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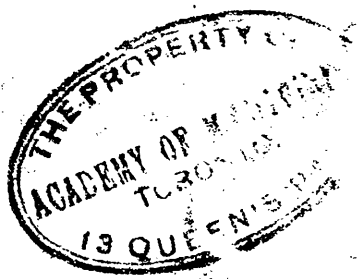
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Kingston

Medical Quarterly

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The KINGSTON MEDICAL QUARTERLY is presented to the Medical Profession with the compliments of the Editorial Staff. Contributions will be gladly received from members of the Profession and willingly published. JOHN HERALD, Editor.

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PRINCIPAL GRANT.

A GREAT man has finished his labours. A good man has gone to his reward. Queen's and Canada have suffered an inestimable loss. Principal Grant is dead. Dead did we say? Nay, not dead. So long as Queen's remaineth, so long as Canada exists as a nation Principal Grant cannot die. It is difficult so soon after the close of a great man's life to form a

true estimate of his character and to realize the full value of his work. On close inspection a master painting may present to the observer's eye inequalities, inconsistencies or even what he may take to be blemishes. As the distance between the observer and the painting is increased, these inequalities, inconsistencies and apparent blemishes disappear and the observer stands amazed at the beauty, grandeur and harmony of the artist's conception. So it is with the life and character and work of a great man. An estimate formed soon after his decease is liable to be biased by the observer's personal feelings, and is sure to be inaccurate, because time has not yet been given for the full fruition of his labours. Fully appreciating the difficulties of the task and frankly acknowledging that our estimate may be biased by our personal feelings and inaccurate because of the short time that has elapsed since his death, we modestly venture to place on record our opinion of his character and his work.

Principal Grant had two main aims in life—the upbuilding of Queen's and the development of a strong and pure national sentiment in Canada. For both of these causes he did much. How much is not yet known and will not be fully known nor appreciated for many years yet to come. What has he done for Queen's? As we look back over the past twenty-five years we can partially answer that question. In 1877 the University was housed in one small, poorly equipped building. Now there are upon the campus six large, commodious and well appointed stone buildings and several frame workshops. The endowment has been largely increased. In 1877 the number of students enrolled in all Faculties was slightly over 100. Last session the number of students had increased to nearly 900. These are but evidences of material growth, but even material growth requires some motive power, and to a limited extent indicates that the institution is well founded and ably managed. Twenty-five years ago Queen's was a denominational institution and local in its influence. To-day Queen's is practically non-denominational and national in its character and influence. Do we claim that all this was the work of Principal Grant? By no

means. Many others connected with the University have contributed, and that largely, to the growth of Queen's, but throughout this period Principal Grant was the guiding and controlling spirit. Many of the plans laid for Queen's expansion and development were conceived by others, but the Principal had the wisdom to perceive their worth and the energy to carry them into effect. No one was more receptive of the ideas of others, and no one was more energetic in making practical use of them. He succeeded in a marvellous degree in surrounding himself with men of ability and in making them loyal to himself and to Queen's.

In the larger field of public affairs his influence was felt from one end of Canada to the other, and even beyond. In the wonderful development of Canadian national sentiment, and in the growth of the idea of Imperial Federation which have taken place during the past few years, no voice nor pen has contributed more than those of Principal Grant. In the earlier days he did much in the Maritime Provinces to bring about Confederation. Later on his "Ocean to Ocean" opened the eyes of Canadians to the vastness and the worth of the empire to which they had become heirs and for the development of which they were responsible. Since then he wrote much and spoke much upon questions affecting the welfare and future greatness of Canada, and throughout all his public utterances there was ever the true ring—faith in our future and a demand for purity in all our public men.

Why was this man able to do much for Queen's, and to wield such an influence on public opinion? What was the source of his power? To us it seems that several qualities contributed to his power. First we would note his firm and childlike belief in an allwise Creator who so governed the affairs of the universe that in the end all would be well. His duty and the duty of each individual was to act as he conceived it to be in accordance with the Divine will as revealed in Holy Writ. Secondly, Principal Grant was a man of courage. Once having made up his mind that a particular line of action was right he would advocate it if he were alone against the world. His belief was

that when the matter under consideration involved the question of right and wrong he was not justified for expediency in remaining silent. It was his duty to make his views known, even though by so doing he should be misjudged, misrepresented and sometimes vilified. He had the consciousness of doing what he believed to be right, and that was enough for him. Because of his strong religious convictions his voice was ever raised against wrong doing, but at all times he had a kindly feeling for the wrong doer. Many a young student has had to listen to a scathing rebuke from the Principal, and then to the kindly and fatherly advice of the man. To our mind nothing was more to his credit than his treatment of erring students. Notwithstanding his onerous and multitudinous duties, he at all times, even during the past session, kept himself in close touch with the students. If a student was leading a wayward life, the Principal soon knew it, and the student was invited to call. He then had pointed out to him the folly and the sin of his course, was advised as to the right way, and was put upon his honour to endeavour to amend his mode of living. The Principal made no further reference to the student's past, but treated him as a friend so long as he showed that he was worthy of confidence. Many an ex-student of Queen's has reason to be thankful that Dr. Grant was the Principal, and that at the same time he was so much a man.

Principal Grant had faith in the future and untiring energy. In spite of the many difficulties surrounding Queen's (difficulties which would have lessened the faith and paralysed the energy of a weaker man) seemed to act as stimulants to Principal Grant, to strengthen his faith and to increase his energy. Those who have been closely connected with Queen's during the past few years know what a worker the Principal was, and what power he had of stimulating others to work. Those who were associated with him were compelled by his example to work with renewed vigour and with a strengthened hope of ultimate success.

His generosity was well known. Whenever he advocated a scheme which required financial support he manifested his

faith in it by contributing towards it himself. No better plan could have been adopted to induce others to give. His example was contagious. Others seeing his faith endorsed by his works had their faith strengthened and went and did likewise.

Now that Principal Grant is gone, many friends of Queen's are inclined to shake their heads and cast gloomy forebodings for her. Not so. The foundations have been too well laid, her friends are too many, and their loyalty too strong to allow her to go back. Queen's has now attained such a position and such a hold on the public confidence, that the new Principal, whoever he may be, supported as he will be by the trustees, the professors and the alumni, will be able to carry on the work for which Principal Grant sacrificed so much—his time, his money, his labour, his life.

THE ONTARIO MEDICAL COUNCIL AND MATRICULATION.

AT its last meeting the Ontario Medical Council decided to raise the standard for registration as Medical students. The new regulation is as follows: "Any person who presents to the Registrar of the Medical Council a certificate that he has passed the examination conducted by the Education Department on the course prescribed for honor matriculation in Arts, including Chemistry and Physics," will be entitled to register as a Medical student. This is a step in the right direction. No one interested in Medical education doubts the advantage and necessity of every Medical man having a good preliminary education. Heretofore our standard has not been high enough. The Council is to be congratulated on the change it has just made. We have not seen an official report of the Council proceedings, but we presume that the options for registration previously allowed will still be accepted by the Council. Formerly "A certificate from the Registrar of any chartered univer-

sity conducting a full Arts course in Canada, that the holder thereof has passed the senior matriculation of such university or the examination conducted at the end of the first year in Arts by such university, shall entitle such holder to registration as a matriculate." As this examination is practically what is required by the Council's new regulation we have no doubt it will still be accepted. Further, we have always felt that the Council's regulations regarding registration ought to be somewhat elastic. Anyone presenting a certificate of a preliminary education of equal value to that required by the Council should be granted his registration on the usual terms. The Council's aim should be not to exclude from registration any who are qualified, but rather to see that those who are admitted come up to the standard set by the Council. No doubt many applicants for registration could present certificates of having passed examinations in Provinces other than Ontario of equal educational value with that of the Education Department. Such certificates ought to be accepted, and the holders thereof registered as matriculants by the Council.

