceps injury, or from hæmorrhage of the cord shortly after birth.

Retro-cæso-phageal abscess is a rare cause of sudden death. It is due to caries of the spine. The child dies from asphyxia due to pressure on the vagus nerve. We can get no symptoms or, on the other hand, symptoms of irritation of the vagus nerve or of the recurrent laryngeal, may be present, as stridulous breathing, spasmodic cough, and inspiratory dyspnoea. He suddenly gets asphyxia and death follows rapidly. It is most difficult to diagnose this condition, as the symptoms are usually mistaken for those of a foreign body, enlarged bronchial glands, etc. Examine the spine carefully in these cases.

In closing, we might summarise and say that the five main causes of sudden death in infants and children are: convulsions, including laryngismus stridulus, asphyxia, pulmonary congestion, syncope, and intestinal troubles.

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RETROSPECT OF CURRENT LITERATURE.

Medicine.

UNDER THE CHARGE OF JAMES STEWART.

Venous Thrombosis in Cardiac Diseases.

WILLIAM H. WELCH. "Venous Thrombosis in Cardiac Disease.
Transactions of the Association of Amer. Physicians, Vol. XV,
1900.

In the preamble to this very interesting article, Prof. Welch remarks on the frequency with which venous thrombosis is associated with infectious and chronic wasting diseases. On the other hand, references in medical literature to venous thrombosis in diseases of the heart are singularly rare, and no particular attention has been called to this complication, either in text-books on these diseases or in special monographs. Most of the cases reported are found in French medical literature. There are certain peculiarities of the venous thrombosis of heart disease which render the subject worthy of investigation. Here follow the histories of five illustrative cases, four from Prof. Osler's clinic, and one from the service of Dr. Herrick of Chicago. The lesions in case i, were aortic and mitral insufficiency with adherent pericardium, thrombosis of left innominate, jugular, subclavian, and axillary veins; in case ii, mitral stenosis, thrombosis of left jugular, axillary, subclavian, and innominate veins, and embolism of left popliteal artery; in case iii, mitral and aortic insufficiency, thrombosis of left femoral vein; in case iv, arterio-sclerosis, mitral and tricuspid insufficiency, fibrous myocarditis and fatty heart, thrombosis of left internal jugular, subclavian, axillary and brachial veins.

In reviewing the literature Welch has been able to collect twenty-three cases. He does not, however, consider this to be a complete category. The most remarkable feature of venous thrombosis in heart disease is the location of the thrombi; twenty-four were thromboses of veins conveying blood from the upper extremities or the neck, or both, mostly of the left side, and only four were thromboses of the veins supplying the lower extremities. Though, owing to the greater oedema of the lower

extremities, it is possible that lower extremity thrombosis may have been overlooked, it is not probable that it is at all frequent, even allowing for an increased ratio of lower extremity thrombosis as a result of a more thorough search in cases of heart disease. The relatively large percentage of upper extremity thromboses in cardiac diseases is most remarkable, when compared with the ratio of upper and lower extremity thromboses in other diseases, Bouchard's estimate of the latter being one to fifty.

From Professor Welch's analysis of the twenty-four cases of upper extremity thrombosis, which constitute a separate and distinct group characterized by special features, the following important features may be selected:—Females 171, males 51, sex not stated 2. The valve most commonly affected was the mitral, and the most frequent lesion, mitral stenosis. Acute articular rheumatism was an antecedent in a little more than half of the cases. The thrombosis as a rule occurred during a period of extreme failure of compensation. The thrombi were in the veins of the left side in 22 out of 24 cases, in both sides in 7 cases, in the left side alone in 15 cases, in the right side alone in 2 cases. The commonest starting point for the thrombus was the lowest part of the left internal jugular (bulb), or the left internal jugular and left innominate vein, or subclavian vein near the entrance of the jugulars. The thrombi were mixed, the prevailing colour being dark red, and they were mostly solid, occasionally centrally softened. Bacteria were looked for in three cases only and found in only one (Welch, case i), the organisms here being streptococcus pyogenes. In two cases only was phlebo-sclerosis noted as antedating the thrombosis, evidenced by pain, tenderness, œdema, the presence of hard sensitive venous cords, and distension of superficial veins.

The explanation of the causation of these upper extremity thromboses cannot be found satisfactorily in assuming that they are due to cardiac cachexia with circulatory disturbances, or to some alteration in the chemical composition of the blood, as is advanced by some of the French writers. Hanot and Parmentier explain the preference for the left side by the greater length and obliquity of the left innominate vein, which make the return of blood more difficult than from the right side, especially in the venous congestion of uncompensated cardiac disease. Hirschloff suggests an additional factor in the greater frequency of imperfect development and insufficiency of the valve near the junction of the internal jugular and subclavian veins on the left than on the right side. Welch adds to these causes pressure on the left subclavian vein from the dilated auricle and dilated large pulmonary vessels. The valves in the lower ends of the jugulars explain the usual starting point of the

thrombi (Peter). Eddyling or whirling motion of the blood may readily be set up in this situation in heart disease, and this eddyling is of great importance in determining the localisation of thrombi in general (Von Recklinghausen). Tricuspid insufficiency with systolic reflux of blood into the veins, would still further favor the formation of thrombi in this situation. These factors, however, explain only why certain veins are the seat of election for the thrombi, and the conditions described most frequently exist in heart disease, yet venous thrombosis is not a common occurrence in such cases. It seems probable that the thrombi are ultimately due to bacterial infection. In one case (Welch), bacteria were demonstrated in the thrombus. Cultures are necessary to exclude the presence of bacteria. Out of forty-four peripheral venous thrombi of the marantic type (not in cardiac cases), thirty-four contained bacteria (Harris and Loncope, in Prof. Welch's laboratory). Moreover terminal infections are not uncommon in heart disease, and the histories and autopsies of many of the twenty-four cases under consideration, revealed some infectious process, usually in the lungs, such as bronchitis, pneumonia, and pleurisy. (In the discussion that followed the reading of this paper several similar cases were described).

LOUIS GALLAVARDIN. "Des Thromboses veineuses au cours des cardiopathies." *Gazette des hôpitaux*, November 8, 1900.

This is such a remarkable *replica* of Prof. Welch's article that it is unnecessary to more than point out that conclusions are identical with those of the American writer, whose work Mons. Gallarvardin has evidently not read or heard of. He has, however, failed to attribute to the dilated left auricle and pulmonary vessels the important part in the production of the thrombus which Welch suggests. In other respects the parallelism between the two articles is most striking.

H. A. Laflaur.

Gynaecology.

UNDER THE CHARGE OF WILLIAM GARDNER.

Recto-Vaginal Carcinoma.

SNOW, HERBERT, M.D. "Two Cases of Recto-Vaginal Excision for High Rectal Cancer." *Brit. Gyn. Jour.*, August, 1900.

The first patient was 57 years of age, and had given birth to three full term children. She was well nourished but had felt rectal pains for about one year although "the bowel was infiltrated as far as the finger could reach," the upper margin could be felt and the whole mass was freely movable. The infiltration was hard and brawny. The whole growth with the rectovaginal septum was removed, the pouch of Douglas was opened, but subsequently closed again by catgut, and the divided end of the rectum was sutured to the skin. After cicatrization of the part, a vulcanite plug was worn by the patient, the cervix uteri being at the apex of the triangular fossa.

The second patient was also 57 years of age, but had never been pregnant. Here also the upper limit of the disease could be reached per vaginam and the bowel was movable. At operation the labia minora and whole lateral and posterior walls of the vagina to within one-quarter of an inch of the uterus, together with the diseased part of the rectum, were removed, as well as a strip of infiltrated tissue which extended out into the left broad ligament. The rectal mucous membrane was sewed to the skin posteriorly, the anterior cavity was packed with gauze, and a catheter was inserted.

The writer holds that so long as the bowel is mobile one should try to extirpate the cancerous disease of the rectum and vagina even if the upper parts of the rectum are involved. He has never seen a case of operable rectal cancer when the disease could not be removed by the above method and does not advocate the operations of Kraske, Madebung, etc.

Angiotribe versus Ligature.

MONTGOMERY, E.E., M.D. "The Consideration of the Methods of Hæmorrhage in Abdominal Surgery." *Amer. Gyn. and Obstet. Jour.*, October, 1900.

In this article a short review of the evolution of the means of controlling hæmorrhage in abdominal surgery is given.

Twenty years ago, Wells, Peaslee, and Atlee were using the clamp, Tait, the ligature, and Keith the hot iron. In recent years the ligature

has been the most popular means of arresting hæmorrhage, and almost every variety of material has been used. The greatest difficulty was experienced in operations upon the uterus but was overcome to some extent by the adoption of the shoemaker stitch. Here, however, the stump when dropped back into the peritoneal cavity was apt to slough. While advocating the use of the ligature for ovarian pedicles, Tait and his followers used the clamp for uterine operations, bringing the stump out of the lower end of the wound, where it was held by pins, which pierced the tissue at right angles to each other, and rested on the patient's abdomen. Later, Goffe, and Mary A. Dixon-Jones tied the uterine artery on each side of the pedicle, which they dropped back into the abdomen after covering it with peritoneum. Here the ligatures were placed in non-elastic tissue, marking a distinct advance, but it was found that these ligatures now and again caused abscess formation, and some means which would enable one to do away with them was sought. It had long been recognised that crushing was sufficient to prevent bleeding from small vessels and, acting on this known fact, Doyen and Tuffier perfected instruments of sufficient power to crush the larger vessels. The instrument was allowed to remain on the tissues for from half to one minute, after which the structures on the distal side were divided. It has been found, however, that this method is rather uncertain, and now operators who use the angiotribe pass a ligature around the tissues which have been crushed, the trough thus formed preventing the ligature from slipping.

Diagnosis of Ectopic Pregnancy.

BALDWIN, J.F., M.D. "The Diagnosis of Ectopic Pregnancy before Rupture, based on eleven cases." *The Virginia Med. Semi-Monthly*, September, 21, 1900.

Our real practical knowledge of ectopic gestation only dates back about twenty-five years, patients who died from this affection previous to that were said to have suffered from pelvic hæmatocele. Our knowledge upon this subject has so increased of late years that now almost every medical man of any experience should always be able to diagnose a case of ruptured ectopic gestation, and even to suspect the presence of an extra-uterine gestation in many instances before rupture.

While there are no pathognomonic signs and symptoms of ectopic gestation, one should always be on one's guard where there is a complaint of menstrual irregularity, especially where one or two periods have been missed and then followed by a constant dribbling of blood from the uterus. Pelvic examination will here reveal the presence of an elongated tumor on one side of the uterus, as well as a soft cervix and probably a slightly enlarged uterus, which will frequently be pushed to

one side. Where a patient has the above symptoms, a pelvic examination should always be made.

"The physician who without making any examination tells the middle-aged women who came to him complaining of irregular hæmorrhages that they are merely having the change of life, will not likely make an early diagnosis of cancer of the uterus; and he will probably tell patients who come to him with symptoms of an ectopic pregnancy that they are merely threatened with a miscarriage." Other conditions may give rise to the same signs and symptoms, such as tubal and ovarian disease, but they all call for operation.

The writer reports five cases in which he diagnosed and operated for ectopic gestation, one patient having the other side affected three months after removal of the first foetus and sac.

Puerperal Septicæmia.

MACHARG, W. E., M.D. "An Analytical Account of Fifty-Seven Cases of Puerperal Infection. *Brit. Med. Jour.*, Feb. 17, 1900.

In this article Macharg gives very full details of fifty-seven cases of puerperal infection which had been under his care. Of this number, 31 terminated fatally, while 25 recovered. In 8 cases, 6 of which were primiparæ, instruments had been used, and three were complicated by hæmorrhage. Well marked traumatism was present in 17 cases, in 9 of which they were severe, the rectum being involved in three. In 67 per cent. the disease first manifested itself during the first four days post partum, in 5 cases after the seventh day, and in one case, which was fatal, not until the fifteenth day. In one case the disease lasted 40 days, and another for 73 days before ending fatally, but both of these patients had chronic nephritis, which may have been answerable for the fatal result.

The pathological conditions found in the 21 patients upon whom post mortem examinations were made were, diphtheritic endometritis, salpingitis, oöphoritis, peritonitis, septic thrombosis of the uterine sinuses and large veins, and parametritis. In 8 cases, one or both tubes contained pus (this evidently being present before pregnancy in one case) and pelvic peritonitis was present. This latter, in two cases, was caused by abscesses in the uterine wall, due to septic thrombi in sinuses. In 13 cases in which there was thrombosis of the uterine sinuses or veins, metastatic deposits occurred in the kidneys, lungs, liver and spleen in the order named. Pelvic cellulitis only accompanied traumatism of the genitals four times.

In the cases which recovered the most frequent complications were phlegmasia (3), gluteal abscess (2), and septic arthritis of one or both

knees (2). It is noteworthy that in the cases of gluteal abscess no connection between it and the interior of the pelvis could be made out. Where bacterial examination was made the chief infective organisms found were streptococcus pyogenes aureus and the bacillus coli.

The writer gives more detail in the diagnosis of the complications than of the disease itself.

The treatment adopted was the administration of two antiseptic intra-uterine douches daily, and draining the uterine cavity by loosely packed strips of iodoform gauze. Complications were treated as they arose. In some cases twenty grains of quinine were given every twenty-four hours, but the results obtained were not encouraging. In the earlier cases the uterine cavity was curetted, but this practice was given up except where there were retained products of conception as it was frequently followed by rigors and pyrexia.

Antistreptococcic serum in doses of from ten to thirty c.cm. repeated in twelve hours, was used on several occasions, but produced practically no results upon the course of the disease.

The author concluded from a study of these cases that any real advance in the treatment of puerperal septicæmia must lie in the way of surgical interference.

F. A. L. Lockhart.

Obstetrics.

UNDER THE CHARGE OF WILLIAM GARDNER.

Childbed Mortality.