PERNICIOUS ANÆMIA.

FROM an experience extending over six years I have arrived at the same conclusions as Cabot with regard to this disease, viz., that its distribution and frequency are in direct proportion to the activity of medical science in a given district. The disease must not be an uncommon one, when in a city like Kingston, from three to six cases presenting the blood characteristics of this disease have come under my observation annually.

What class of cases is one to include under the heading of pernicious anæmia, and where is one to draw the boundary line between this form of anæmia and some forms that are closely related in blood characteristics? Is one to include only those

cases as defined by Addison, who first separated out this disease as a clinical entity and describing it as "idiopathic" anæmia, or is one to follow such German authors as Biermer, Grawitz, Ehrlich and others, who give a wider field to this form of disease? Addison outlined this affection as "a general anæmia occurring without any discoverable cause whatever, cases in which there had been no previous loss of blood, no exhausting diarrhœa, no chlorosis, no purpura, no renal, splenic, miasmatic, glandular, strumous or malignant disease." The wider view is perhaps best expressed in the words of Schaumann, who states, "I hold the same views as those authors who consider the disease is not an etiological unity, but only a symptomatic group, which can be produced by causes of all kinds. I regard as pernicious anæmia, not only the so called idiopathic or better cryptogenetic cases, where the disease develops without any recognizable cause and apparently spontaneously, but also those in which a definite etiological cause for the anæmia is to be found. Among such causes are the following :—(1) Intestinal parasites; (2) gastro-intestinal disturbances of all kinds; (3) pregnancy and the puerperium; (4) repeated hæmorrhages; (5) infective processes (syphilis, malaria, typhoid); (6) intoxications (carbonic oxide poisoning). If I had to define my position in a few words, I consider that we must regard as pernicious anæmia, those cases of severe anæmia, which correspond to the clinical picture described by Biermer and possess the blood condition described by Ehrlich, irrespective whether such cases occur in individuals previously healthy or in those already affected with disease, and irrespective whether the anæmia runs a fatal course or not."

Stockman has endeavored to establish the view that any severe anæmia may, by lowering the nutrition of the blood vessel wall, give rise to large or small hæmorrhages, and these in turn of course increase the anæmia, thus establishing a vicious circuit, and the cases thus become pernicious in character. This explanation would necessarily do away with any specific character of pernicious anæmia. This theory does not explain however why every severe anæmia—and there are

anæmias where the blood constituents are frequently as lowered in character as in pernicious cases—does not become pernicious and further cannot explain the origin of certain cases which develop just as Addison stated,—without recognizable cause. Dr. Hunter, who has paid particular attention to this disease for many years, sharply differentiates off those cases described by Addison, while pointing out that in many cases where the clinical and blood characteristics of this affection follow upon or can be traced back to some seeming cause, that this cause bears either an accidental relationship or the processes of pernicious anæmia have been engrafted upon it, i.e., the seeming cause is in reality a predisposing one. This view of Hunter's is the one which I believe to be the most nearly accurate. The exact reasons for this belief need not be here stated as their discussion would lead one too far afield in a paper of this character. Hunter believes that he has discovered the cause of those seemingly idiopathic cases, and in a series of papers published this last few years has endeavored to prove his position. Dr. Hunter's position can be best outlined by some extracts from a summary of his latest paper read before the Pathological Society of London on May 20th, 1902.

“My conclusion is that in it (pernicious anæmia as understood by Addison) we have to do with a disease *sui generis*—a definite, specific, infective disease, with a very definite group of clinical features, and a very definite and constant group of pathological changes associated with it. These changes are of two kinds :—(1) Infective lesions in the mucosa of the alimentary tract; (2) distinctive pigment changes in the liver and kidneys, the result of the hæmolysis, caused by the infection underlying the disease.”

Regarding the nature of the infective (and specific) lesions of the alimentary canal, Hunter says that this is of a double character. “1. A specific infection, of which the chief evidence is a glossitis. 2. A septic infection of mouth, stomach and intestine, of which the chief evidences during life are varying degrees of “oral sepsis” (stomatitis and gingivitis) and “septic gastritis” (a subacute gastritis set up by influx of pus

organisms from mouth), the latter recognizable during life by the vomit and various symptoms of oral, gastric and intestinal disturbance, and after death the conditions of gastritis, gastric atrophy, intestinal atrophy, erosions or ulcers now and again found in the disease."

Dr. Hunter's observations regarding the presence of mouth, stomach and intestinal lesions in pernicious anæmia are without doubt correct. That these lesions are specific and bear a direct causal relationship to the disease cannot yet be accepted in their entirety.

The post-mortem findings in this disease are very characteristic and consist, apart from the changes in the blood, in a general fatty degeneration of the viscera; frequent hæmorrhages in skin, mucous or serous membrane; deposit of iron containing pigment, particularly in the portal area (spleen and liver), though it is also found in the epithelium of certain of the convoluted tubules of the kidney; a transformation of the bone marrow into an ætieve state, resembling that seen in the fœtus during the last months of pregnancy; changes in the spinal cord, a peculiar lemon-yellow tinting of the skin and body-fat; and lastly and according to Hunter, the important factor, we find various grades of oral, gastric and intestinal inflammation. Perhaps the post-mortem findings would be better illustrated by giving the results of an autopsy held on the body of a woman dying of this affection at Rockwood Asylum for Insane, on Jan. 23, 1902. A blood examination made some six weeks previous to death had given a blood reading of 1,000,000 corpuscles and 25 per cent. hæmoglobin, together with the usual peculiarities in the red cells. The examination was made three days after death.

The body (H. D.) was that of a medium sized woman, aged 35 years, quite well nourished, skin and conjunctivæ a distinct lemon-yellow tint (not jaundiced). The eyelids and lower extremities were somewhat œdematous. No petechiæ. The thoracic and abdominal organs only were examined.

Thorax. On opening into thorax each pleural cavity contained about 30 ozs. of a blood tinged transudation. The *lungs*

were pale, non-adherent, showing a few puckerings at apices and some hypostatic congestion and collapsed lobules along posterior surface. The trachea, bronchi and bronchial glands were normal as was also the oesophagus. The pericardial sac contained six ozs. of a pale serous fluid. The epicardial fat was tinged a distinct yellow. The *heart* weighed $7\frac{1}{2}$ ozs. The muscle was decidedly pale on outer surface. The endocardial surface showed marked fatty degeneration, the musculi papillares showing particularly well the so-called "tabby-cat striation." The walls were very soft and flabby, the chambers slightly dilated and the valves normal. The intima of aorta showed some patchy areas of fatty degeneration.