R. MILNE MURRAY. "Childbed Mortality. *British Medical Journal*
Nov. 24, 1900.

Dr. R. Milne Murray, in his presidential address, at the opening of the sixty-second session of the Edinburgh Obstetrical Society, discusses the question of childbed mortality. The figures he quotes, showing the condition of affairs in the British Isles, are certainly startling. In his address he referred to the three epoch-making contributions, for which the nineteenth century would ever be famous, as being Mæjelle's work on the mechanism of labor, Simpson's discovery of anæsthesia, and Lister's work on antiseptis. He then drew attention to the fact that, in spite of all that is claimed for modern midwifery, 5000 women perish in childbed annually in Great Britain. Entering the new century, it is the first duty of obstetricians to discover and remove the cause of this lamentable condition of affairs.

That deaths from puerperal fever were increasing during the last forty or fifty years was undoubtedly as true as it was appalling. The facts in this connection he tabulates as follows:—

Mortality from Puerperal Fever in England and Wales:

	Mean deaths per thousand.
1847 to 1856. Early anæsthesia, no antiseptics.	1.89
1875 to 1884. Anæsthesia general, early antiseptics	2.28
1886 to 1889. Anæsthesia general, antiseptics general . .	2.46

In Scotland, far more labours were attended by medical men in proportion to midwives than was the case in the middle of the century, yet the following table is quoted to show how the matter stands in what portion of the island.

Childbed Mortality in Scotland.

	Accidents of childbed.	Puerperal fever.	Total.
1897	331	205	536
1898	351	227	578

He points out that had the increase for 1898 been proportional to the

increase of population, it would have been 4 instead of 12 as the figures quoted show.

He then refers to the fact that in maternity hospitals mortality has been reduced to the "irreducible minimum" through the use of anæsthetics and antiseptics principally. He considers that the midwife is not to be blamed for this sad condition, but that the source is probably complex. Dr. Milne Murray considered that an explanation of the material mortality from 1827 onwards would be found in the misuse of anæsthesia, and secondly, in the ridiculous parody which, in the hands of many practitioners, stood for the use of antiseptics.

Before the days of anæsthesia, forceps and turning were only employed when the maternal efforts failed, as such interference only increased the conscious suffering of the patient. When anæsthesia became possible, interference became on that account more frequent, and operations were undertaken when really unnecessary, thus increasing the dangers and complications of labour. With the introduction of antiseptics, the dangers of early interference were apparently mitigated, but when one heard of men who admitted that forceps cases represented from 30 to 70 per cent. of their practice, one wondered what the antiseptic precautions were which they claimed as their justification.

Normal labour being a natural process was best left to itself. The moment we interfered it became a complex and dangerous process, and it was chiefly because this was being constantly ignored, that the death rate of childbed was what it was to-day.

Until the obstetrician brought with him to the labour room all that was possible of the principles of antiseptic surgery, which had been at the bottom of the triumphs of modern gynæcology, we should have to wait for the lightening of the dark cloud which hung over modern midwifery.

The Indications for Operative Procedure in Contracted Pelvis.

J. WHITBRIDGE WILLIAMS. "The Indications for the Employment of Cæsarean Section, Symphysiotomy, and Craniotomy in Contracted Pelvis." *Richmond Journal of Practice*, September, 1900.

Recent statistics show that the mortality of Cæsarean section, when performed upon uninfected cases by competent operators, is less than five per cent. When performed on infected cases, the results are disastrous.

Pinard, the most enthusiastic advocate of symphysiotomy in France, has recently reported 100 consecutive cases of symphysiotomy with twelve maternal deaths. Removing from the number the cases profoundly infected before operation, the corrected mortality would be

about five per cent. Bar collected statistics from 149 cases of symphysiotomy in the hands of four skilfull operators and found a maternal mortality of 6.7 per cent.

Convalescence seems to be more rapid after Cæsarean section than after symphysiotomy, patients being able to walk on the average three weeks after undergoing the former operation, while after the latter, on the average, thirteen weeks elapsed before they could walk with any degree of comfort. The ability to walk after symphysiotomy is directly proportionate to the degree of pelvic contraction, those having least pelvic deformity being able to walk soonest. After Cæsarean section women could return to hard work in four or five weeks, but not until four or five months after symphysiotomy.

Pinard reports the foetal mortality after symphysiotomy at 13 per cent., and Bar at 9.39 per cent. The infant mortality after the Cæsarean operation is practically nil, a point greatly in favor of this operation. In view of the good results following Cæsarean section, he thinks the former indication of a conjugate vera not over $5\frac{1}{2}$ c.m. should be extended to $6\frac{1}{2}$ c.m., provided the child is alive. When the conjugate vera is 7 c.m., it is advisable to allow the patient to go into labor and, if the head rapidly molds, spontaneous delivery may occur, but when the head shows no signs of descending, Cæsarean section should be performed without attempting to deliver.

Williams is of the opinion that where a woman is infected or is so situated that no one is at hand competent to perform Cæsarean section, craniotomy upon the living child is justifiable.

With regard to the induction of premature labour in women with contracted pelvis, he considers that, in order to be efficacious, it must be performed six to eight weeks before the date of the expected confinement. Pinard and Charles report a foetal mortality of 33 and 36 per cent. respectively.

He closes his paper by dwelling on the necessity of skill, good surroundings, and a non-infected patient, in contemplating a Cæsarean section.

The Role of the Liver in Eclampsia.

W. A. NEWMAN DORLAND. "The Role of the liver in the Production of Eclampsia." *Amer. Jour. of Obstetrics*, September, 1900.

Dorland reviews in this paper the theory of auto-intoxication that is now steadily gaining ground as the probable etiology of puerperal eclampsia. The tendency to-day is to ascribe the convulsive seizures and the albuminuria to one and the same cause, the presence in the blood of a certain toxin or it may be, certain toxins of unknown consti-

tution and undertermined origin. The constancy of hepatic lesions, necrotic and hæmorrhagic, that has been noted in autopsies upon eclamptic women, has inclined the consensus of opinion towards the view that the liver is the probable laboratory whence the poison or poisons are engendered. The organism is constantly engaged in a fight against a toxicosis. It has two sets of organs for its defense, namely, the metabolic organs, those whose function is to arrest and transform the toxic principles (intestines, spleen, lymphatic glands, suprarenal capsules, thyroid gland and liver), and the eliminating organs (the intestines, skin, lungs, and kidneys.)

The liver is called upon to play a triple rôle, to collect certain toxic principles in order to turn them gradually into the blood, or to excrete them with the bile; to transform other foreign poisons in a similar manner; and through the antiseptic properties of the bile, to modify the intensity of intestinal fermentation.

He draws attention to the fact that pregnancy predisposes to an autointoxication, as it is characterised by a marked increase in the waste products of the body, and an increase in the production of leucocytes. In verification of this he points to the increased toxicity of the urine of healthy women during pregnancy. The metabolites of both mother and foetus must be discharged through this channel, and, owing to the hydræmia incident to pregnancy, the work of the lungs and the heart is increased. During pregnancy there is also an increased tendency to constipation with dyspepsia and intestinal fermentation. As long as the kidneys can do so, they dispose of the morbid products from the bowel also, and thus still further add to the toxicity of the urine. From this excess of duty, these organs are apt to succumb and cease to eliminate the toxic principles. He agrees with Pinard, that the kidney has only a secondary relation to eclampsia, and the albuminuria is a sign of hepatic insufficiency. He considers that a sedentary life, a warm climate, tight lacing and arthritism are some of the predisposing causes of hepatic inadequacy.

He considers that the theory of hepatic origin of puerperal eclampsia will afford explanation for those fulgurant cases not accompanied by albuminuria, and will also open up a new field in the study of the grave affections of pregnancy hitherto but little understood, especially acute yellow atrophy of the liver and puerperal mania. Acetone is likely to find its way into the blood as the result of rapid katabolism, and it is probable that this substance is at least one of the exciting morbid agents. He states that "it may be concluded, therefore, that when the foetus and woman send an excess of waste products to the mother's liver, there occurs an acute inflammation and degeneration of the hepatic cells

with an accompanying retention of materials that quickly undergo retrograde processes and break up into toxins, among them being acetone and the other eclamptic poisons. The relation of acetone to metabolism is so important that the urine of pregnant women should be systematically examined for it."

He points out that the index to the liability of women to eclampsia is the daily quantity of the urine excreted, and the relative proportion of solids contained in this total amount. If the percentage of urea in the urine is high, there is probably not a great accumulation of poisons in the blood.

A Cause of Error in the Diagnosis of Ectopic Gestation.

PAUL BAR. "Sur une forme irrégulière de l'utérus peuvent devenir une cause d'erreur dans le diagnostic de la grossesse intra-utérine à son début." *Bulletin de la Soc. d'Obstetr. de Paris, No. 7, 1900.*

Bar directs attention in this communication to the fact that not uncommonly at the beginning of pregnancy the uterus undergoes an asymmetrical enlargement. One cornua develops excessively and becomes softer than the main body of the uterus. In such cases, by bimanual examination, the body of the uterus is to be found somewhat enlarged and fairly hard. To one side, the border of the uterus can be distinctly outlined, while on the other side, the border is less distinct, the uterus appearing to be flanked by a tumour having a somewhat softer consistency than that of the body. Between the soft tumour flanking the uterus and the body of the organ, a more or less distinct groove can usually be distinguished. In these cases the soft zone corresponding to the inferior segment is absent, and the body of the uterus is of the same consistence from fundus to cervix. In these cases, when examined at a later date, the uterus is usually found to have assumed its regular form, the body having its regular contour and being separated from the cervix by the usual soft zone.

Bar quotes three illustrative cases and gives outline drawings of the conditions present; all three went to full term. Vineberg, in 1895, drew attention to the difficulty of differential diagnosis between irregular development of the gravid uterus and ectopic gestation.

With regard to the cause of this condition, Bar does not agree with Vineberg in attributing it to any early metritis interfering with the development of the uterus. He attributes the condition to the attachment of the ovum in one of the uterine cornua, not far from the ostium tubæ. He considers that this point of attachment for the ovum cannot be rare, judging from the frequency of irregular development of the uterus at the beginning of pregnancy. In his hospital service, scarcely a month passes without a case of this kind being observed.

The condition is very transient. He has noted the persistence to the fourth month of pregnancy in only one instance. It is usually to be observed in the course of the second month. When found, the condition is not of a serious import, its principal interest being the errors of diagnosis to which it may give rise. With regard to these, he mentions the possibility of mistaking the hard body of the uterus for a fibroma. This condition may possibly explain those cases where, after a diagnosis of a para-uterine tumour, the abdomen has been opened only to discover the presence of an intra-uterine pregnancy.

This condition can readily be confounded with an ectopic gestation, especially in the absence of symptoms before rupture. The points of importance in the differential diagnosis of these conditions he states as follows:—"The confusion with tubal pregnancy may possibly be eliminated by noticing the position of the round ligament, which in tubal pregnancy is to the inner side of the tumour; in making out that the groove of separation between the uterus and the tubal tumour does not exist, at least as marked, between the mass formed by the pregnant horn and the uterine body; in locating the situation of the tubal tumour, which is generally behind the uterus, whereas the pregnant horn is very elevated and situated on the side of the empty part of the uterine body."

Reviews and Notices of Books.

A BOOK OF DETACHABLE DIET LISTS AND SICK-ROOM DIETARY. By JEROME B. THOMAS, JR., A.B., M.D. Published by W. B. Saunders, Philadelphia.

This little work contains diet lists for all the more important diseases. We have, on many occasions, made use of them. They are conveniently printed, and are to be recommended to the practitioner, as both an assistance to the memory, and a saving in time.

CONTRIBUTIONS FROM THE WILLIAM PEPPER LABORATORY OF CLINICAL MEDICINE, UNIVERSITY OF PENNSYLVANIA.

This very beautiful memorial volume contains many important papers; among the most valuable of which we note two by W. G. Spiller, one on muscular dystrophy and the other on amyotrophic lateral sclerosis. Dr. A. E. Taylor has an exhaustive paper on studies in leukæmia. Dr. Edsall contributes a paper on the influence of immoderate drinking of water upon metabolism and absorption; and Dr. Walsh details some interesting investigations on the etiology of pertussis. The volume reflects the highest credit upon this research laboratory, from which many previous papers have already appeared. *A. D. B.*

HEART DISEASE IN CHILDHOOD, AND IN YOUTH. By CHARLES W. CHAPMAN, M.D., M.R.C.P., London; with an introduction by Sir Samuel Wilkes, Bart., M.D., F.R.S. The Medical Publishing Co., Ltd., London.

Dr. Chapman, who has been for many years much interested in the study of cardiac diseases in children, gives us, in the present volume, his opinion in regard to the prognosis and medical treatment of heart disease in infancy and childhood.

Dr. Chapman strongly advises that in children who have suffered from an attack of rheumatic fever, the heart should be examined at intervals for a year, at least, after the attack has subsided, in order to determine the exact amount of injury which has taken place, and the amount of exercise that may be gradually permitted. The absence of a murmur, he says, during, or soon after a rheumatic attack, is no guarantee that the heart has escaped injury since the auscultatory symptoms of valvular disease may not be in evidence until some weeks have elapsed. The

effects of a pericardial adhesion also are not immediately apparent, and mitral stenosis, for the most part a consequence of endocarditis, with subsequent adhesion and contraction of the inflamed membrane only gradually manifests itself. In the after treatment of the case, he warns against permitting any exercises requiring fixation of the chest, such as rowing, but he permits bicycling in the less serious cases.

We regret that the author does not sufficiently insist on the great value, in our opinion, of complete rest for many weeks after an attack of endocarditis in children. Repair takes place slowly in these cases; and we feel a far greater amount of repair will take place under complete rest, than even under gentle exercise. Exercises, in our opinion, should not be commenced until many months, Holt insists upon a year, after the acute symptoms have passed off.

A. D. B.

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY.—A New and Complete Dictionary of the Terms Used in Medicine Surgery, Dentistry, Pharmacy, Chemistry, &c., with their Pronunciation, Derivation, and Definition, Including much Collateral Information of an Encyclopedic Character. By W. A. NEWMAN DORLAND, A.M., M.D. With numerous illustrations and 24 colored plates. W. B. Saunders & Co., Philadelphia and London, 1900. Canadian Agents, J. A. Carveth & Co., Toronto.

We have examined, with much pleasure, this new dictionary. Its size and general get-up make it particularly useful and convenient. The definitions are satisfactory. The various tables, and the accompanying illustrations will, we are sure, prove of much value both to students and physicians.

We have much pleasure in recommending the work as one of the most useful and convenient of its class that we have yet seen.

A. D. B.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

Stated Meeting, November 16, 1900.

JAMES PERBIGO, M.D., PRESIDENT IN THE CHAIR.

Drs. R. W. Mitchell and E. S. Harding, were elected ordinary members.

Harelip with Advanced Premaxilla in an Adult.

DR. G. E. ARMSTRONG presented this case before the society.

A Cardiac Condition for Diagnosis.

DR. G. GORDON CAMPBELL introduced a girl thirteen years of age with a puzzling group of physical signs in connection with the heart. See page 20.

DR. A. D. BLACKADER considered the remarkable points about this case were the apparent enlargement of the heart upwards towards the left clavicle as evidenced by the dull percussion note, the loud diastolic murmur heard as clearly in the first as in the second interspace and accompanied by a thrill, and the loud and ringing character of the pulmonary second sound. It seemed to him that in pulmonary stenosis, the most common lesion in congenital affections of the heart, a weak second sound was generally met with owing to the necessarily low tension in the pulmonary arteries, and in the few cases where an accentuated pulmonary second sound was met with, the tension was raised by some abnormal patency of the ductus arteriosus. Here, the second sound was loud. The speaker did not think he had ever heard an aortic second sound with a more ringing quality than this had, and in his opinion it must indicate great tension in the pulmonary circulation. It seemed to him questionable whether the lesion in the lung was alone sufficient to cause this increased pressure. If so, the stenosis must necessarily be slight, the regurgitation great, and the trouble in the lungs very extensive. If this was a congenital lesion there probably existed thickening of the pulmonary valves and patency of the ductus arteriosus and, perhaps, of the interventricular septa. With reference to cyanosis, it was generally recognized that cyanosis in a child was an accompaniment of pulmonary stenosis but it was not invariably so, for in a series of cases collected by Dr. Crozer Griffith in only 85 per cent. of the cases in which stenosis existed had cyanosis been present during life.

DR. HAMILTON thought it was almost impossible to tell what one was dealing with. Dr. Campbell's statement that the patient was an-

æmic when first seen, and that she had scarcely ever seemed to be cyanotic was a point against patency of the foramen ovale. A third point was the absence of any clubbing of the fingers. Taking this view of it, we would have to do here with aortic stenosis and regurgitation. In corroboration of this view, first, a presystolic murmur had been heard at different times and was now absent, secondly, the very much weakened first sound at the apex, thirdly, the size of the heart and the direction in which the increase had taken place corresponded more to an aortic lesion than to any congenital condition that we are at all conversant with. Then again the sharp accentuation of the pulmonary second sound was strongly in favour of some condition not associated at all with the pulmonary valve. If there was stenosis beyond the valve it would bring about besides this accentuation of the second sound, dilatation of the heart to the right. The small pulse might be explained by aortic stenosis as well as insufficiency. The position of the heart was rather to the left and the question whether this is not partly due to deformity of the chest had to be considered.

DR. LAFLEUR thought it would add to the interest to suggest another diagnosis of the condition. His opinion, based it was true on a superficial examination, was that the child had got an adherent mediastino-pericarditis. There was no condition in childhood which gave rise to such large hearts and it, moreover, gave rise to murmurs of every possible variety, and chiefly about the area of the pulmonary artery. He did not attempt to explain all the murmurs present, but the case made one think of mediastino-pericarditis.

DR. J. G. ADAMI was pleased to see Dr. Lafleur referring to this condition of adherent mediastino-pericarditis. He had seen a case in Dr. Steele's wards in Manchester of a similar nature, which came to post-mortem and proved to be indurative mediastinal pericarditis. In this case—it was in a child—there had been a coincident extensive pleurisy especially affecting the apices of both lungs but more on the left side. The result had been that, with this generalised adhesive pericarditis and the contraction of the old pleurisy, the heart had been pulled to one side, and the murmurs present had been apparently due to alteration in the position of the heart, to distortion of the auricles, and consequent obstruction to the blood current. Dr. Adami had been reminded of this case on seeing the outlines of the heart in Dr. Campbell's case, and thought that it might be due to a similar condition.

DR. MCCONNELL had examined the case and was inclined to look upon it as one of pulmonary regurgitation. The marked thrill over the pulmonary area and not felt elsewhere could not be explained by pericarditis but might be due to regurgitation through the pulmonary valve. The

pulse was small, and one would expect a small pulse when there was a great deal of pulmonary regurgitation, as there would be less blood going to the lungs and consequently less in the systemic circulation. The hypertrophy was probably entirely confined to the right ventricle, and the slight systolic murmur would be accounted for by a slight amount of stenosis. The mitral valves were apparently intact.

DR. F. M. FRY thought that if the thrill were due to a pericardial condition, one would naturally expect to find it at the base of the heart. The small pulse would also be accounted for on the supposition of adherent pericardium.

DR. CAMPBELL, in reply to Dr. Hamilton's suggestion of aortic regurgitation, said he had naturally thought of that on first seeing the case. He had excluded it, however, on account of the condition of the pulse. In the five or six cases of aortic regurgitation which he had seen in young children, one of the most marked features had been the beating of the whole body. With such an enormous heart and a sudden fall in the blood pressure, as was found in aortic regurgitation, it was not uncommon to have not only the body but even the chair on which the child was sitting shaken by the heart's beat.

Of the other alternatives, he had been inclined to favour adherent pericardium as the most likely. In a case which Dr. Finley had seen with him some years ago where there had been a very large heart and a number of murmurs which could not be explained; autopsy had shown only an enormous heart with an almost universally adherent pericardium and normal valves. This and the presence of a slight retraction of the space which corresponded to the apex beat, had made him decide in favour of adherent pericardium. In discussing the question of pulmonary stenosis, he thought the extremely loud second sound at the pulmonary cartilage was incompatible with pulmonary stenosis and regurgitation. At the same time he felt that it was a case which could not be decided definitely and that it might be of interest to the society.

Gastric Ulcer—Repair and Perforation.

DR. ARNDREW MACPHAIL exhibited a specimen which he said well demonstrated the power of nature for repair.

The specimen, a stomach, had been taken from the body of a young woman who had died very suddenly on November 10th. She had been brought to the Western Hospital in a state of collapse with a diagnosis of rupture of the stomach. On opening the body a large amount of blood had welled up from the under surface of the liver showing that a perforation had occurred. The point of interest, however, was that two inches from this rupture there was found, on removing the stomach,

a second opening at least one inch in diameter, which had long since been securely repaired by a mass of adhesions.

DR. G. E. ARMSTRONG said that this repair was commonly seen on the operating table. He remembered that in one of the first cases of perforating ulcers which he had closed, when he had come down on the ulcer there was a perforation as large as a lead pencil. On attempting to suture this the sutures came right out, and examination showed that the ulcer had been partly closed by a great layer of lymph which had to be got away in order to reach firm tissue, and which when removed left an opening about three inches long. The process of repair had gone on and on, and the stomach wall had perhaps been adherent to the liver but had separated through the repair, for some reason, not being sufficiently strong. It was well recognized by all who had operated upon perforative ulcer that it was quite common to find a thick layer of lymph on the serous surface of the stomach, which possibly had to be removed in order to get down to the stomach wall and obtain firm tissue for sutures.

DR. J. G. ADAMI, on examining the specimen, considered that tissue rather than definite lymph, as in Dr. Armstrong's case, had here to do with the repair. Plugs of this nature formed by omentum were fairly frequent. He referred to a paper which he had brought before the society some years previously, in which it had been shown that there was evidence that these omental adhesions might act as plaisters here and there along the whole course of the intestines.

The Hæmorrhagic Diathesis in Typhoid Fever.

DR. A. G. NICHOLLS first pointed out that there were certain diseases, notably the so-called 'idiopathic' purpuras, scurvy and typhus, in which the most striking feature was a tendency to hæmorrhage in certain portions of the body. What was a constant appearance in these affections, was found exceptionally and as a complication of some others, such as typhoid, yellow fever, scarlatina, measles, sepsis, acute yellow atrophy of the liver and cholera.

He next criticised the term 'hæmorrhagic diathesis,' pointing out that since we were forced to conclude that there was in these cases a profound vitium of the blood, and since in some few cases a family tendency to the hæmorrhagic condition seemed to be present, the term was on that account preferable to that of 'purpura hæmorrhagica,' and still more so since there was no agreement between clinicians and pathologists as to what was properly to be included under the latter appellation.

By the hæmorrhagic diathesis in typhoid fever was meant, not those comparatively frequent cases of hæmorrhage from the bowel, epistaxis, or of petechial eruption, but a pronounced tendency to bleeding from

the various mucous membranes and into the skin. That such a condition existed, was recognised by Murchison as far back as 1873, and by Liebermeister, Wilson and Loomis, Wood and Fitz, and Osler.

The condition was very rare. In 12,000 cases tabulated from the published statistics of typhoid fever, there were 18 examples of the hæmorrhagic diathesis. The condition seemed to be more frequent in Montreal than elsewhere, since there were three cases in 543 typhoids treated in the Royal Victoria Hospital besides two others of a less degree. Many isolated cases were recorded but comparatively few had been checked by the Widal test or post-mortem examinations. The majority, too, had not been carefully worked out, so that our present knowledge of the condition was somewhat limited. Owing to the kindness of Dr. W. F. Hamilton, a case was here presented which had been very carefully studied.

V. D., female, was admitted to the Royal Victoria Hospital on June 19th, 1900. There was nothing in the personal or family history which had anything to do with the case. The illness began with chill, pains in the back, and fever. On admission, there was fever, the abdomen was distended, rose spots were present, Widal reaction was present on the 17th day. On the fourteenth day from the onset of the first symptoms, a hæmorrhagic area made its appearance near the umbilicus, following the application of an icebag. Two days later there was intestinal hæmorrhage. The following day epistaxis set in with hæmorrhage from lips and gums, hæmaturia, and conjunctival extravasations. Patient died on the 20th day.

The autopsy confirmed the diagnosis of typhoid fever with the hæmorrhagic diathesis. About 30 ulcers were found, mostly confined to the large intestine; the spleen was small. Bacteriologically the staphylococcus albus was recovered from the blood, the kidneys, and the peritoneal cavity. Several other bacilli were isolated, but were found to be non-pathogenic. A very careful microscopical examination was made of the different organs with a view to finding out the cause of the hæmorrhage. Particularly the condition of the blood vessels was investigated. The most found was a condition of fatty degeneration of the smaller capillaries and basement membranes. No thrombi, bacterial emboli, arteritis or phlebitis, were discovered. The case was regarded as one of typhoid fever with secondary infection with the staphylococcus albus. The hæmorrhage was to be attributed probably to qualitative changes in the blood produced by the circulating toxins of the various bacteria present reacting upon the vessel walls and producing degenerative changes. Whether the hæmorrhage was *per rhexin* or *per diapedesin* could not be determined; all local action of bacteria or plug-

ging of the various vessels had to be excluded. Further, all predisposing causes, such as malnutrition, scurvy, cachexia and hæmophilia, could be excluded.

Dr. Nicholls then gave a very full account of the etiology, pathology, clinical features, and treatment of the condition, showing the relationship which this type of disease bore to other purpuric conditions. The influence of scurvy, rheumatism, hæmophilia, malnutrition, and alcoholism was believed to be but slight. A few cases of a family predisposition were, however, referred to.

The condition was commonest in childhood and early adult life. Most cases were found in those suffering from a severe typhoidal infection. With the single exception of the presence of the hæmorrhagic lesions, the morbid anatomy of the condition did not differ much from the ordinary type of typhoid. Cases are most frequent in the third week, at the time when secondary infection was apt to take place, though primary typhoidal purpura has been observed in the first week. The skin, subcutaneous tissues and the mucous membranes were most frequently affected by the blood effusion next to the lungs and urinary organs. Gross changes in the appearance and coagulability of the blood have been noted, but are not invariably present. With regard to the vascular lesions proper, thrombi or bacterial emboli have not been found in these cases, but at most fatty degeneration of the vessels.

The recorded cases fall naturally into three groups:—

- (1) Primary typhoidal purpura.
- (2) Purpura due to secondary bacterial invasion.
- (3) Cachectic purpura.

The case recorded belonged to the second group. Treatment was mainly symptomatic. Gerhardt discontinues the cold bath treatment and gives vegetable juices, under the belief that the condition is due to a too great indulgence in proteid foods. To control the hæmorrhages, ergot, turpentine, inhalations of carbonic dioxide, injections of calcium chloride or gelatine, had been recommended.

Dr. Nicholls concluded by attempting to simplify the present classifications of the known purpuric conditions, since most pathologists were now agreed that the majority of these conditions were due to infection. As researches became more numerous the list of the infectious purpuras was gradually extending. He suggested the classification of cases into five main classes of 'essential,' 'symptomatic,' 'cachectic,' 'toxic,' and 'disseminated sarcomatous.' The essential purpuras included the so-called 'idiopathic' purpuras, Werlhoff's disease, Schönlein's disease, purpura simplex, peliosis rheumatica, purpura urticans. The purpura of typhus and the primary purpuras of scurvy, variola, scarlatina, measles

and typhoid, might possibly be included under this heading, though it was better to include them in the second group. The second group included all secondary or complicating purpuras found in the various infectious diseases, as typhoid, plague, sepsis, yellow fever, icterus gravis, acute yellow atrophy of the liver, variola, measles, scarlatina. The third group included those forms found in pernicious anæmia, leukæmia, heart disease, Bright's disease, carcinoma, and in the period about convalescence in infectious fevers. It was possible that many of them belonged to the category of 'infectious' purpuras. The fourth group contained those purpuras occurring in snake-bite and poisoning from various drugs, antipyrine, phosphorus, copaiba. The fifth group where with a diffuse sarcomatosis there was a sarcomatous invasion of the vessel walls. These cases might be complicated with infections. The first two classes, and perhaps the third, were infectious purpuras, and the fourth and fifth were non-infectious.