Abdomen. The abdominal fat (1 inch) markedly yellow and contrasting with the dull red muscles. The *stomach* was empty, the mucous membrane covered with a thin layer of mucus, the mucosa very pale, no erosions. The *intestines* were almost completely empty, very pale mucosa, no erosions nor ulcerations. The *liver* weighed 45 ozs. and was very soft and flabby, of a pale yellow color and greasy on section. Section showed a yellow surface with scattered reddish dots. The *spleen* weighed 10 ozs. and was very dark, but rapidly turned bright scarlet when exposed to air. No gross changes in parenchyma. The *pancreas* was very pale. The *suprarenals* normal. The *kidneys* weighed, right $4\frac{3}{4}$ ozs., left 4 ozs. The right kidney was very pale and cortex somewhat increased. The left kidney showed some adherence of capsule with the surface granular and contracted, and cortex thin and very pale. Evidently some interstitial tissue increase as well as fatty degeneration. The *bladder* was distended with urine and the ureters were slightly dilated in lower half of course (evidently terminal.) The *uterus* was normal sized, organ very pale. The cervix showed some grade of papillary erosion and a bilateral laceration. The *femur* on section showed the marrow changed to a bright red color, resembling that of the foetus. Unfortunately the head or spinal canal could not be examined.

The potassium ferrocyanide and hydrochloric acid test was applied both to gross and microscopic sections of the liver,

spleen and kidneys, and a marked reaction obtained. In microscopic sections of the liver this iron reaction was practically confined to the outer zone of the lobules. This same area of the lobule was the seat of marked fatty degeneration, as was well demonstrated by the use of sudan iii, and also by osmic acid. The heart showed most advanced fatty degeneration. The kidneys showed fatty degeneration of both tubular and glomerular epithelium and the epithelium of many of the convoluted tubules contained iron pigment. The mucosa of the stomach showed a condition of atrophic gastritis, the glands being pushed apart by fibrous tissue and many of them destroyed. The epithelium lining many of the peptic glands contained numerous fat particles. The mucosa of the small intestine (ileum examined) showed no marked change. The marrow of the femur in cover glass films showed the marrow cells to be actively proliferating, but many of the forming blood corpuscles are over-sized and their nuclei stain but faintly (megaloblastic degeneration).

In view of Hunter's recent work, I regret that the tongue was not removed and submitted to microscopic examination. This case illustrates very well the morbid anatomy of true pernicious anæmia, as will be seen by contrasting these findings with the list of changes given as characteristic of this affection.

As to the symptoms and clinical signs nothing can be added to the descriptions found in every text book. The point that has always struck me in examining these cases is the peculiar yellow tint of the skin while the patient is not at all emaciated. In view of the finding of Dr. Hunter more careful examination will have to be made of the condition of the cavity of the mouth. This factor is generally neglected as the condition of the mouth is generally looked upon as secondary to stomach involvement, and not as a factor of any importance. Apart from the general features of anæmia the diagnostic factors lie in the condition of the blood. Examination of the blood will show very characteristic features, but it should be remembered that often a series of examinations are necessary

and again the time of examination is important, for if the examination is made during one of the periods of "improvement" the usual blood features of a pernicious anæmia may be absent.

The blood in pernicious anæmia flows more freely than usual, does not clot so readily, the red corpuscles do not tend to form rouleau, the specific gravity is greatly lowered (down at times to 1.025, normal 1.058) and the blood drop is generally but not necessarily pale and watery looking.

The red corpuscles always show a great reduction in their numbers, falling to 1,000,000 per cb. mm. or lower. The lowest reading I have yet met with was one of 692,000 (Mrs. J.) There is always marked poikilocytosis and irregularity in size, both large (macrocytes) and small corpuscles (microcytes) being common, the former generally in larger number. Nucleated red cells are almost a constant feature, being absent only when there are no compensatory changes (haematogenic) in the bone marrow. An absence of these forms is frequently detectable some days before a fatal issue, and is, I believe, to be looked upon as of grave omen. (Cases W. S., Mrs. R., J. R.) The usual form of nucleated disc present is the megaloblast (Ehrlich's gigantoblast), though occasionally normoblasts are noted. But normoblasts are decidedly more common in grave chlorosis or secondary anæmias, while megaloblasts are rare in these conditions though present often in leukaemias. Considerable stress is laid by most authorities on the presence of the megaloblast in the blood of pernicious anæmia.

The haemoglobin is always reduced in amount, but seldom falls to the same extent proportionately as do the corpuscles. The consequence is that the individual cells contain a normal or hypernormal amount of haemoglobin and stain deeper. The color index of the corpuscles is plus, not minus as is the rule in chlorosis and secondary anæmia. In the case above mentioned with 692,000 red cells, the haemoglobin reading was 18 per cent., giving a corpuscle color index of 1.3. During the remissions which are so common in the clinical history of this disease, we find that the corpuscles rapidly increase in numbers, while the rate of increase in the haemoglo-

bin is much slower, so that if the blood is examined at this period the blood shows more of the characters of a secondary anæmia, the corpuscles color index being minus say .7.

The white cells do not undergo any particular changes, though generally in graver cases there is a reduction in their numbers, the fall being most commonly in the polymorphonuclear variety.

To sum up one can say that the characteristic blood features in pernicious anæmia are a marked reduction in the number of blood corpuscles with a reduction in the haemoglobin in lesser proportion, together with marked poikilocytosis and presence of megaloblasts.

I very seriously question if the results of blood examination are of any particular value in prognosis, particularly as to gravity of the disease in different individuals. For some of my cases with a corpuscle reading of over one and a half million, have gone down more rapidly than others who presented a reading of under a million when first seen. But the changes in the blood condition are the best indication in the individual of the progress of the disease, and should be made every two weeks, or at furthest every month. A table giving the blood analysis of some typical cases is appended.

As to the treatment I fear there is nothing new to add. The majority of cases well deserve the name of progressive pernicious anæmia, though partial or almost complete recoveries are common, being followed by relapses. If there is any condition present which may stand in causal relationship to the disease it must be removed, e.g., intestinal parasites, syphilis, bad hygienic surroundings and the like. Next, in view of Hunter's work careful attention must be paid to the mouth, and in fact the entire alimentary canal. The conditions present must be treated according to their character. In the mouth however, antiseptic measures must never be neglected, and a course of intestinal antiseptics (salol, bichloride of mercury, etc.) is often of benefit. The diet must be carefully regulated, and owing to frequent absence of HCl in the gastric juice the use of this acid after meals will often be advis-

able. The only drug which seems to have any marked effect is arsenic, which must be given in increasing doses to the limit of toleration. Owing to the gastro-intestinal features of this disease arsenic is often not well tolerated, and its use by the mouth, where such symptoms are marked, must be avoided as more harm than good will be found to follow. Occasionally, but not generally, iron will be found beneficial and should always be tried. Red marrow, etc. is occasionally valuable. Other indications must be met as they arise, as there is no specific treatment for this affection.

Extracts from Blood Examination in Three Cases of Pernicious Anaemia.