DR. C. F. MARTIN, speaking of the connection of purpura with other diseases held that the explanation of it was not easy, because the causes were so various. The commonly met with forms of purpura might be said to be due to infection, and in other cases, such as the purpura met with in arterio-sclerosis, and in certain cases of sarcoma, it was also thought to be due to infection. He referred to two cases, reported by himself some time ago, in which purpura was present, and in which the bacillary origin was by no means evident. Many cases were noted in athletes and in people who were in the best of health, in which the bacillary origin could not be demonstrated, and yet which ended fatally.

DR. T. W. MILLS was pleased to note that in the study of this subject Dr. Nicholls had taken into consideration the condition of the vessels as well that of the blood. It seemed to him that the fact that both the vessel and the contained blood arise from the same embryonic layer, would lead one to look to changes in the vessel walls as well as in the blood for a possible explanation of the cause of purpura and allied states.

DR. LAPHORN SMITH, after alluding to the vomiting of blood in patients who died of septicæmia after operation, thought that much the same explanation could be given for the vomiting of blood in typhoid as described by Dr. Nicholls. The blood assumed a black or coffee grounds appearance from contact with the gastric juice. He considered the condition due to septicæmia, and destruction of the blood vessels either by bacteria or by their ptomaines. He had seen purpuric eruptions in septicæmia several times with hundreds of spots varying in size from a split pea to a five cent piece, and in nearly all these there had been this vomiting.

DR. W. W. FORD, in referring to the treatment by the subcutaneous

injection of a solution of gelatine, as recommended by Lancereaux for aneurysm, related the experience obtained in Dr. Osler's clinic by this method. Of some ten cases treated, only two showed improvement. The first was a large thoracic aneurysm which was treated twice a week during one winter with subcutaneous injections of gelatine; the pulsation rapidly disappeared the dyspnoea was lessened and the general effect on the patient was good. The other patient had a large abdominal aneurysm and received the same treatment for a similar period of time, but without improvement. On death occurring some eight months after the treatment, the autopsy showed the aneurysm to be absolutely free from any clotted blood and its walls to be quite smooth. This point in Dr. Nicholl's paper, as to how it was possible to increase the coagulability of the blood, was a very interesting one.

DR. FINLEY asked if any of these cases had been treated by large doses of the coal-tar products as he had thought that these might sometimes have this effect.

DR. SPIER believed that the fact that purpura was so frequently met with in connection with infectious diseases would point to the specific toxins in the blood as a factor in its production. He had met with it three times in scarlet fever and once in measles, and it was well known to occur in smallpox.

DR. G. GORDON CAMPBELL thought that it was pretty generally recognized that some individuals, especially among children, were peculiarly liable to have purpuric eruptions from comparatively slight causes. The simplest instance that he could recall at the moment was the liability of flea bites in certain children to produce purpuric spots. Quite recently he had seen two children from the same family, apparently equally exposed and in good health, in one of whom there was a well marked purpuric eruption due to flea bites, and in the other very little evidence of subcutaneous hæmorrhages having occurred.

DR. W. F. HAMILTON, apropos of Dr. Campbell's remarks, stated that he had seen an outbreak of measles in an institution having about a hundred children. Among these was one girl who had suffered from purpura for perhaps five years off and on, and she was the only one among these children to have a purpuric eruption. A very scanty ordinary eruption of measles was present, but over the whole body, and involving some portions of the mucous membrane of the mouth, there had been a diffuse purpuric eruption. She had made an uneventful recovery. It was interesting to find that in this case it had been the hæmorrhagic type of measles which developed.

DR. J. G. ADAMI said that when one read the literature of purpura one was confounded by the number of causes suggested and possibly

in action in inducing this condition; he was glad to see that Dr. Nicholls had been very cautious in drawing conclusions. He was glad to hear Dr. Mills calling attention to the vessel walls as a factor in the etiology. A day or two previously he had been criticising Dr. Nicholls for employing the term Hæmorrhagic Diathesis for this condition, but on thinking it over had come to the conclusion that the term might properly be employed. In hæmophilias, some slight lesion was required as a cause before the condition declared itself. In this case the typhoid might be the cause of a slight weakness of the vessels; in ordinary health the vessels might perform this function perfectly, but with the typhoid intoxication the walls might give way more easily in them than in other individuals. He had seen Dr. Nicholls' specimens, and it had struck him that here, looking at those stained for fatty degeneration, the endothelium of the vessels in the hæmorrhagic areas was markedly degenerated. This in itself appeared adequate to explain the purpuric eruption.

Many authors had been of the opinion that thrombosis played an important part in the production of the purpuric hæmorrhages. With Dr. Nicholls, he would point out how difficult it was to be perfectly certain that this formation of hyaline and other thrombi was primary and not secondary. Dr. Nicholls' case, so far as it went, certainly favored the idea that it was secondary; for in his case he found hæmorrhages without evidence of vascular plugging. The course of events, in this case at least, would seem to be degeneration of the endothelium, weakening of the same, hæmorrhage through the weakened walls, and now, if the weakening of the endothelium advance with definite death of the cells, then the necrosed tissue might form a starting point for the development of thrombi.

DR. NICHOLLS, in reply, said that the whole subject of purpura was very interesting, but it was absolutely impossible to go into the matter from every standpoint. He was quite aware that a great many cases of purpura occurred, for example, in connection with heart disease, Bright's disease, and in many cachetic states but it was open to doubt whether these were infectious or not. Then there was the question of the purpuras which were due to the exhibition of certain drugs; these of course were not due to infection. However, in looking over the work done he had been struck with the general consensus of opinion, for the vast majority of observers have now concluded that 99 out of 100 cases of purpura are really due to bacterial invasion. To him the probability seemed to be that the blood-change was the most important one. There was unquestionably an alteration in the blood and it was pretty hard to say how this was brought about unless

it was by bacterial toxines and of course the action of high fever. Granting that this was so, the nature of the resulting degenerative changes in the heart might lead to weakened circulation and changes in the vessel-walls and thrombosis might subsequently be induced. All these lesions no doubt tended to bring on the condition. No one factor was sufficient to account for all the cases.

With regard to the point raised by Dr. Finley about the treatment, most cases recorded so far were previous to the last eight or ten years and he noticed that in a large series of cases referred to by Weigert treatment with quinine was given. In one of his own cases quinine had been given, nine grains a day, and he had thought of it as a possible cause. Still he could not convince himself that the quinine had anything to do with it.

Stated Meeting, November 30, 1900.

JAMES PERRIGO, M.D., PRESIDENT IN THE CHAIR.

Rodent Ulcer,

DR. A. E. GARROW showed a woman, 71 years of age, with a rodent ulcer of the nose which he had treated by removing the diseased tissue and promoting healing by granulation.

Twenty-two years ago the woman developed three small nodules in the typical situation at the upper corner of the eye. These broke down and gradually ulcerated and were followed by a new crop of tubercles on the other side. The sore covered the whole right side of the nostril from the angle of the eye, and extended pretty well over to the left side. It was dry, covered with a scab, and exuded no fluid; the edge was distinctly infiltrated, not very much elevated, and no surrounding nodules could be felt in the skin. It was not at all painful. The method adopted for treatment and which had given very good results, was removal by the scalpel of the tissues surrounding the ulcer for at least a quarter of an inch, and the dissecting of the whole base of the ulcer from the underlying tissues. After this, when the bleeding had been stopped by twenty-four hours compression, Nougard's paste was applied for twenty-eight hours. This was followed by sloughing and the healthy granulating area was treated, and healthy skin resulted.

The important point of view was that many of these cases showed extensive ulceration without deep involvement. This case did not involve the bones although it had existed for twenty odd years.

DR. E. W. ARCHIBALD exhibited stained sections of the ulcer under the microscope showing very typically the very small size of the cells.

Myelo-Sarcoma of the Leg.

DR. E. W. ARCHIBALD exhibited a specimen consisting of a leg removed by Dr. Garrow, the subject of a myeloid sarcoma. The tumour had evidently started in the medullary cavity of the tibia or in the cancellous tissue of the head, and it involved the whole upper portion of the bone. It had destroyed the cartilage upon the head of the tibia but had not yet gone through the synovial membrane. It extended downwards to below the tubercle of the tibia, and had broken through the bone on all sides, and before operation the egg shell crackling sound typical of these tumours was readily made out. The whole thing was now a soft mass, which had very extensively broken down and was largely hæmorrhagic. A frozen section made that afternoon had not been clear enough to render the microscopical diagnosis certain.

DR. A. E. GARROW stated that the patient had first come under observation last April complaining of the pain in the knee, when some swelling in the outer and upper tuberosity of the tibia and some abduction were noted. The tuberculin test was negative though two doses were given, and a diagnosis of possible sarcoma was made. There was no egg shell crackling then, no dilated veins, and no pain except on movement. She left the hospital and returned later when Coley's fluid was used with no apparent benefit, but the attending physician believed that it somewhat diminished the size of the mass. Later on the mass increased in size, became painful at all times, and the patient lost considerably in flesh and became markedly anæmic. The pain was very severe and constant.

DR. J. ALEX. HUTCHINSON had used Coley's fluid in some half a dozen cases two or three years ago for recurrent epithelioma of the neck, and although he was not satisfied that any change had occurred in the growth itself, the sloughing portion certainly had seemed to clear up.

Tubal Pregnancy.

DR. LAPHORN SMITH reported two cases of tubal pregnancy from one of which DR. ANDREW MACPHERSON exhibited the organs removed at operation. See page 11.

DR. J. M. ELDER asked Dr. Smith if he understood him to say that he had removed the good tube and ovary and if so for what reasons.

DR. SMITH was very glad that Dr. Elder had asked the question as it brought up a very important point and one which had caused a great deal of controversy. He had removed the second tube and ovary in the thirteenth case in order to prevent further trouble and a recurrence of the condition. Quite a large number of cases have been reported in

which a woman who had gone through this terrible danger and been operated upon, had been exposed to the same danger a year or two later by the occurrence of the same condition on the opposite side. Besides this, he believed that where one tube was diseased, in 95 out of 100 cases, the other tube was diseased also, and he considered it wiser so to complete the operation at one time so that he would not be called upon to operate a second time for the same thing. In the fourteenth case he had left the other tube and ovary at the patient's request.

DR. D. J. EVANS related the history of a patient who had been operated on for tubal pregnancy, the left ovary and the right tube being removed. The left tube was carried back over the uterus so as to approximate somewhat to the other ovary. She was now shortly expecting her confinement.

DR. ELDER was glad that Dr. Smith had the courage of his convictions to get up and say that his procedure was the proper thing to do. Dr. Evans had reported a case where pregnancy had followed operation for tubal gestation and under peculiar circumstances. The speaker had known of similar cases where women had borne children after being operated upon for tubal pregnancy, and he did not think it was right for Dr. Smith or any other surgeon to mutilate a woman by removing more than was actually diseased.

General Emphysema Complicating Measles.

DR. D. J. EVANS reported this case. See page 8.

An Error in Diagnosis.

DR. H. A. LAFLEUR reported a case of error in the diagnosis of intestinal perforation in typhoid fever.

DR. G. E. ARMSTRONG felt that this question of the early recognition of typhoid perforation was becoming more and more important and that a good many surprises were developing in the practice of different surgeons as the result of operative procedures. While certain cases occurred where there was no doubt about the condition, the perforations met with in the Montreal General Hospital had not as a class been accompanied by those well marked signs which were so generally looked for. He thought that one reason why a larger number were not recognized early was because the symptoms were so mild and indistinct. The pain was often not at all severe and there was not always any evidence of shock, and sometimes it was absent altogether. Pain occurring with rigidity and tenderness was not sufficiently marked in these doubtful conditions to warrant a diagnosis. If we would save a larger number of cases we must expect occasionally to open the abdomen without finding perforation.

The speaker was inclined to think that the symptom of leucocytosis was not a safe guide as it might occur in other conditions accompanying typhoid. In a case of perforation seen by him two days previously a blood count had shown 6000 white cells and two hours after the operation only 4000, though the pulse had gone from 96 to 116 and the temperature had risen from 103° to 106°. Dr. Lafleur's case possibly illustrated a point made by Warren that a few hours after the perforation there might be a leucocytosis of from 18,000 to 30,000 falling perhaps in six or eight hours to the normal. In Dr. Lafleur's case the count had been 17,000 to 18,000 at mid-day, 10,000 at six o'clock in the evening, and 6,000 to 7,000 at nine. Warren had also shown that similar symptoms were present in other conditions such as localized peritonitis possibly set up by the germs or toxins getting through the thin bowel wall, and enlarged mesenteric glands were found in four of his twenty-nine cases, as the only evident cause of the pain and tenderness.

With regard to the time of operating, one had to choose between shock and infection. Keen thought that cases did better by waiting for eight hours and allowing the shock time to pass off. The speaker thought that in cases where there was no shock present the operation should be done at once and he believed that in cases done at once the operation was not followed by any shock to the patient. The operation could be done in ten or fifteen minutes, the temperature fell and remained down considerably lower for twenty-four hours and the patient's condition was not much worse than without operation.

Another point the speaker felt strongly upon, was that if perforation was diagnosed and one was prepared to stick to it but felt it wiser to delay operation, a good dose of morphia should be given to arrest peristalsis. Its advantage was that when operation was performed the intestines would be found lying quite still and quiet. In one of his cases with a rising temperature to 106° he had given $\frac{1}{4}$ grain of morphia and operated three or four hours afterwards, about nine hours after the perforation. There had been no pus found in the peritoneal cavity and the coils of adherent intestines were lying perfectly quiet, and the infection had remained localized. When he had separated these coils there was a perforation with three other spots just ready to perforate and four or five more not far off that were dangerously thin.