Case & Date.	Red Blood Cell Count.	Haemoglobin.	Leucocytes.	Character of Red Cells and Remarks.
(1) W. S. Apl. 1, 1897	1,216,000	30	5000	Marked poikilocytosis. Macrocytes quite numerous; a few microcytes. Many megaloblasts and an occasional normoblast present.
Dec. 13, 1897	1,440,000	43	8000	Moderate poikilocytosis—otherwise features as before. Examination made shortly after relapse following a period of marked improvement.
Feb. 24, 1898	952,000	17	Very marked poikilocytosis, etc. Megaloblasts very rare. Death Mar. 19th.
(2) Mrs. R. May 25, 1898.	3,500,000	55	9000	Slight poikilocytosis, numerous microcytes and a few macrocytes. No nucleated discs. (This reading shows the character of a secondary anaemia.
Sep. 20, 1898.	1,185,000	28	Marked poikilocytosis, many macrocytes & megaloblasts.
Dec. 16, 1898.	850,000	22	Very marked poikilocytosis. Many macrocytes, but nucleated forms were not noted. Death within 30 days.
(3) J. R. May 3, 1902.	1,226,000	25	4000	Marked poikilocytosis, many macrocytes, a few microcytes, frequent megaloblasts & an occasional normoblast.
	1,100,000	22	Ditto; apart from an absence of nucleated forms in the 6 films examined. Death on June 16.

W. T. CONNELL.

INTRAVENOUS TRANSFUSION OF NORMAL SALT SOLUTION.

THE introduction of what is known as normal salt solution (a seven-tenths of one per cent. solution of sodium chloride in water) into the system in the treatment of disease and for the prevention of certain conditions, has come into such general use, and its value has been so thoroughly tested by its repeated use in those cases, that it has occurred to me, that a few remarks on what little familiarity I have with the subject, and what benefit I have derived from its use, might be of service to others in the profession whose opportunities for doing such work have been limited.

From what I can learn by enquiry, I feel that its use in this district has been too limited, and a few remarks on its usefulness in certain cases, simplicity of apparatus, mode of introduction, etc., would not be out of place.

In regard to the value of normal salt solution on renal secretion we have but to refer to our physiology. Foster has demonstrated an immediate increase in renal secretion, on the transfusion into a vein of so small an amount of salt solution that no general rise of blood pressure was produced. He demonstrates this with all the renal nerves severed, which shows that the effect produced on the kidneys is a specific one on the secreting cells.

Again this has been demonstrated by Dr. Kemp of New York, who, in his experiments with intestinal irrigation, transfused half an ounce of normal salt solution, to which he added a very small amount of potassium ferrocyanide. In from one and a half to two minutes a marked increase in the amount of urine secreted was shown, by counting the urine drops by means of a registering lever and kymograph, and in the same space of time the urine gave the prussian-blue reaction with chloride of iron. The amount transfused in this case was also so small that there was no appreciable effect on the general blood pressure.

Of the different methods of introducing this solution into the system, I intend to refer in detail to one only, viz., the intravenous transfusion of normal salt solution. Hypodermoclysis and enteroclysis are slower and milder means of obtaining the same end. Some recommend these in preference to the intravenous method, enumerating as dangers of the latter: injection of air into the veins, too rapid distension of the heart, phlebitis, thrombosis, etc. Of course these are dangers we must anticipate, but thorough asepsis ensured, carefulness combined with an ordinary amount of intelligence will exclude these accidents. In an experience of some forty cases by this method, I have never seen any of these accidents occur.

Others advise,—and I think rightly so, hypodermoclysis and enteroclysis in cases except where the vitality is so low, that absorption from the subcutaneous spaces and by the intestine is too slow to produce the desired effect.

As regards the length of time the three principal methods take in producing their effect as evidenced by increased secretion, I might say that it has been demonstrated by the addition of a minute amount of potassium ferrocyanide to the normal salt solution. This, with chloride of iron, gave the prussian-blue reaction in the urine in from one and a half to two minutes when the solution was transfused by the intravenous method, in four and one half minutes by hypodermoclysis, and in twenty minutes by the bowel. It must be remembered however, that these results were produced, while experimenting on healthy animals, and these results would therefore vary in disease, according to the vitality of the individual. There can be no doubt but that the intravenous method is the quickest, though it does need more care in its performance. In a state of collapse from shock, hypodermoclysis is the slowest. Some recommend a combination of hypodermoclysis and enteroclysis to overcome this slowness of action.

Another valuable means we have of introducing salt solution into the system, is by absorption from the peritoneal cavity. Here absorption goes on over an extensive surface, and the effect is fairly rapidly produced. In abdominal surgery

this is a first-class method of combating expected shock after the operation. The method employed is to fill the abdominal cavity with normal salt solution before closing the wound, and leave it there to be absorbed.

The advocates of hypodermoclysis and enteroclysis contend that more benefit is derived from the repeated use of small amounts of salt solution, than is obtained from the throwing into the system of a large amount by the veins. This may be so, as far as certain cases are concerned, but in a case of sudden shock, they are altogether too slow, and it is in such cases that most benefit is derived from the intravenous method.

INDICATIONS FOR ITS USE.

I do not intend, in advocating the intravenous transfusion of normal salt solution, to refer to the variety of cases reported benefited by transfusion in the "trashy" medical journals of the day. I will confine myself entirely to the cases I have had actual experience with, and while it is true the greater number of these occurred during my term of service as House-Surgeon in the New York Polyclinic Hospital, and in nearly all those cases the primary operation had been done by the Visiting Surgeon, the transfusion part came under my duties. The cases I would like to draw attention to as suitable for transfusion, and which I have seen greatly benefited, are : (a) Septicaemia, following labor, abortion, etc. (b) Suppression of urine and uraemia or any sluggish condition of the kidneys, indicated by diminution in the amount of urine secreted. (c) Shock following the loss of a quantity of blood, prolonged anaesthesia, long operations or any other cause.

In septicaemia of all kinds, the introduction of normal salt solution into the system is very beneficial. It dilutes the poison and by stimulating the kidneys and skin, it hastens the drain from the system of the poison. Septicaemia of the milder type, due to staphylococcus, will rarely need as vigorous treatment as that of streptococcus origin. In septicaemia due to septic endometritis with the streptococcus present in discharge

Dr. Pryor and others in New York, if irrigation etc. have failed, invariably curette and drain the peritoneal cavity through Douglas' cul-de-sac. Having done this, they transfuse three pints of normal salt solution. The amount of fluid drained through the cul-de-sac in the first forty-eight hours is enormous. This drain through the cul-de-sac ensures the drainage of septic material that has penetrated beyond the reach of irrigations and the curette. I have never seen this treatment fail in such cases, and in every case so treated there was not one that had not been treated by irrigation, curette, etc., from two to four weeks, and as a last resource had been sent to the Hospital.

In inactivity of the kidneys after operations, the introduction of normal salt solution into the veins is the best means we have of stimulating the skin and kidneys to increased secretion. In suppression of urine and in uraemia there is nothing so effectual in relieving the situation as the introduction of three pints of normal salt solution into the system. In these cases the secretion of urine is frequently re-established, the skin is stimulated and the accumulated poisons are drained from the system. In sluggish kidneys after operations etc., it is hardly necessary to introduce the solution into the veins. It is here that hypodermoclysis and enteroclysis will be found of service. In all such cases the introduction of normal salt into the system will be followed by the following results :—the amount of urine is greatly increased, the sp. gravity of the urine is lowered, the amount of urea is increased, and albumen, if present, is remarkably diminished or entirely disappears. From these results we can have no hesitation in advising this treatment in all such cases.

In shock due to any cause we probably have the most immediately beneficial results from intravenous method. In these cases the pulse, from being barely perceptible, is commonly reduced to 115 beats to the minute and becomes full and strong. The respirations are reduced in frequency, the temperature (after an initial rise) is lowered, the mind becomes clear, secretion of urine and perspiration are established, and

the general condition becomes most satisfactory. In a case of severe hemorrhage it is the most satisfactory treatment we have. As illustrative of its efficiency in this respect, I might mention the fact of a case of cancer of the tonsil for which the Visiting Surgeon cut down on the external carotid on the affected side, ligated the branches directly or by anastomosis supplying the tonsil, ligated the trunk and divided it. The patient was put back to bed fairly recovered from the anaesthetic, and I had just finished taking off my operating clothes, when the nurse in charge of the patient came and informed me that there was quite a lot of "oozing." I hurried down and found the patient completely exsanguinated. The dressings and bed were soaked with blood. I ordered the transfusion apparatus to be brought, while I ripped open the wound and plugged the cavity with a towel. One of the other Internes could barely hear the beat of the heart with a stethoscope while the patient was absolutely pulseless and unconscious. As quickly as possible I started transfusing the salt solution, (3 quarts), while the other Interne gave brandy hypodermically. He gave thirty-three injections, each containing half a dram of brandy. The nurse injected 1-15 grain of strychnine. The patient rallied and that same evening, when the nurse left the ward for a minute, he got out of bed and walked to the lavatory. He made an uninterrupted recovery so far as the loss of blood was concerned, but died four months after from the effects of the cancer. The cause of the hemorrhage in this case was the slipping of the ligature to the proximal stump of the carotid.

I have never used transfusion in cases of Bright's disease except in the few cases we had that had undergone operation. I have no doubt but that in all cases of Nephritis it would be beneficial, and while I have had no experience in such cases, it has been reported by good authorities that not only is secretion of urine stimulated and albumen diminished in quantity but casts have been lessened in number and in acute cases often have disappeared entirely.

Transfusion has been recommended in pleurisy with effusion especially when the secretion of urine is sluggish, in diphtheria, in enterocolitis, in children where there is an enormous drain in the fluids of the body, and in poisoning especially by the alkaloids.

APPARATUS.

The simplest and best instrument for such work is the one I am about to describe. Any man can put it together at an expense of about seventy-five cents, in about ten minutes time. The advantages that are claimed for such an instrument are: that the entire instrument can be sterilized, it has nothing connected with it that can possibly get out of order, it is cheap and it does its work as efficiently as the more complicated and costly ones. An experience with it in some forty cases has led me to believe that it is absolutely safe in every respect.

The component parts necessary to make such an instrument are: an eight ounce glass funnel, six feet of rubber tubing, and a canula. These parts are connected together and the apparatus is complete.

The canula used may be either sharp or blunt. While the sharp one may be more easily inserted into a small slit in a vein, it has the disadvantage that it is much easier to get between the coats of the vein. Pure gum rubber in the tubing is preferable, because it will stand the frequent sterilization better. The funnel is an ordinary glass one. The apparatus is placed in a tin pail which contains sufficient plain water to cover it. The lid is then placed on the pail and the apparatus sterilized by boiling for twenty minutes. The whole is then set aside ready for use.

The salt solution is prepared by making a 7-10 of 1 per cent. solution of chemically pure sodium chloride in water (preferably soft.) This is filtered into a glass container and boiled for fifteen minutes, and the mouth of the container plugged. Florence flasks with a capacity of one quart are the most suitable for containers. It is well to have at least three such flasks filled with solution ready for use. When required for use, two of these are placed in a pan of water, the pan

placed over a heater and allowed to come to a boil. The cold one is used for reducing these to the temperature desired. This apparatus with at least three flasks of solution should be in every ward of a hospital and in every doctor's office. Caught unprepared, I have on two occasions (once in a case of collapse after a hysterectomy and once in a case due to loss of blood) used a solution made by putting ordinary table salt in plain water in the proportion of a teaspoonful to a pint, boiling it and filtering it as it goes through the funnel by placing a dozen layers of sterilized gauze in the funnel. Both cases recovered with no bad results.

OPERATION.

If the operation is undertaken while the patient is not under the effects of a general anaesthetic cocaine injected over the line of intended incision is all that will be required. After the incision in the skin is made there is no pain so it is not usually difficult to do it without any anaesthetic at all.

Let it be understood in the beginning that thorough sterilization of the hands of the operator and assistants, all instruments, apparatus, field of operation, dressings, etc., is very essential if an entirely successful result is desired. I will not refer to this again but take it for granted that this is the case.

The site selected is usually the anterior aspect of the bend of the elbow. The median-basilic vein is generally the most prominent and is usually selected. If the patient be fat, or if the veins at the elbow do not stand out, a little compression above the elbow will bring them into prominence. It is not necessary in every case to tie a bandage around the arm. I say the median-basilic is usually chosen because it is the most prominent and largest. I do not believe however in looking for it. The rule I follow is to select the most prominent vein and very often this is not the median-basilic. I used on one occasion the radial vein, and on another I was unable to see a single vein around the elbow so I cut down and used the cephalic. In cases due to shock it is often very hard to find a vein on account of their collapsed condition. These are the

cases in which a bandage tied around the arm will be found of great assistance.

Having selected the vein, draw the skin slightly upwards over it and make an incision about an inch long along its upper margin. Allowing the skin to fall back into place, the incision will be found over the centre of the vein. This is done to avoid prematurely wounding the vein. By a little dissection the vein is isolated from the subcutaneous tissues. Grasp the vein with an artery forceps in the lower angle of the wound. This forceps takes the place for the present of a ligature to the distal end of the vein.

While I am doing this, an assistant has been preparing the solution, i.e., bringing it to the proper temperature (110 F.) In the absence of other means, I judge the temperature fairly accurately, by pouring a little over my bare arm. Water at 110 F. can be borne on the bare arm. The assistant fills the funnel with the solution and holds it about four feet above the patient's arm, before I proceed with the next step, viz. opening the vein. To do this, some recommend to sever the vein entirely across. The only occasion I did this I found it very inconvenient. It necessitates holding on to the severed ends, the employment of more instruments to do so, and in spite of all precautions the frequent losing of the proximal end and the consequent loss of time in searching for it.

The method I always follow is to make either a transverse or a longitudinal incision in the vein wall. The escape of blood tells me all the coats of the wall have been penetrated. Now taking the canula in one hand and with the other manipulating the vein into position by the forceps attached to it and allowing the solution to flow on my arm to satisfy myself of the correct temperature, I then insert the point into the incision in the vein. Allowing the solution to flow over the wound for a few seconds clears the field of blood excepting the small stream marking the cut in the vein wall. The point of the canula is inserted into the vein with the stream running. The assistant keeps the funnel supplied with fluid, refilling while there still remains about an ounce of fluid in the funnel. Before refilling

he warns me that he is about to do so. I then compress the tubing while the assistant refills and thus the possibility of the entrance of air is prevented. The solution is allowed to flow in very slowly, i.e., at the rate of about one quart in about fifteen minutes.