DR. N. D. GUNN asked if Dr. Lafleur thought the large glands mentioned by him were the cause of the symptoms simulating perforation.

DR. C. F. MARTIN, speaking of leucocytosis as a sign of impending perforation, stated that he and one of the fourth year students had been trying to determine the value of this symptom. Unfortunately the number of cases of perforation at the Royal Victoria Hospital had been

very small, but in those they had examined leucocytosis had been present. The results of a series of observations of this kind had, however, certainly gone to show that this sign was not of as much value as had generally been supposed.

DR. A. E. GARROW asked whether the evidence of free air in the peritoneal cavity had not been more or less a constant symptom when taken in connection with diminution of the liver dulness. In the cases which he had examined personally, he had looked upon this as a symptom of some importance when taken in connection with pain and rigidity.

DR. J. M. ELDER had a word to say about the matter of leucocytosis. During the past summer he had had several cases of perforative ulcer in typhoid fever on which he had operated unsuccessfully as far as saving the patient's life was concerned. In these cases an estimate of the number of white corpuscles had been made, but in none had there been any leucocytosis, so that he felt that it was not a reliable sign.

With regard to the clinical question of operation, he thought that the surgeon must be prepared to open the abdomen when a group of symptoms, such as the reader of the paper gave to-night, was present, if there was to be any advance in the surgical treatment of these typhoid ulcers. All surgeons had opened the abdomen in cases of appendicitis which had given the same sort of history, and had found very little the matter with the appendix. With regard to the time of operation, it seemed to him that, as experience was gained, the stage of the disease and when the perforation took place, would have to be taken into account. Many cases showed a bad result at the post-mortem from the fact that the disease had gone on to a fatal result in spite of the success of the operation in closing the perforation. Dr. Armstrong's idea about giving a dose of morphia seemed to him a good one.

DR. ARMSTRONG did not place any value on the presence of free gas in the abdominal cavity diminishing the liver dulness. He had opened the abdomen and had gas escape without any material lessening of the liver dulness having been present. On the other hand, a distended colon by tilting the thin edge of the liver upwards lessened the dulness. He advised the use of morphia because it kept the intestines quiet and did not favor peristalsis.

DR. A. G. MORPHY, speaking of the difficulty of diagnosis, about a year ago had a case of typhoid in which, during the subsidence of the fever, there had been a sudden rise of temperature with severe pain in the abdomen and rigidity. Dr. Lafleur, whom he had called in managed to find a pleurisy which the speaker had not suspected.

DR. A. LAPHORN SMITH dwelt upon the value of a sudden rise of the pulse rate as an evidence of peritonitis.

DR. F. R. ENGLAND referred to the discussion on typhoid fever which took place during the last session of the society, and stated that the conclusion had been arrived at then, that it was bad practice to open the abdomen unless the existence of a perforation was rendered pretty positive. He felt that it was likely to render the chances of recovery less if the abdomen was opened while the patient was in this typhoidal state, and that it ought not to be done merely as an exploratory procedure. He thought that Keen's best results were obtained after waiting some hours after perforation was thought to have occurred, allowing the patient to somewhat recover from shock. It was fortunate if a reasonable delay was warrantable, for in most cases it would probably give ample time to make a pretty positive diagnosis.

DR. LAFLEUR, in reply, thought it was very probable indeed that the pain complained of was due to the swollen and inflamed glands. He had been glad to hear Dr. Martin's remarks about leucocytosis as they coincided with his own ideas. He also agreed with Dr. Armstrong in putting no value on the diminution of the liver dulness.

He took exactly the same view as Dr. England, that if there was a reasonable probability of perforation, operation may be performed; but he did not think one should approximate typhoid perforation with appendicitis. In the latter one had to all intents and purposes a patient in a perfectly healthy condition. At the same time one must take the risk, as there was no other way of saving what might be a perforative case. As regards the fall of temperature referred to by Dr. England, he did not lay much stress upon this when the patient was getting cold baths every two or three hours, as one could not tell whether the fall was not due to the bath. He would make the suggestion that the presence or absence of leucocytosis might depend upon the exact nature of the infection. In those cases where there was a colon infection, practically as a pure culture, he would like to know whether leucocytosis took place or not. On the other hand, where there was a streptococcus infection, he did think it took place in some cases.

Four Cases of Fracture of the Pelvis.

DR. J. ALEX. HUTCHISON reported four cases of fracture of the pelvis. See page 14.

DR. WYATT JOHNSTON exhibited the specimen of one of Dr. Hutchison's cases. The case was of interest as showing the extreme degree of the injury and the curious fracture of both the rami and the top of the pubic bone, and one of the small iliac joints was also loose. The bladder had been torn, and there was some infiltration of urine about the pubes,

and a reddish urinous looking fluid in the region behind the bladder. The rupture in the bladder was, however, quite a small one, rather superficial, and did not penetrate at all. The urethra was torn across at the ligament, and apparently the general tearing of the tissues had led to the infiltration of urine.

DR. GARROW said that Dr. Hutchison's paper was, of course, a surgical one and he had not taken up some points of special interest in this class of cases. It would be of interest to know the prognosis and whether recovery was complete after the ordinary injuries to the bones of the pelvis and tearing of the soft parts. The speaker had only seen one case, that of a man who had had his pelvis fractured and who still suffered from periodical attacks of very intense pain once or twice a month, the cause of which could not be determined.

DR. HUTCHISON, in answer to Dr. Garrow, said that in ordinary simple fractures of the pelvis, wings and symphysis, the usual results of simple fracture could be obtained. Fractures in the neighbourhood of the symphysis made an uneventful recovery. In another class of cases more severe injuries were often present and not recognised, such as rupture of the bladder. In one case which had come under his notice, an attempt had been made to pass a catheter and a rupture had been found in the membranous urethra. The physician attending the patient did not seem alive to the condition present, and allowed many hours to pass before sending him to the hospital.

The prognosis depended entirely upon whether one had severe lacerations in the pelvic area, where the loose cellular tissue readily allowed a septic condition to develop. A fracture without this extravasation of urine would simply have the same prognosis as any compound fracture without suppuration.

OTTAWA MEDICAL SOCIETY.

A meeting of the Society was held on Friday, November 30th, in Water Street Hospital, for the demonstration of clinical cases and pathological specimens.

Living Cases.

DR. HORSEY showed a case of hereditary syphilitic disease presenting facial scars, marked kerato-iritis, and ulceration of the vomer.

DR. DEWAR showed a case of compound communicated fracture of the tibia and fibula treated by incisions, removal of loose fragments, and drainage with fixation. After four months treatment a small sinus still persisted at the ankle, but the result was most satisfactory.

DR. TROY showed a case of extensive recurrence in the inguinal glands

after amputation of the penis four years ago for epithelioma. The right groin was occupied by a large inflamed and ulcerated mass of glands. The right leg was very much swollen. The patient was under treatment by the injection of Coley's fluid.

DR. BRADLEY showed samples of the photography of patients before and after treatment recently inaugurated by the official photographer to the hospital.

Pathological Specimens.

DR. KIRLEY, pathologist to the hospital, showed a large multilocular cyst, weighing when fresh with contained fluid forty-five pounds, and removed by Dr. Dewar recently. Fibroids of the uterus removed by Dr. Chevrier, an extra-uterine foetation sac, and a large varicose cyst over the saphenous opening with a large tortuous vein leading from it, were also shown.

Cocainization of the Spinal Cord.

DR. PREVOST reported an operation for femoral hernia performed on November 27, at St. Luke's Hospital, under cocainization of the cord.

Fifteen minims of a two per cent. solution of cocaine hydrochlorate were injected into the arachnoid cavity after ten minims of the spinal fluid had been allowed to escape. Insensibility to pain over the lower limbs and lower part of the abdomen was complete enough in thirteen minutes to allow the operator to proceed. The operation was completed without trouble in twenty-five minutes. Slight mydriasis followed but no vomiting. There was intense throbbing, darting headache, especially occipital and in the back of the neck. This was relieved by ten grain doses of antikamnia. It did not entirely disappear until the third day.

The temperature rose to 101° on the second and was not normal until the third day. The patient had a severe attack of herpes on the right side of the face and lips appearing on the third day.

Dr. Prevost then discussed the diagnosis of a very movable abdominal tumour about the size of a kidney, which turned out to be a cancer of the pylorus with considerable gastrectasis.

DR. KIDD reported a similar case in which there was also a right kidney which was floating.

THE

Montreal Medical Journal.

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

EDITED BY

THOS. G. RODDICK,
A. D. BLACKADER,
GEO. E. ARMSTRONG,
WILLIAM GARDNER,
F. G. FINLEY,

JAMES STEWART,
J. GEORGE ADAMI,
G. GORDON CAMPBELL,
FRANK BULLER,
H. A. LAFLEUR,

WITH THE COLLABORATION OF

WYATT JOHNSTON.
C. F. MARTIN,
J. M. ELDER,
D. J. EVANS,
A. E. GARROW.

T. J. W. BURGESS,
J. W. STIRLING,
F. A. L. LOCKHART,
W. F. HAMILTON,
E. J. SEMPLE,

H. S. BIRKETT,
J. C. WEBSTER,
KENNETH CAMERON,
C. W. WILSON.
A. G. NICHOLLS.

VOL. XXX.

JANUARY, 1901.

No. 1.

MEDICO-LEGAL DIPLOMAS.

We publish below a communication relative to the establishment of a medico-legal course. We understand that the matter is now receiving very careful consideration from the Medical Faculty of McGill University and that a diploma is likely to be established. We would emphasize especially the necessity of our medical schools providing adequate practical courses in the special lines of work needed in railway surgery and in accident and life assurance. If it were known that special competence in these subjects can be acquired and certified to academically, we predict that the corporations interested would soon show a decided preference for those holding certificates in these subjects in making their appointments.

We hope that the course may be established and that it may prove successful, in which event, Canada could claim credit for being the first English-speaking country to move effectively in the matter.

We have been asked to publish the following communication, which is part of a report to the Education Committee of the Medical Faculty, McGill University, Montreal, by Dr. Wyatt Johnston, with regard to the establishment of a post-graduate diploma in Legal Medicine.

“Academic regulations defining what qualifications should be officially recognized in Legal Medicine have existed for many years in most European countries and have recently been established in some which had depended upon other methods of deciding as to fitness for medical expert work. Were it necessary to do more than point out the general advisability of establishing such qualifications, I could cite numerous statements from responsible authorities on the medical and legal, as to the evil results of haphazard or political methods of selecting medical experts.

“While it might perhaps be desirable that the legal authorities should be the ones to move first in the matter, experience elsewhere has shown that unless the teaching bodies take the initiative, nothing is done. It is clear also that teaching will probably be better done by those whose duty lies in teaching rather than routine official work. What may be fairly expected of the official bodies is to see that sufficient facilities in the way of teaching material is afforded and that as far as possible, special qualifications of this kind be taken into consideration in making appointments. So long, however, as there is no recognized means of determining who have proper qualifications and who have not, it is difficult to see how the public authorities are to decide as to which candidates are fitted to fill a given vacancy. This consideration has probably been that which has led to the establishment of medico-legal diplomas elsewhere. The fact that the total number of experts required is very limited does not affect the principle involved.

“Assuming that it is desirable on general grounds to establish a medico-legal diploma the questions to be decided are :—(1) What shall be the standard? (2) How shall the teaching be carried out? (1) Standard for diploma on legal medicine.

The method of adopting some well recognized standard has many advantages not only in giving value to the certificate, but in simplifying the problems in connection with teaching arrangements.

After careful study of the matter, I am of opinion that the standard recently adopted by the Faculty of Medicine of Paris and endorsed by the Medico-Legal society of France (the details of which are given in a recent report by Prof. Brouardel, Dec. 20, 1899), is the most suitable for our purpose provided that certain minor modifications are made. These are called for first by the fact that all our medico-legal students have to pass a compulsory course of 6 months duration on legal medicine and 3 months on mental disease which are optional in France.

Second, it would be well to homologate the course as regards time of The French diploma course in legal medicine calls for :—

1. A period of study covering an entire academic year (9 months) subsequent to graduation in medicine.

2. Attendance on a general course of lectures on Legal Medicine and Mental Diseases if this has not been done as a student.

3. Practical instruction in autopsy methods under the tuition of a medico-legal expert.

4. Practical instruction in the medico-legal examination of living persons and in making examinations of blood stains, etc.

5. An elementary practical course in toxicology.

6. Practical instruction in mental medico-legal work with clinical experience in mental diseases.

7. A written and practical examination covering the above subjects.

This was adopted by the Paris Faculty upon the recommendation of Prof. Brouardel.

The modification course which I would recommend would be as follows (following the lines of the Diploma Course of Public Health).

1. Six months' scientific training subsequent to graduation upon medico-legal pathology, bacteriology, chemistry and microscopy.

2. Six months' practical experience under a medico-legal expert having facilities recognized as adequate for instruction in the various departments of legal medicine. (Of this not more than 3 months to be concurrent with the work under article 1.)

4. Attendance on special advanced courses in legal medicine.

5. Elementary practical toxicology.

6. Instruction on medical law.

7. Clinical instruction and practical medico-legal work in connection with obstetrical, surgical and mental cases.

8. Written and practical examinations on the above before examiners having special qualifications. Not less than 12 months to elapse between graduation in medicine and the obtaining of the diploma.

Practical instruction in the methods of examination for life—and accident—insurance and in the estimation of disability resulting from injury would appropriately be made to form part of such a course.

With reference to 4, 5 and 6 I think it should be understood that the diploma is of a general nature and does not intend to qualify as a specialist expert on chemical, mental, obstetrics, and surgical questions. This should call for evidence that the person has a special training in any one of these branches implying at least an additional year of special study.