Having transfused as much as is deemed advisable, a catgut ligature is thrown around canula and vein, and one knot tied. As the canula is withdrawn, the ligature is tightened on the vein, and another knot tied. The solution is not allowed to stop running until the canula is withdrawn from the vein. The distal end of the vein is now tied with catgut, the portion of vein included between the ligatures excised and the skin incision closed and an aseptic, or if the case be one of sepsis, an antiseptic dressing applied.

EFFECTS OF THE TRANSFUSION.

Before the operation is completed the patient breaks out into a profuse perspiration. There is also a feeling of fulness in the head and a glowing sensation from the hot solution introduced, but he does not suffer any discomfort. From ten to thirty minutes after the operation the patient has a severe chill lasting from ten minutes to half an hour, followed by an exceedingly high temperature. The chill is very severe and one will be led to think that the treatment has done more harm than good. Immediately after the chill the temperature commences to rise. In cases of shock this may not go very high unless the temperature before the operation has been high; but in septic cases I have seen 107.2 registered, and 108 has been reported to me. Fortunately this condition does not last long and then the temperature commences to fall. In an hour or thereabouts it has reached what it was before the primary operation and from there it gradually declines until it reaches normal.

During the chill 1-40th grain of strychnine combined with 1-100 grain of nitro-glycerine is given hypodermatically, hot water bottles applied and brandy given either by the mouth or rectum.

C. A. MORRISON.

A CASE OF INFECTION IN UTERO WITH MALARIAL PARASITES.

IN a paper by Dr. Lindsay Peters, published in "The Johns Hopkins Bulletin" for June, 1902, a brief resume is given of the views at present held as to the possibility of infection in utero by the plasmodium malariae. As quoted by him, Laveran states that, "It has been proven in the affirmative beyond a doubt," while Marchiafava and Bignami call especial attention to the fact that, "no truly demonstrative case of congenital infection has been published since the discovery of the malarial parasite. Furthermore, after a series of autopsies in still born children of malarious women, they express the belief that the foetus enjoys immunity even against the anæmia and other secondary effects of the infection, although these effects may be well marked in the mother." Again, "Bastianelli, and in fact practically all of the eminent Italian observers agree on this subject with the opinions of Marchiafava and Bignami," and Thayer states that, "Since the discovery of the parasite no one has been able to bring positive evidence of the congenital presence of parasites in the blood of the new born child, or of the development of true malarial fever in the infant where the possibility of post-partum infection was out of the question." In the paper above referred to, Dr. Peters reports the case of an infant, 50 days old, in whose blood he found the parasite, and, while strongly convinced that the infection occurred in-utero, yet he admits the slight possibility of post-uterine infection.

The case I desire to report seems to me to indisputably prove that intra-uterine infection is a possibility, but I would premise by saying that true malarial fever is almost unknown in this city, nor can I find on enquiry among my confreres that any true malaria has been seen here during the last twenty years, except, of course, occasionally (and that rarely) when those who have been infected elsewhere have come here.

Mrs. W., a native of this city, but lately resident in one of the West Indian Islands, suffered from malaria to such an extent that she was advised change of climate by her physician. Accordingly, she arrived here about the middle of June last year and enjoyed good health with slight exceptions until her confinement which occurred toward the latter end of August. Convalescence was uneventful, and the infant, apparently healthy, continued to thrive until about the latter part of October, when it was noticed that it was getting thinner and that it seemed to be in considerable pain. On examination I found it somewhat wasted and anæmic, and believing the cause of the trouble to be dietetic, various modifications of its nourishment were suggested and tried without success, the marasmus continuing and the pain which was apparently increasing in severity seemed to come on in paroxysms, causing sharp shrill cries.

After watching the case for a few days longer the paroxysmal nature of the pain struck me as being peculiar in that it came on at a regular time, generally about 4 o'clock in the afternoon, and, with the mother's history in mind the possibility of it being malarial led me to ask Dr. W. T. Connell to make a blood examination, the report of which is appended. Laveran's corpuscles being found, quinine one-fourth grain every three hours was administered, with the result that the attacks lessened in number and violence, and in a short time the anæmia disappeared and the babe was soon enjoying excellent health.

On reviewing the above we notice that the mother had repeated malarial attacks during the earlier months of her pregnancy; that because of these attacks she removed during the latter months to a non-malarious district in which no case, with the exception of those mentioned above, had been reported for many years; that the infant was born towards the latter part of August, a time when what mosquitoes we do have here (the *Culex* species) are almost disappearing, and yet the infant's blood contained the plasmodia; hence no other conclusion it

seems to me, can be reached in this case than that the infection did occur in-utero.

DR. CONNELL'S REPORT.

Nov. 1st, 1901. Examination of blood of baby W. Haemoglobin 45 per cent. of normal (for adult.) Red cells 3,200,000 per cb. mm. Many show poikilocytosis and a few are nucleated. Besides a number contain pigmented bodies about half filling the cell, the protoplasm of which is pale, and the entire cell larger. These pigmented bodies correspond with half-grown tertian malarial parasites and are readily noted both in the fresh drop and in stained films.

Nov. 5th, 1901. A second examination was made to-day of blood from baby W. No parasites were found either in the fresh specimen or in stained films. A few dark pigment granules were noted in some of the polynuclear leucocytes.

An examination was also made of the blood of Mrs. W. and revealed nothing of import.

D. E. MUNDELL.

A CASE OF FŒTAL SMALL-POX.

Reported to the Kingston Medical Society by Dr. J. P. Boyle, B.A.,
Casselman, Ont.

I BEG leave to report to your society upon a rather peculiar case of small-pox, which I attended on April 7th in Casselman. I was called to a case of confinement. The mother was apparently anxious and inquired if the child was dead, as she had felt no movements for some days, and according to her own reckoning she would not reach full time for another month. The labor proceeded normally and a baby girl was born. She had to receive considerable attention before respiration was satisfactorily established. My attention was called to the baby's limbs, feet and hands, which were somewhat excoriated and pretty well covered with well marked pustules. I gave the

child to the nurse and was attending to the third stage of labor, when the nurse called my attention to the child who was very cyanotic and gasping violently. I immediately placed her in a dish of hot water and worked with her till cyanosis disappeared. It was a premature fœtus, eight months, and I counted fifty well marked pustules on the limbs, hands and feet, which to my mind were undoubtedly those of small-pox, and my diagnosis was small-pox "in utero." There was nothing abnormal about the delivery. It was a vertex presentation with a rather precipitous second stage. A large amount of amniotic fluid came away after birth of the child. The father and mother claim that neither of them have had small-pox this year, but just three weeks previous to the birth of the child they moved into their present abode, a house in which small-pox existed for the greater part of the previous two months. The baby lived about twenty-four hours.

NOTES ON OTHER SMALL-POX CASES.

Mrs. S. suffered from an aggravated form of the disease, which was ushered in by convulsions, great prostration and loss of consciousness. In many places the pustules were confluent. She was pregnant during the disease, but did not abort and expects to be confined soon.

I have found considerable eye trouble in many cases. One little boy, aged four years, lost the sight of one eye, and I have had many other severe cases of conjunctivitis, following the pustular stage.

I have found that vaccination is all that it is claimed to be in the prevention of the disease, and not one of the many cases I have treated could show a cicatrix worthy of notice as the result of a former vaccination.

J. P. BOYLE.

NOTES OF THREE CASES.