I think it would be well to communicate with the Provincial Government, pointing out the advantage to it of having instruction of this kind given and asking that such opportunities as they can give without detriment to the public service be placed at the disposal of those giving the course. Opportunities of a corresponding kind afforded by the

health boards were of material aid in carrying out the Diploma course in Public Health.

Several applications have already been received from graduates wishing to take the course in the event of its being established.

I may state the conclusions of the reports briefly as follows:—

1. The establishment of a diploma course in legal medicine is a necessary step for the proper training of medico-legal experts.

2. It has been found necessary in other countries for teaching bodies to take the initiative in this matter.

3. A standard equivalent to that of the new French diploma of legal medicine would be adequate and feasible. The schedule of the course could be made to correspond with that of the English diploma course in Public Health as now given by this Faculty.

4. This would call for 6 months' scientific training and 6 months' practical medico-legal work for which 3 months may be concurrent; also for special courses on medical law, medico-legal pathology, microscopy, chemistry, obstetrics, surgery and psychiatry. The diploma could not be obtained in less than 12 months after graduation. The above special studies to be in addition to the ordinary medico-legal requirements for the degree in medicine.

I remain,

Yours respectfully,

(Signed), WYATT JOHNSTON."

Montreal, Nov. 14th, 1900.

Proceedings of the McGill Medical Society of Undergraduates.

THE MEDICAL STUDENT AND HIS PROSPECTIVE CAREER.*

BY

PROFESSOR FRANK BULLER, M.D.

There is in all human affairs a general law of averages, which enables the student of economics to foretell with reasonable certainty the chances of success or failure of business enterprises, and of communities or individuals engaged therein under certain known conditions; for instance, all the different varieties of insurance, life, fire, marine and accident, are based on the law of averages, which taken the world over remains immutable though subject to local modifications dependant on altered conditions of a temporary or local character. So that things which in a way are subject to the universal law have to be studied in detail, and in a local sense, by those whose interests are restricted to the limits of any particular country, district, locality or community in each of which human affairs have their own more or less modified law of average.

The same may be applied of course to every class of persons who have in some way differentiated themselves from the community as a whole.

The soldiers and sailors of a nation can easily be shown to have definite average income, chance of promotion, duration of life, etc., etc., subject of course to the chances of war and other perturbing influences, and it is not difficult to understand that a careful study of any other class of individuals will yield a fairly exact knowledge of the same kind in regard to these. I do not know that anyone has undertaken such a task in reference to the medical profession; however interesting researches of this kind may be it is more than doubtful whether the person undertaking them would ever reap a satisfactory reward.

Nevertheless, I purpose in this address to give you a few thoughts along these lines derived partly from my own observations and partly from reading and hearsay.

I think it may be accepted as true that everyone who chooses the medical profession as his life-work, at the outset cherishes the hope that he may make a success of it.

* Read before the Undergraduates' Society on Dec. 7, 1900.

It is possible that all do not take the same view of what constitutes success. One may say my life will be a success just in proportion to the amount of good I may be able to do unto others, irrespective of any benefit that may accrue to me in a material or pecuniary sense. Another may say the esteem and good will of the people I live among is the reward I have in view; another may look upon the chances of amassing money as the chief incentive to entering the ranks of the profession, or a combination of these and perhaps other motives not so easy to define may determine the choice. Some enter the profession as a matter of choice because they have a real liking for the study and work pertaining thereto; these are the ones who become diligent workers, and attain the highest positions in the ranks; the rewards for merit which never come to the careless, the indifferent, the negligent and slothful. Give heed to the maxim "Honors come by diligence: riches spring from economy."

Some are thrust into the profession by parents, friends or guardians, because it is a respectable calling and open to all who can spend a few years time and the modest sum of money necessary to acquire a medical degree: many of these become "chronics" in our classes for they love not their labor.

After thirty-five years association with medical students and their teachers, and twenty-five years a member of the teaching staff of this school of medicine, I do not hesitate to say that I have never known a single teacher or examiner in any medical school, or one member of our faculty, who was not sorry for any or every student that failed to pass his examinations, nor one that was not sincerely pleased with each who passes creditably to himself and his college. From this you will see that everyone of you has from the outset the entire good-will and co-operation of those who are ultimately obliged to decide for, or against, in the pass examination. It is my firm conviction that there is not a British or American school of medicine in which the curriculum of study is placed so high that any student of average ability is justified in failing in any of his pass examinations; should he do so the explanation is to be found in one of two courses, viz:—Want of diligence, or, deficient mental capacity. The first may be compared to a preventible disease; the second, to an incurable ailment. Those who come in either category, are in all probability perfectly aware of their situation and should govern themselves accordingly.

Just think the matter out in a quiet philosophical way and I believe you will agree with me that the examiner who rejects every badly prepared candidate at the earliest possible period, is the students' best friend. Those who feel they have done their best and failed can

and should step down and out and waste no more time in work for which they are not properly equipped by nature. Their average is too low. Those who feel they have not given their best to the cause should awaken from their lethargy and resolve once and for all never to miss another opportunity, or else stand aside and seek no more to enter the profession which of all others has no place for the indolent and careless in its ranks, but presents the greatest scope for all the best qualities found in human nature.

A set back in one or two subjects may be partly due to an element of chance, which cannot be entirely eliminated from any system of examination covering a wide range of knowledge, but apart from this I believe it is a mistake for anyone who has failed in his primary examinations for two consecutive years, to continue his university course. The world has need of his special talents in some other sphere of action and in the long run the world does take most men for just about what they are worth. I have not the least doubt that every trade, profession or calling in life contains many who are not fit for their vocation and I will go further and state, without fear of contradiction, that there is not one present here to-night who has not had opportunities of observing the truth of this assertion as applied to the medical profession, as well as other occupations. It will be an ideal civilization when some method has been discovered whereby everyone shall be allotted exactly the work for which he is best adapted.

Of one thing we are at present reasonably certain, viz:—That in all civilized countries the medical profession is over-crowded, and that the demand now is rather for quality than quantity. Hence the tendency everywhere apparent to lengthen and augment the curriculum of medical schools. You of the present time will in a few years inevitably have to meet with the opposition of younger men who have been sent out better qualified than their predecessors. If you are wise you will prepare yourselves now to hold your own against all comers.

To me it seems that the most difficult thing every practitioner has to do is the task of keeping up with the procession. The struggle is so constant, so arduous, that only a few are able to keep the pace.

Those who do not succeed in practice, lacking the stimulus of prosperity, become careless and indifferent and make little or no use of such opportunities of study and advancement as come to them, and those who are more fortunate in getting plenty of work find it difficult to spare the time for minute study and careful observation. It is not so easy for a professional man to employ others to do the drudgery as in ordinary business, in fact, there is very little of his work he can

delegate to others under any circumstances, and when the usual day's work is accomplished, how few there are capable of bringing the energy and concentration necessary for efficient work of a literary or scientific character, with the additional burden of being subject at all times to ever recurring interruptions.

There is one way, however, in which everyone engaged in the practice of medicine and surgery can do something to advance his knowledge and keep up with the times; an easy and a pleasant way withal and highly to be recommended. It is this:—We should all make a practice of seeing each other as often as possible in a social way and in regularly attending the meetings of medical societies. Each one should make a point of supporting and attending the meetings of his own local society, and also at the least, one provincial or national meeting every year. Although we may feel inclined to make little of the apparent benefit derived from any particular occasion of this kind there is no doubt that the aggregate result is extremely beneficial. It is only by the friction of mind against mind that the best of us can avoid the ruts and grooves of a mere routine, so fatal to progress of any sort. It has been repeatedly urged by many who have made a study of the business side of our profession, that there are in the first place a great many more doctors than the country needs, some say twice as many as are required. If this be true, our medical schools are partly responsible for a great waste of human energy. Just think of this army of able-bodied men who are fritting away their lives and serving no useful purpose in the national organism. If we look at the question from the standpoint of the wage-earner, we have but to compare the earning power of the average medical man with that of men engaged in other occupations. The common day labourer in this country will earn about one to two dollars per day; mechanics of some skill and special training earn on the average about three dollars per day, or for the labourer \$300 to \$600 per annum and the mechanic, carpenter, bricklayer, engine-driver, etc., from \$600 to \$1200.

If you wish to get an accurate idea of the average value of a medical man's services after several years experience as a licensed practitioner you have only to look into the advertising columns of the "*London Lancet*" or "*British Medical Journal*" where you will see large numbers of public appointments which will take the whole of the holders time and attention, for the munificent sum of \$500, \$750, or possibly \$1000 per annum; with two or three per cent. off as a superannuation fund; and let me tell you such appointments are eagerly sought after by our brethren on the other side of the Atlantic.

Now in the city of Montreal it is said the average income of the

medical practitioner is about \$700 per annum. How much better off is he then than the labourer or mechanic? Or if we believe this estimate is too low and say the average is ten or twelve hundred per annum, how do they compare with clerks and book-keepers, whose education costs comparatively nothing. The advantage is with the latter, as they can live anywhere and anyhow, not so with the doctor who must of necessity pay more for appearance sake or sink out of sight altogether. The public has an absurdly exaggerated idea of people's incomes and especially so of the doctors.' They hear occasionally of one who has made a fortune and then utterly ignoring the fact that this was a rare exception, one perhaps in a hundred thousand, proceed to argue that all others in the same profession must be doing likewise.

I will read you a brief statement in this connection which recently appeared in the lay press, which seems to present this question correctly. "The fact that Sir William Jenner left nearly two millions of dollars has led to much speculation by the English press on the prizes of the medical profession. The *Lancel* has accordingly taken occasion to point out that this money was not made by Sir William Jenner at all; but bequeathed to him by his brother, who was in trade. After going through the list for the last ten years, the *Lancel* comes to the conclusion that greatest fortune made in medicine was that of Sir Wm. Gull (\$1,500,000), and that was probably augmented by fortunate investments. Only two other physicians left over a million dollars—Sir Andrew Clark and Dr. Rhodes Armitage. There are 28,000 doctors in Great Britain and most of them die poor. The *Lancel* seems to have made out its case. The figures bear out a very general impression that the medical profession is hard worked, with few prizes and those not very great ones.

I have known many medical men whom the general public spoke of as "well off" or even rich, who in the midst of this assumed affluence have died in actual poverty, leaving their families wholly unprovided for or at least a meagre pittance.

I have tried to find the names of medical men who had become wealthy by the practice of their profession in this city in the past century and have failed to find one. It is true that half a dozen or so have died fairly well off in this world's goods, but most of these gains may be traced to money acquired by inheritance, by marriage, or, by the rise in value of real estate incident to all growing cities, in which a few cheap lots have in time come to represent a competence. If this be a true picture of your prospect should you seek to work up a city practice? Is there any particular reason why you should expect better things than have fallen to the lot of your predecessors?

Let us now turn our attention to the country districts and see if there is no better fate in store for the young physician. This is what I find:—

In the larger towns there are always at least two doctors where one is wanted and most of them though presenting some outward appearance of prosperity, are living on the verge of poverty; a few, perhaps, one in twenty-five, accumulate some money and if possessed of good business capacity ultimately acquire a modest fortune. In some small towns and villages, which of course absorb the majority of graduates in medicine, we find them as a rule working long hours and subject to every imaginable discomfort for pecuniary rewards not nearly so great as are expected by hackmen and livery stable owners as mileage rates, leaving the question of professional services out of the reckoning.

Let me quote one example which came under my own notice, one of our graduates of over thirty years ago. I knew him well, he was of the sort the people out West would call a hustler. He would work more cheaply and do more work than anyone in his neighbourhood, driving on an average not less than 50 miles per day, Sundays included. He never was a good collector and although nominally making eight or ten thousand dollars per annum, this is how the relentless logic of figures sums up the result. After thirty years practice he died leaving an estate valued at \$25,000, to obtain which he drove in the thirty years 525,000 miles, his net reward being therefore rather less than 5c per mile, or if we allow for his cost of living certainly not more than three thousand dollars per annum, his total earnings were \$115,000; which again translated into mileage gave him just 22c per mile, or three cents less than ordinary cabman's fare, leaving office work and all fees as a professional man out of the reckoning. His only advantage over the cabmen was his more constant employment and corresponding hardship in the way of exposure and loss of rest. How does the prospect please you? And yet this man was the envy of all his less successful competitors, not one of whom in that town has succeeded in accumulating so large a fortune. This is unquestionably a bad showing, a deplorable state of things for the profession as a class, but the facts I have stated are correct or very nearly so. Wherein then lies the fault?

I believe it rests with the profession itself. In their want of co-operation for mutual benefit, in their lack of integrity towards one another. They should seek for some means of avoiding bad debts, remembering that every dollar uncollected is just so much off their net profits and the worst feature of all is that the honest and willing clients are the only ones that pay, whilst the habitual "dead beat" goes Scott

free, though they are often the most exacting in taking up the doctor's time and attention. I do not believe there is a physician in the whole country who is not pestered by this sort of parasite. These too, are the very people who squander their means in useless extravagance of all sorts and there could be no hardship in compelling them to pay their doctor's bills. There are two ways in which this could be accomplished. The first is to exact cash payments for all office consultations; the second would be for all physicians to keep a list of those who do not pay and keep each other informed as to whom these persons are; each one steadfastly refusing to give his services to all who are in debt to any other physician. This can only be achieved by demanding to see a clear receipt in doubtful cases, for all previous medical services. I have often followed this plan myself, and find it gains the patients' respect and never does any harm. Moreover, it removes from the minds of your confrères the bitter thought that you wish to gain by another's loss. You do not need such an evidence of good faith at the first visit, but if you demand it as a condition of further attendance, you will seldom be disappointed and the chances are that by so doing, in addition to the approval of your own conscience, you will have gained the active goodwill of a colleague and the lasting respect of your patient.

Very few patients will be found unwilling to comply with conditions so obviously fair to all parties concerned and those who decline are not really worth having. If all physicians would agree to follow this plan and act towards one another in strict honour, the beneficial results would be incalculable, and would go a long way towards raising the business morality of the whole community. If the profession were not overcrowded, no doubt this simple but most important point in medical ethics would at once receive the general recognition it deserves, but *there is the rub*, the eagerness to obtain practice is constantly subversive of the code of ethics to the great detriment of all engaged in the strife, yet how much better it would be for all to make common cause in doing away with that pest of the physician's life the "dead-beat," that wolf in sheep's clothing who comes with guileless tongue to gain your sympathy and adds insult to injury first by robbing and then by slandering you. That is all you have to expect from the man or woman who comes to you because he has not paid your predecessor.

There are two books I can confidently recommend to every graduate in medicine. The first is "The Code of Medical Ethics," the second is "The Physician Himself," by Dr. W. D. Cathell. If you take them as your guide and follow steadfastly the precepts they contain, you cannot go wrong, more than this, you will win the esteem and warm regard of all who come within the sphere of your influence.

I wish to say a few words in regard to the large class of young men who graduate in our medical schools and immediately disappear by settling down in country villages remote from the larger centres. I would like to see better things in store for these than have been in the past. Theirs is a life of ceaseless toil in soul depressing surroundings.

Many, for want of means, begin life by renting a room, or two, in some small wooden house of weather-beaten exterior and all the environments looking like the last stages of desolation. The interior a rough floor devoid of carpet or oilcloth, shabby paper on the wooden walls, faded and torn; a square ugly box-stove the sole means for providing a scanty warmth in winter; some wooden chairs, a lounge and perhaps a medical chair covered with imitation leather, completes the meagre list of furniture. For wall decorations two or three chromos and an ill-framed diploma. In one corner a short grey-looking wooden counter garnished with unwashed bottles and a few crude instruments of pharmacy, some dusty, grey, wooden shelves on which repose the books used at college; medicine bottles, sundry boxes and untidy odds and ends. A bedroom still more desolate in appearance and appointments with its bed so tossed and untidy that no one could accuse it of ever having been made up. Hundreds there are who start in this way, and although in time the changes incident to a matrimonial venture may effect some amelioration, the man and his surroundings never reach a condition worthy of one whose mission in life is to cheer and comfort his fellow beings. Far be it from me to blame or harshly criticise where fate or destiny has proved unkind, but I do feel that a little more energy, enterprise and ambition, rightly directed, might sometimes work a wonderful change for the better.

Although I would be the last to advise imprudent outlay, or, extravagant pretension, I cannot but think a few hundred dollars judiciously expended in making a good appearance at the outset, even at the cost of going into debt, would be money well invested, since the world judges largely by external evidences, and the smart dapper alert young physician always makes a much better impression than one who is negligent and slothful.

No one can afford to rely upon the knowledge he has gained at college to carry him through life, hence the necessity for new books every year, not many, but a few of the best, and also at least two medical journals, these last to be carefully scanned and an index made of all that seems useful and practical as they come in. Such a system of ready reference will prove invaluable in the effort to keep up with the times.

It follows from the distribution of our population over a very wide

area, more so perhaps than in any other country, that the vast majority of those who practice medicine must of necessity be prepared to attend everything within the whole range of medicine and surgery and there are, fortunately, taking one thing with another only a comparatively few cases cropping up here and there that call for special skill, for a finer knowledge of detail than can be expected of the general practitioner, and of this residuum most can very well wait a few days or longer until special aid can be obtained, provided, however, that no harm is done by undue interference with the aims and objects of Dame Nature. When difficulties arise of a sort requiring greater skill and experience, or better facilities than happen to be within easy reach, it will be well for the sufferer if he finds himself in the hands of one who knows *what not to do*, for surely it were better to do nothing than to do the wrong thing, or even to do the right thing in the way it should not be done. Within the past twenty-five years a growing evil has come upon the profession in the form of an army of immature specialists, men who have taken a six weeks, six months, or even a year of study abroad and then pretend to know all that can be known of all the "ologies" on record, when in reality they have scarcely mastered the rudiments of any one special branch of medicine or surgery. The real specialist is not made in this way, he must be evolved by years of patient toil in clinical work, after he has become "a ripe medical scholar, replete with general experience."

None but those who love work for its own sake are worthy of the name. To me there is nothing so sad as the spectacle of a wasted life, or a promising career blighted by the formation of pernicious habits. A retrospect of the vanished years, of the time when I too had college chums and loved everyone in the class almost as a brother, of those later years with their associations and reminiscences of young men just starting in life, full of hope and energy, recalls full many a history of lives misspent, of deviations from the safe paths of temperance and self restraint. Perhaps in no other profession are there so many pitfalls and snares, so many temptations to err as in ours. It is so easy for the doctor, tired and discouraged as he often is, to seek relief in the use of drugs and stimulants, that the wonder is so many manage to resist the evil genius. All praise is due to those who do resist and only pity, not blame, those who fail. Of these last there would be a still smaller number if everyone realizing the danger and steadfastly resisting the temptation, resolved never to use alcohol or any drug for the purpose of obtaining temporary relief from the inevitable fatigue or discomfort they all at times must endure.

The danger is greatest to those who in their student days acquire the habit of conviviality and good fellowship. Beginning with alcohol and

so weakening the will power, it is an easy step to the use of the deadly narcotics, opium, cocaine and chloral. These things are always at hand but no man is safe who prescribes them for his own use, for no man can be certain that he will have the power to resist a craving once indulged. Therefore the greater the temptation the more need there is to put it from you. I am not here as a temperance lecturer, I only tell what I have seen and know to have been the downfall of many who might otherwise be living to-day, happy in the enjoyment of all that makes life worth living.

It has not been my intention to say aught that would be discouraging to those who are earnestly striving to make the most of their opportunities and I have no doubt some of you will realize your fondest expectations, but for those who do not gain riches and fame there is at least the consolation that you belong to an honorable and useful profession and it will be your own fault if in the end you have not acquired and maintained the respect and esteem of the community in which your lot happens to be cast; and, after all, what need is there of more than this?

HOW TO TEACH ANATOMY.*

BY

T. A. TEITELBAUM, M.A., '03.

This is the subject upon which I have been asked to write a paper to be read before the members of this society. Not until I began to think the question over did I realize the many difficulties with which the question is beset. It is not a question how to convey a certain amount of information to a particular individual, but, how to equip a class of men, possessing varying degrees of ability as well as diverse powers of comprehension, with a practical knowledge of that subject which is the very foundation and key-stone of their profession.

The question is undoubtedly one of vital importance, for a perfect knowledge and at the same time a practical knowledge of anatomy constitutes the ground-work of the science of medicine. Anatomy must indeed ever be looked upon as the basis of every branch of medicine, and it is to anatomical investigations that physiology and pathology owe their advancement to the prominent position they now occupy. There is no department, no branch of the medical profession which can claim exemption from the obligations due to anatomy. It is the guiding star of the operative surgeon, and a thorough knowledge of its principles is of the greatest importance to the physician in the estimation of internal and hidden disorders. The discoveries in anatomy have done

* Read before the Undergraduates' Society, on Oct. 19, 1900.

much towards clearing away the mist of hypothesis and speculation with which medical science was at one time enshrouded, and it is from continued investigation in this branch of science that we may hope one day to see the practice of medicine, divested of the mantle of empiricism, take its place in the rank of exact sciences.

How then can this all important branch of the medical curriculum be imparted to the student to the best advantage. The methods of to-day are without doubt far in advance of those which were in vogue a hundred years ago. Renbrandt's picture gives us a fair insight to the lack of knowledge which prevailed. The advanced methods of to-day owe their existence to facilities which did not exist in the past. The art of preserving dead bodies from putrefaction and decay; the modern methods of placing dead bodies by means of antiseptics beyond the power of imparting to the dissector that specific virus which is undoubtedly generated after death, more especially where death has resulted from puerperal fever, or, acute peritoneal inflammation; and lastly but not least, the change of sentiment which has followed in the train of enlightenment by which those handling dead bodies are no longer stigmatised as "unclean"; these and many other changes have placed the teacher of anatomy in a place of advantage, and placed at his disposal means by which the theoretical instruction can be demonstrated by practical proof and demonstration. He is as it were equipped with a graphic method, a method which fixes the subject in the mind of the hearer in a manner not to be effected by words alone, no matter how forcible and apt the language may be. It would be impossible to express, by words alone, the different changes of colour or physical character which occur in chemical experiments and which constitute, so to speak, the text-book of the chemist. Following the same line of argument we may say, that a theoretical knowledge of plexuses, anastomoses and the relation of parts such as is imparted by lectures and diagrams, can never fit the surgeon to guide an unerring knife in the delicate and intricate operations he is called upon to perform. Such skill can only result from a teaching that is practical, therefore the teacher of anatomy calls to his aid all those means by which his instruction can take more of the practical form than the mere theoretical.

These means are numerous, but chief among them are the skeleton, models, and the subject of the dissecting room. On the use of the skeleton I shall have but little to say. It is potent to the most casual observer that it is a matter of impossibility to become a master of osteology without the aid of bones. How necessary and essential these bones are to a practical instruction in this branch of anatomy is well illustrated by the well assorted and profuse display of bones and parts to be seen daily on the table of the professor of anatomy.

The utility of models is not without pros and cons. They are undoubtedly a useful means of conveying to the student a vivid and impressive picture of the parts they represent, but the model, with its careful attention to details and its punctilious adherence to general rules does not admit of deviations so constantly met with. They are useful, but, their utility has its boundaries and limits. Models can never take the place, nor rise to the value and importance of those means provided in the dissecting-room. Some of you will remember how Prof. Shepherd in his introductory lecture emphasized the fact, that all anatomy had to be learned in the dissecting room. All other means, therefore, provided by a school of medicine must be looked upon as auxiliaries. They are to all intent and purposes the theoretical part of the subject and can only be neglected to the detriment of the practical, but this theoretical part without the practical is utterly useless to the surgeon. They are therefore eminently essential to each other and if any degree of importance can be attached to the one above the other, the practical part can be designated as "*Primus inter pares*."

We may then assert, without fear of contradiction, that since it has been shown that anatomy must be learned in the dissecting room, it is there that it must be taught. We have, therefore, to ask the question, "How and in what manner can this instruction be given to the best advantage?" The complicated instructions laid down by Cunningham, Ellis, and others would be almost meaningless without the aid of demonstrators, cutaneous nerves and the fine lines of demarcation between superficial and deep layer of fasciæ and aponeuroses would only too often be passed over unnoticed by the student but for the aid of the trained dissector. The presence, therefore, of demonstrators is most essential and the aid they render to the student of incalculable value. But craving the indulgence of my superiors, and those who are masters in the art of teaching, while I am still in *statu pupilaris*, I beg to point out a want I experienced as a freshman and one which has undoubtedly been felt by many others.

The average freshman comes to his practical anatomy without any previous knowledge. He does not know the bony prominences and landmarks of the human body by the technical names. To him the "sternum" is the breast bone; the "clavicle" the collarbone, and the "oss innominatum" a thing undreamed of. It is therefore only, after much questioning and loss of time, that he learns the different points between which incisions are to be made for the reflection of the skin. He has much difficulty in discriminating between a nerve and an injected blood-vessel, and unless he has some knowledge of physiology, he may not know the difference between an artery and a vein. Even the

removal of fatty tissues without injuring the vessels embedded in it and the other muscles beneath it, cannot be done with skill. For these and many other reasons too numerous to mention there seems to be room here for some improved method. The one which seems to suggest itself is that of practical demonstration. A demonstrator might have a certain number of students allotted to him as a class, and before them he would carry out a dissection. The student by this means would gain much valuable knowledge which would enable him to carry out his own dissections to great advantage.

The advance of every science so sure and rapid will undoubtedly demand new methods of teaching this all important branch, and with the demand also bring the supply. To claim perfection for the methods in vogue at the present, would be to put an end to progress and advancement. That they are better than the methods of the past is without doubt, and it would not be too venturesome perhaps to predict that in time the penetrating power of the X-rays will be brought to such a state of perfection as to enable the student of anatomy to study the various parts of the human body *in situ* and with their life, the removal and withdrawal of which leave them in an abnormal condition.

PROPHYLAXIS OF INFECTIOUS DISEASES BY SERUMTHERAPY.*

BY

L. D. MASON, B.A., '02.

In approaching such a subject as this, the first thing that must strike an observer is the wonderful change in medicine that this method of treatment—while yet in its infancy—has already produced. For years disease had been treated empirically, without the physician knowing why, or wherefore, certain drugs brought about certain results.

Wonderful advance had been made in surgery by the discovery of anæsthetics and later of the antiseptic and aseptic treatment of wounds. It was becoming an exact science. But medicine still remained greatly in the dark, as far as its healing methods were concerned. A writer once said:—"Medicine consists in pouring drugs, of which we know little, into bodies of which we know less," and the rebuke was not without foundation. Now, however, a new era seems to have dawned, and while not allowing our hopes to rise too high, nor making predictions of too rose-coloured a hue, we must admit that there will probably be a great advance in this form of treatment, that has already accomplished

* Mr. Mason's very excellent paper, of which the following is only a condensation, was read before the Undergraduates' Society, on Nov 16, 1900.

so much. Let us see what led up to these results:—It was recognized for centuries back that man suffered, as a rule, but once from certain diseases.

¹An attack of smallpox, diphtheria or measles, if recovered from generally rendered the patient immune to that particular disease for the rest of his life. Early in the 18th century attempts were made to protect men from small-pox by inoculating them with material from the pustules of this malady. It was not until 1796, however, that vaccination, the salutary effects of which have since become world-wide,—was first introduced by Jenner. Nearly a century elapsed before the next great step forward was taken. In 1880, Louis Pasteur—whose discoveries in this branch of medicine have earned for him the title of “Father of Bacteriology,” as it is known and practiced to-day—proved that chickens could be made immune to chicken cholera by inoculating them with attenuated cultures of the specific germ of the disease. Numberless experiments by Pasteur, Koch, and others soon showed that animals could be similarly inoculated against anthrax. Studies upon the blood of animals, immune to certain maladies, were made as early as 1887 by Maurice Raynaud, and in 1888 by Richet and Héricourt.