1. EXOPHTHALMIC GOITRE.

CASE 1.—Exophthalmic Goitre or Graves disease. Mrs. M., aged 40, married and mother of two children, consulted me in the latter part of Nov. 1901. She complained of extreme weakness of a rapidly progressive form. She had been failing in health for over one year. Patient seemed to be very nervous and easily excited. Previous health good and family history excellent. Pulse between 124 and 130 to the minute, very weak and compressible, and at times intermittent. I noticed that her eyes had a staring look and could plainly see that the eyeballs were abnormally prominent—showing a ring of conjunctiva all around the corneal margin. This led me to examine for goitre and I at once discovered the right lobe of the thyroid considerably enlarged, the isthmus but slightly involved, and the left lobe scarcely, if at all, increased in size. I at once diagnosed the case as one of exophthalmic goitre or Graves' disease. The measurement of the neck at this time over the largest part of the goitre was $14\frac{1}{2}$ inches. I advised patient's removal to hospital, where she was placed at complete rest—a nutritious diet ordered, and, as far as possible absolute quiet enjoined. The only medicine prescribed was suprarenal (saccharated), one grain three times daily. After three weeks of rest and freedom from household worries the patient felt so improved that she decided to leave the hospital and again undertake the work of her home. She continued however to take the suprarenal and one month after her return home the measurement of the neck was reduced to 14 inches, the pulse was more regular and in decidedly better tone and the patient had considerably increased in weight.

After this the patient kept on improving, and the last examination I made of the neck showed it reduced in size to $13\frac{1}{2}$ inches. Other symptoms were accordingly improved. Since last March, after four months of steady medication, I have only heard indirectly that the patient feels strong and well, and is

able to attend to her household duties as well as ever. To sum up (*a*) The improvement in this case was manifested as follows: 1. Decided increase in weight, several pounds, changing patient's emaciated appearance to one of a healthy and well nourished condition. 2. Slight (only) reduction in size of enlarged gland. 3. Marked amelioration of nervous condition. 4. Pulse slowed and regulated, though at my last examination it was between 90 and 100. 5. Palpitation disappeared. (*b*) No improvement however in exophthalmos.

This is, however, my first experience with suprarenal in exophthalmic goitre. With the literature at my disposal I have not even seen any mention of it. I am interested in the action of the drug in this condition, and regret that I cannot quote from a greater number of cases. For this reason I would not for a moment affirm that the effects, generally, would be so satisfactory as in the above individual case.

2. LOCOMOTOR ATAXIA.

Case No. 2.—G. H. D., a Welshman, aged 45, consulted me Aug. 1901. He complained of sharp pains in the extremities which he thought were rheumatic in origin. These pains which he described as sharp and shooting had been troubling him for 7 to 8 months. He also stated that the "stiffness" made it difficult for him to walk, especially at night. While walking out during a dark evening he had once or twice fallen. He said that he had always been healthy. He gave no history of specific disease, rheumatic, tubercular or albumenuric tendencies. His family history was remarkably good. I at once tested the patellar reflex and found it absent.

Upon directing him to stand upright in the middle of the room, at the same time closing his eyes, he began to waver and would finally have fallen had he been allowed to do so.

The history of the pains, absence of the patellar reflex and the marked inco-ordination led me at once to diagnose Locomotor Ataxia.

Besides these cardinal features of the disease, the patient exhibited several minor symptoms which altogether made a

very complete picture:—He complained of a “belt” sensation around both ankles as if they were bound tightly with bands of iron. His hearing was greatly impaired. A watch could not be heard even when held lightly against the ear. The visual disturbances consisted in considerable ophthalmoplegia and almost complete loss of vision of left eye, and defective vision of the right eye.

Another symptom well marked in this case was a remarkable flaccidity of the muscles of the body, or absence of the normal tonic contraction—a symptom commonly called hypotonus. With this clinical picture the condition commonly known as tabes was undoubtedly well advanced in his case. In addition to certain advice along dietetic and hygienic lines he was placed upon the iodide of potash. After weeks of such medication with no result except considerable disturbance of the stomach the medicine was discontinued and I frankly told him that there was no help for him.

I heard no more of him for some time when in November, 1901, I was called to his house and found him suffering from repeated attacks of vomiting. These attacks usually followed the taking of food or drink—came on very suddenly and generally were associated with nausea. This condition of affairs had been going on several days and the patient was extremely weak. Accordingly I had him placed in the hospital. Here the usual gastric sedatives were used and only the lightest and blandest forms of nourishment allowed him, and then in very small quantities. The vomiting persisted. A slight temperature developed, say about 100° to 101° in the evening with a drop of a degree in the morning. Patient became very weak and stimulants both by mouth and hypodermically had to be used. Another feature that appeared about this time was retention of urine. After he had been catheterized once or twice a slight greenish tinge was noticed in the urine. This deepened in color and finally urine of a deep olive green was taken away, if anything in larger quantity than normal. The cause of its appearance and the nature of the coloring we could not ascertain. This peculiar coloring of

the urine disappeared along with the retention in about two weeks, and also about this time other conditions began to improve. The stomach became quieter. The patient began to take nourishment, and finally after three weeks of convalescence was able to be moved to his home.

This was undoubtedly an example of gastric crisis. The after effects of this condition seemed to be mostly an aggravation of all the other symptoms. Inco-ordination became very marked, so much so that it was almost impossible for him to walk at all. Hearing was very defective—one having to shout to make him understand. He also complained of his eyesight being very poor.

About this time I commenced a series of exercises. 1st.—In order to educate the disordered centres back to co-ordination I advised him several times daily to walk along a crack on the floor or a line pattern in the floor covering. After he had done this two or three times I directed him to choose a point on the wall and then to walk directly to and touch it with the point of his finger. In addition to this I carried into effect a suggestion that I heard in one of the clinics, viz.—Stretching the spinal cord for tabes, instead of suspension, which is a painful procedure. Every second day the patient was placed on a table and his legs by reason of the marked hypotonus were flexed on the body without any discomfort to patient, and sometimes the feet could be locked at the back of the head. This had the effect of bowing the spine and thus stretching effectively the spinal cord.

After months of these exercises faithfully carried out, and the stretching treatment intermittently applied, the patient has considerably improved. At the present time he can walk very much better than when he first consulted me last year. The hearing is very much improved, so much so, that when he left for England a few days ago, he could understand plainly, words spoken in the ordinary conversational tone. His handwriting, which earlier in the year was scarcely intelligible, is now quite plain. The pains do not trouble him so very much, and there is a marked general improvement in the case, suffic-

ient at any rate to enable him to resume his work at home in England.

I mention this case for two reasons :— 1st. The completeness of the clinical picture. 2nd. The peculiar course of the disease, first gradually growing worse until the gastric crisis, after which the patient seemed steadily to improve to what looks for the present to be a fairly satisfactory condition.

Whether or not it is fair to attribute this improvement to the treatment which was instituted after his stay in the hospital, I am at a loss to say.

3. PRESSURE PARALYSIS OF LOWER EXTREMITIES IN CASE OF SPINAL CARIES.

Case 3.—About 2½ years ago Mr. D., aged 23, was thrown violently from a buggy and sustained an injury to his back. After a few days the pain and swelling disappeared and patient went about as usual. About a year later however he noticed a small lump appearing on the spine in the dorsal region. At first he took no notice of this, but as it began to increase in size he thought it wise to consult a physician. He gave no history of tuberculosis in the family and he himself had always been in very robust health. After some time the condition became worse and he was obliged to stop work, his employment being that of a grocery clerk, and finally went to the hospital where he was placed at complete rest for several weeks. Here he seemed to improve, but after returning home he again began to grow worse, and in March, 1902, I saw him for the first time. I found him bed-ridden on account of a complete paralysis of lower limbs which had come on about three months before. The lump on the spine was situated at about the 7th or 8th dorsal vertebra and surmounted a considerable kyphotic curve as well as a slight scoliosis. The lower limbs were totally paralysed. Motility was entirely gone, sensation almost absent, and atrophy quite marked. He also complained greatly of starting pains, which not only disturbed his rest, but which materially aggravated his condition. Temperature and pulse normal. No evidence of pulmonary or other disease.

Appetite and other conditions fairly good. The only suggestion I could offer in the way of treatment was to place him at complete rest in a double extension apparatus. After gaining the consent of his friends he was sent to the hospital.

First of all he was suspended by means of Sayres apparatus and a light but firm plaster of paris jacket applied. After this had thoroughly hardened he was placed on his back on an adjustable bed, fitted with a fairly hard and level mattress. Weights of 8 lbs. were then attached to each foot in the usual way of applying extension by adhesive strips fastened to each leg and connected to weight by means of a cord passing through a pulley at the foot of the bed. A counter weight of seven pounds was attached to head. The mode of attaching weight to head was by means of two padded straps joined over the vertex, one fitting around the chin, and the other about the occiput, thus providing as far as possible traction in the line of the vertebral column.

In addition to this apparatus large sand-bags three feet long were placed on each side of the body, the object being to control the injurious muscular contractions. The patient defaecated without moving—the bed being constructed so as to allow of this. He was not allowed out of the apparatus even to take food, the nurse in charge attending to the feeding.

After a week the muscular contractions lessened in frequency and amplitude, and in about ten days the first signs of returning motility were noticed in that the patient was able to move his ankles slightly. He continued to improve though very slowly—sensation began to return—a pin prick could soon be felt fairly well. The muscular contractions finally ceased altogether.

After the patient had been in the apparatus for nine weeks the extension was taken off and a fresh light jacket applied. At this time the patient could bend his knees four or five inches from the bed, and could flex and extend the ankle quite readily. Sensation had largely returned and the patient was now allowed to get up and soon after returned home. After his return home progress was more rapid. His appetite was

better, and with the gaining strength the improvement in his limbs was quite remarkable. Every second day a moderate electrical treatment was given and every day a treatment of salt massage (which consists in the usual massage technique modified by the masseuse having on the palm of the hand some dry common salt.) The patient soon got so he could get up himself, and even while in bed could raise the foot with the bed clothes a foot or more from the bed. A week or so ago (about three months from date of commencing extension treatment) he took two or three steps with his sister holding his hand merely to balance him. On Tuesday, July 15th, he with his sister steadying him, walked from his bedroom out into the hall. I may say that since the extension treatment at the hospital a jacket has been kept on all the time, and we are now having a light spinal brace (a modification of Taylor's spinal apparatus) made for him.

I think the progress in this case so far is very encouraging, and it seems that one would not be too sanguine to hope for a fairly complete restoration of power in the limbs.

Recent authorities are of the opinion that in such cases of spinal disease complicated by paralysis—that the defective innervation is not due to active pressure on the spinal cord by the diseased and displaced vertebrae. They hold that the trouble results from a pachymeningitis set up (*a*) by surrounding disease in the vertebrae and (*b*) aggravated by the disturbance to the parts by reason of the muscular contractions. It is easy to understand how such a condition of affairs would first of all set up an acute inflammation of the spinal membranes, and on account of the constant irritation—later a subacute, and finally inflammation of a chronic nature would take place, resulting in a permanent thickening and thus irreparable injury to cord. This fact, it seems to me, emphasizes chiefly two points in the treatment of these cases. 1st. When paralysis has developed treatment along above lines should be begun without delay. 2nd. In carrying out the treatment great effort should be made toward counteracting undue activity of the muscles.

G. W. MYLKS.

EXAMINATIONS OF THE ROYAL COLLEGE OF PHYSICIANS AND SURGEONS.

The following students of Queen's have passed the recent examination of the Royal College of Physicians and Surgeons of Ontario :

PRIMARY EXAMINATION.

H. A. Bowie, Kingston; G. H. Bleecker, Trenton; J. H. Cryan, Demorestville; J. V. Connell, Spencerville; J. S. Dickey, North Williamsburg; F. J. Ellis, Ellisville; J. L. Kane, Gananoque; J. H. Laidlaw, Georgetown; H. M. Moore, Athens; W. S. Murphy, Portland; W. W. McKinley, Seeley's Bay; C. G. McGreer, Napanee; G. E. McIntosh, Kingston; S. E. Porter, Lindsay; V. Reid, Kingston; E. J. Robinson, North Williamsburg; A. H. Singleton, Newboro; H. Tandy, Kingston, W. Workman, Kingston; G. H. Ward, Napanee.

INTERMEDIATE EXAMINATION.

H. A. Bowie, Kingston; J. V. Connell, Spencerville; T. V. Curtin, Brockville; C. de St. Remy, Kingston; H. E. Day, Odessa; G. F. Dalton, Kingston; L. W. Jones, Ottawa; F. E. Mellow, Sillsville; J. W. Merrill, Ottawa; T. O. McLaren, Loncaster; W. J. Patterson, Peterboro; S. E. Porter, Lindsay.

FINAL EXAMINATION.

H. A. Bowie, Kingston; I. G. Bogart, Berwick; T. V. Curtin, Brockville; C. de St. Remy, Kingston; H. E. Day, Odessa; G. F. Dalton, Kingston; T. S. Geuge, Parham; W. S. Grimshaw, Kingston; J. W. Merrill, Ottawa; A. D. McIntyre, Glencoe; J. McCulloch, Blackstock; S. E. Porter, Lindsay; W. C. Redmond, Westwood; E. Richardson, Brockville.

HOUSE SURGEONCIES.

We extend our congratulations to the following gentlemen, who graduated in Medicine at Queen's last session, on their appointment to the position of House Surgeons in the under-mentioned Hospitals, viz.—

G. F. Dalton, Kingston General Hospital; C. de St. Remy, Kingston General Hospital; F. Etherington, Kingston General Hospital; L. W. Jones, Carlton County General Hospital, Ottawa; W. R. Mason, Carlton County General Hospital, Ottawa; J. W. Merrill, Water St. Hospital, Ottawa; J. V. Connell, Burnside Ave. Hospital, Montreal.

From our personal knowledge of these gentlemen we feel assured they will perform their duties with credit to themselves and satisfaction to the institutions to which they have been appointed.

DR. W. T. CONNELL

Desires to announce to the Profession that he is prepared to make Microscopical, Chemical and Bacteriological Analysis, as may be required, of Morbid Tissues, Tumors, Serous or Purulent Effusions, Curettings, Sputum, Urine, Blood, Stomach Contents, Throat Membranes or Secretions. Urethral or Vaginal Discharges, and to apply Widal's method for diagnosis of Typhoid Fever. He is also prepared to perform Autopsies, Medico-legal, or otherwise.

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