The importance of such blood-serum was not recognized, however, until 1890, when Behring and Roux’s researches on diphtheria, and those of Behring and Kitasato on tetanus, showed that the serum, from an animal rendered immune, would protect a susceptible individual.²

In the words of Dr. Washbourn,³ “The principle of Serumtherapeutics depends on the fact that the blood serum of animals highly immunized by artificial means to any bacterial disease, possesses the property of protecting other animals against the same disease, and this protection is afforded whether the serum is administered before, simultaneously, or after infection, provided that in the latter case, the disease has not advanced too far before injection is made.”

Of immunity itself and the various theories of its production, the limits of this paper will not allow me to treat at all.

I can only name some of the more important suppositions about its origin. Pasteur’s “Exhaustion Theory,” claimed that the bacteria died out, after a time, from want of suitable food, and so the individual became immune.

Chauveau’s⁴ “Retention Theory” held that the germs produced material, prejudicial to their own growth, which accumulated in the system and finally stopped their development. Neither of these is now believed. Metchnikoff brought forward in 1884, the celebrated “Phagocytosis theory,” which is still maintained by some and which teaches that the white blood-cells destroy and literally devour the germs.

The mass of evidence tends to show that phagocytosis occurs only after other influences have acted injuriously on the bacteria. The probability of other factors being concerned was pointed out as early as 1891, by our own Professor Adami.⁵ The belief now is, that, when the toxins or poisonous products given off by the germs in their growth enter the animal body, they stimulate the cells to increased activity, and these latter secrete a substance, termed an "antitoxin," which neutralizes the poison and prevents it from exerting its deleterious effects, while in the system. By injecting non-fatal, but gradually increasing doses of toxins into an animal, its blood may be made to contain so much antitoxin, that its serum introduced into another individual may not only prevent, but actually cure the same disease in him,—which latter effect requires the neutralization of large quantities of poison already in the body."

And now let us see what are the practical results of these researches:—The first great disease to be successfully encountered by this new form of treatment was that dread scourge and terror of mothers and children alike—diphtheria.

Antidiphtheritic Serum.—Klebs discovered the specific germ of diphtheria in 1875; Löffler confirmed his work. It was not until 1894 that Behring and Roux showed, at Buda-Pesth, the value of diphtheria antitoxin. For the following account of its preparation I am indebted to Dr. E. M. Houghton's admirable paper on "Antitoxins."⁷

Virulent cultures must be used in the immunising process. If mixed with other organisms they have to be isolated. To keep the germs in a high state of cultivation, they have to be transplanted daily into fresh bouillon, possessing an exact degree of alkalinity. The approved cultures are planted in large flasks of beef bouillon which are then placed in the incubator for seven days. The cultures are then filtered under strong pressure so that all the bacteria are removed. This leaves a clear brown fluid called diphtheria toxin, the virulence of which is so great, that 1-50 to 1-10 of a drop will kill a half-grown guinea-pig. Small initial subcutaneous injections of this toxin are made into selected horses 1-10 c.c. of toxin diluted with sterile saline solution to 1 c.c. is sufficient. The reaction varies greatly with the animal taken; some horses show no local or general reaction, others are prostrated. The variabilities and difficulties in this connection are said to be "well nigh distracting." After a considerable length of time the animal can resist large quantities of toxins, a definite quantity of blood is drawn from the jugular vein, under aseptic and antiseptic precautions into sterilized vessels. The clot contracts and squeezes out after some hours, the straw-coloured serum which contains the antitoxin. This serum is placed in a sterilized container; some preservative, e.g. cam-

phor or weak carbolic solution is added, and it is allowed to stand. It is then filtered, the most complete asepsis being observed throughout.

The strength of the antitoxin has now to be tested. This is done by injecting a mixture of ten times the fatal dose of diphtheria toxin with variable quantities of the serum, into a series of guinea-pigs. Thus the force of the antitoxin is gauged by the amount required to protect these animals from all ill effects of the poison.

An "antitoxic unit" is ten times the quantity of serum necessary to guard a medium sized guinea-pig against ten times the fatal dose of diphtheria toxin. Thus, if 1-20 milligramme (1-20000 cc.) of serum protects against 50 milligrammes of a toxin, the fatal dose of which is 5 mg., the unit here would be 1-2000 cc., or each cubic centimetre would contain 2000 immunizing units. The finished and tested product is now put up in tubes and labelled with the number of units it contains. Some firms send out various grades of serum, using tubes that hold from 2 to 20 cc. of fluid.

Others never allow the latter to exceed 5 cc., no matter how many units it contains. Will the serum keep? And if so, how long? If it has been properly prepared there is no danger of its putrefying, but, as it is a complex albuminous body, it tends, as soon as made, to break up and so deteriorate. Manufacturers however, generally add sufficient excess of serum to insure the full number of units claimed on the wrapper, being present at the end of six months. It should be kept in a cool dark place. And now we come to the administration of the antitoxin. It is introduced by subcutaneous injection. The most rigorous asepsis is here absolutely necessary. The greatest care is needed in handling the serum. It should be of thoroughly reliable make; it must not be left long exposed to the air.

Dr. Washbourn² reports two instances at least of death recorded from the use of contaminated antitoxin. And as the physician holds a serious and responsible position in this matter, absolutely clean and sterile instruments must be used. The skin should be washed with soap and water, and then a 1 in 20 carbolic solution applied. The syringe ought to be boiled before use. The above quoted authority recommends in the selection of this instrument, that one, which can be so treated, should be got; the pistons ought to be made of rubber or asbestos, and the joints made tight with washers of the same material. No cement should be in the joints. The best site for injection is said to be the subcutaneous tissue of the flank. Into the treatment of the disease itself, I cannot go further than to say, that, "the dosage depends on the severity of the disease rather than the age of the patient."³

In all cases, the first twenty-four hours is the period when the bulk of the serum should be injected. During this period, 2, 4 or 6

injections should be given in mild, moderate, or severe attacks respectively. For the next two days, one, two, or three injections may be given daily. If the patient shows no improvement after three days, no benefit is likely to result from further injections. About 4000 units is an average dose for injection." It is important to give it early, and to remember that one good sized injection is vastly superior to small ones.

Dr. Washbourn shows that in cases of tracheotomy for diphtheria in children under 5 years of age at Guy's Hospital, London, the total mortality for the years in which antitoxin was not used, viz., from 1887, 1894 was 76·7 per cent.; while that of the antitoxin years 1895, 1897 was 28·2 per cent.

Now let us examine what concerns us most at present, viz.:—*The Prophylactic power of Diphtheria Antitoxin.*

Klein³ said of this, "The chain of symptoms constituting true diphtheria in man is primarily caused by the growth and multiplication of diphtheria bacilli in the affected mucous membrane; by this growth and multiplication certain metabolic products result (diphtheria toxins) which are absorbed into the system and give rise to the constitutional changes that characterize diphtheria, so that local inflammation and necrosis caused by them is one thing; the absorption and action of their toxins in the body generally, is another. The serum of diphtheria-immunized animals, can neutralize diphtheria toxins and also counteract the growth and multiplication of the bacilli themselves. The higher the antitoxic and immunising power of such serum, as tested on the animal,—the greater the neutralization in diphtheria in the human subject, of the toxin already circulating in the affected body; and the greater the arrest of further multiplication of diphtheria bacilli in the affected mucous membranes, *i.e.*, the disease will be cured." If the serum is injected too late after infection, it has no protective power whatever,—no matter how large the dose, for at this stage the individual is suffering from the results and not the direct action of the bacteria and their toxins. It is against the latter alone, that the serum can act.

The great drawback to its general use as a prophylactic, is the brief period that the immunity lasts. But instances are recorded⁹ where epidemics in schools were apparently stopped by injecting the antitoxin into all the inmates.

Dr. Washbourn⁸ says that "Its use is confined to cases, which have been definitely exposed to infection. When one or two children in a family are attacked with diphtheria, it may be advisable to treat the other children with the serum. Personally, I prefer to have the throat systematically examined for diphtheria bacilli and to use the antitoxin immediately they are found."

Dr. Park,⁴ however, of the New York Health Department, states that the inspectors of this department immunised from January 1st, 1895 to January 1st, 1900, 6,506 cases with diphtheria antitoxin, of which cases 55 developed the disease without fatal results. Among these 6,506 persons—mostly children and most directly exposed to diphtheria, no fatal cases developed within thirty days, with the single exception of one patient who had scarlet fever as well. He says "Let me also recommend its use in all suitable cases for immunisation. It gives us a guarantee of at least two weeks of safety and this can be lengthened at will by repeating the dose."

Dr. Shurly¹⁰ of Detroit goes even further. After deploring the ravages of diphtheria, especially amongst the poor of our large cities, he recommends the general adoption of a prophylactic dose of antitoxin to every child of croup age, viz.: under ten years exposed to diphtheria. He believes this is the chief remedy to diminish the mortality. The use of this preventive is especially indicated in the presence of adenoids and enlarged tonsils. He advises the early administration of the serum, without waiting for bacteriologic diagnosis. Antitoxin employed twelve hours or more prior to operative interference, will reduce the mortality of intubated cases at least 50 per cent.

These are the advantages that certainly ought to enhance its value, but, does it cause any injurious effects?

Dr. Washbourn³ claims that several cases are recorded in which fatal collapse has occurred immediately after the injection of the antitoxin. He says that similar results have followed the subcutaneous injection of morphia. This, however, is most uncommon and not by any means the difficulty met with in its use. Writing five years ago, he remarked that the injection of antitoxin frequently caused an eruption, and sometimes pain in the vicinity of joints. These symptoms usually appeared a week after injection. The eruption was generally erythematous or urticarial and might be uniformly distributed, or, confined to a particular part, *e.g.*, extensor surfaces of the limbs. The eruption was accompanied by pyrexia—the temperature sometimes reaching 104° Fahr. The pains in the joints were less common, while at times there was effusion into the latter. These complications passed off after a few days, and while none proved fatal, still naturally they were most undesirable. They were thought to be due to something else in the serum besides the specific therapeutic body.

In fact Klein² had a serum dried by evaporation for him, which kept indefinitely its antitoxic and immunising action; this he diluted with a definite amount of water and used for injection. He found that the rash, as a rule, did not appear with this, and so thought that the

substance which caused it was insoluble in water. This objection to the use of antitoxin, however, still exists to a slight extent to-day.

Dr. Spronck¹¹ of the University of Utrecht claims that it is proved by statistics that heating the serum for a time, at a lower temperature than will destroy its curative power, causes it to lose some injurious property which otherwise produces a rash and the other complications.

Dr. Wright¹² states that in 268 cases of diphtheria treated by him with antitoxin, the only disagreeable effect caused was the production of a localized painful spot in the vicinity of the place of inoculation. He never observed pain in the joints. Urticaria often followed its use in the earlier cases, but since the antitoxin has been produced in a more concentrated form he has never seen it. So we may justly conclude that its benefits far outweigh the temporary distress that may in some cases follow its use.

The next form of therapeutic serum to be discussed is the *antitetanic serum*. Kitasato in 1889, discovered the specific germ of tetanus. Behring and others in 1892, succeeded in immunising horses and used their serum in man. Prof. Roux believes that the action of this particular antitoxin is upon the tissue cells, which it fortifies against tetanin—or the poison of this germ.

“This explanation,” says Dr. Geo. W. Cox of Chicago,¹³ “clearly accounts for the wonderful immunising properties known to exist in the antitetanic serum, and is the strongest possible appeal for the use of this agent as a preventive. Not a single case of tetanus has ever developed after an adequate prophylactic dose of a reliable serum was given.” This fact was proved in hundreds of cases at the Pasteur Institute in 1895. Preventive injections are strongly recommended by numerous writers, in the case of suspicious wounds, such as those soiled with earth, especially in those places where the disease is known to be endemic. For this purpose 10 cc. of the serum given two or three times at intervals of as many weeks, have been suggested.⁸ Treatment of the disease, when once manifested has been unsatisfactory, because tetanus is only recognised when the toxic effect has been produced. The convulsive stage corresponds to the paralytic stage in diphtheria and at this time it is too late to counteract the poison's deadly work.

Antistreptococcic serum is another kind, which was first prepared by Marmorek. Its results are most perplexing, due probably to⁸ the difference in virulence and condition of the germs themselves. Some uphold its benefits in erysipelas and puerperal septicæmia. Where this germ gives rise to complications in scarlet fever or diphtheria, the use of this serum seems to lessen the severity of these diseases.

Sera have been prepared for the treatment and prevention of typhoid, cholera, smallpox, rabies, tuberculosis, pneumonia, and yellow fever.

While some have been undoubtedly failures, it is premature to pass judgment on most of them, as they are yet in the experimental stage.

There is one other kind which I wish to mention before concluding and which, as tried in Portugal last year, cannot be declared a decided success. This is the

*Antitubonic serum*¹⁴—Yersin of the Pasteur Institute and Kitasato, about the same time, in 1894, discovered the germ of plague. A serum was prepared after various trials. When the disease broke out in Oporto in 1899, in 142 cases treated with this remedy there was a mortality of 14.78 per cent.; in 72 not treated there was a mortality of 63.72 per cent. It must be given early and in sufficiently large doses. Intravenous injection is the best method. The envoys of this Institute gave as much as 40 cc. at a time. The veins of the hand or wrist were selected, the serum was raised to body temperature, the needle introduced under the sterilized surface of the skin, directly into the blood-vessel, and three or four minutes were taken to inject the fluid. A drop of collodion closed the wound. Prophylactic injections were successfully tried on about 600 persons. Immunity was found to almost immediately follow, but it was short-lived, scarcely lasting more than 15 days, when, however, it could be reproduced by a fresh injection.

The future seems bright for this form of treatment. Though there have been, and will be, no doubt, failures, still victory is often learnt through defeat. The value of the proverbial "ounce of prevention" is well known, and here, where we can accurately measure our ounces and employ them intelligently results will probably follow, as beneficial as they are now ardently desired.

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