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THE PATHOLOGY OF URÆMIC INTOXICATIONS.[1]

BY

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In venturing to address you this evening on the subject of uræmic intoxications, I am not unmindful of the difficulties that are inseparable from the problem which I shall undertake to discuss. Indeed it cannot be denied that one of the attractions of this subject is the obscurity which surrounds the oft-recurring phenomena which we call uræmic—phenomena that have excited the interest and baffled the insight of Richard Bright, of Traube, of Frerichs, and of many lesser intellects.

Although a study of uræmia that has extended over many years does not make it possible for me to isolate, as definitely as could be wished, the pathological factors concerned in the production of the symptoms of uræmia, I believe I can, at least, indicate the direction in which we should look for an explanation of the nature of these symptoms. It will be my purpose to show that the clinical phenomena which we include under the term uræmia are dependent on toxæmic states rather than upon primarily mechanical causes. In doing this I shall make use of observations which I have accumulated from the study of the blood in 28 cases of uræmia, which have either been observed by me in my medical service in the City Hospital, or have been placed at my disposal by interested colleagues. In addition to this, I shall draw upon facts which have come to my knowledge from a study of experimental uræmic states. It would be a satisfaction to present these facts in full detail, but as this could hardly be done without exhausting your patience, a summary of results must suffice for the present.

[1] Read before the Montreal Medico-Chirurgical Society, at McGill University March 4, 1898.

purpose.[1] For the sake of convenience, the facts to be surveyed may be grouped under the following subjects: the toxic properties of the blood in uræmic states as measured by intravenous infusion; the relation of uræmia to the urea of the blood, to the extractive substances, and to the potassium salts; cerebral œdema and uræmia; the internal secretion of the kidney and uræmia; experimental uræmia from double nephrectomy and its relation to human obstructive uræmia, and other types of human uræmia.

A question of fundamental importance in the pathology of uræmia is whether the blood in this condition is more toxic when introduced into the circulation of animals than is human blood from normal persons. In the hope of answering this question, the blood serum from 28 uræmic patients, who were bled during life, was introduced intravenously into rabbits, proper precautions being taken as regards the freshness of the serum, its temperature, the rate of infusion, the exclusion of air from the vein, etc. The observations were not confined to rabbits, but included in some instances dogs and monkeys. Two different methods of intravenous infusion were employed. In one case the serum was infused into the femoral vein at a fixed rate until the commencement of fatal symptoms. In the other case, the serum was injected in much smaller amount, either into the femoral vein or into an ear vein with a view to ascertaining the minimum dose capable of causing death in the course of 24 or 36 hours. A difficulty which at once confronts the investigator in the use of these methods is the fact that normal human serum is in itself toxic to rabbits in a considerable degree, owing chiefly perhaps to its power of inducing coagulation. Thus I have found that its requires from 25—40 c.c. of normal human serum to the kilo to initiate fatal symptoms in rabbits when the method of continuous infusion is employed, while it seems generally agreed among investigators that the fatal dose of human serum, as employed by the second method, is from 9—12 c c. per kilo. Inasmuch as it is found that there is considerable variation in the toxicity of the same serum for different rabbits of the same weight, notwithstanding every precaution in making the infusion, it is clear that it is necessary to observe much care in concluding that a given class of serums is more than normally toxic.[2]

Of the uræmic serums which were studied with respect to their

[1] The details of the experimental observations will be elsewhere published.

[2] Uhlenhuth claims that the serum should be subcutaneously injected into guinea pigs to avoid the error incidental to intravenous infusions. In several instances where I have employed this method, there seems to be no doubt that the blood was more than normally toxic, judging from the standard of normal toxicity given by Uhlenhuth.

toxicity, 19 were obtained from cases of uræmia characterized by the occurrence of well marked and repeated convulsive seizures,[1] six of these being instances of puerperal eclampsia. In the nine remaining cases the serum was obtained from patients with chronic nephritis, characterized by dyspnœa and high tension pulse—none of these patients having had convulsive seizures. The inferences which we may make from the study of these serums are as follows: The cases of nephritis characterized by dyspnœa and high tension pulse without convulsions, taken as a class, do not yield positive indications that the toxicity of the serum was greater than normal, although in at least two of the nine cases the toxicity was considerably greater than any I have observed in health. On the other hand the least toxic of these serums possess toxic values that come so near the highest toxic values observed in normal serums that we cannot be certain that they are quite normal. More observations are required before a final judgment can be formed regarding these cases. Taken as a class, the serums from the convulsive group of uræmias show a degree of toxicity distinctly greater than any which I have observed for normal serums, and although there are a few of the 19 cases in which the results are difficult to interpret, there seems to be no doubt that an increase in the toxic properties of the blood is a characteristic of cases of convulsive uræmia. This latter statement apparently holds good also of certain serums from patients with puerperal eclampsia, but here again more observations are required. Volhardt has quite recently denied that there is any increase in the toxic properties of the blood of eclamptic patients, but his results cannot be regarded as final.

Admitting that the serum in convulsive uræmia is more toxic than normal serum, the question at once arises, what is the cause of this pathological increase?

It is not possible at present to give a satisfactory answer to this question, but the following facts bear upon it. In the first place the toxicity of uræmic serum for animals is greatly reduced by exposure to moderate heat, say 60°C. for a few minutes. This is also true of the toxic properties of normal human serum. These facts suggest that the increased toxicity of uræmic blood is dependent on the presence of an increased amount of a toxic proteid substance which is normally present in the blood.[2] We cannot, however, feel certain that the increased toxicity of the serum does not depend on some

[1] In one of these cases there were merely coarse twitchings never amounting to typical convulsions.

[2] The toxic properties of urea, extractives, salts, etc., are of course not influenced by so moderate an elevation of temperature.

unknown foreign substance. A fact which strengthens the view that a proteid substance is responsible for the toxicity of uræmic, as of normal serum, is that the removal of the proteids by means of absolute alcohol almost wholly deprives the serum of toxic properties.

In trying to form an estimate of the significance of an increase in the toxic properties of uræmic as contrasted with normal serums, it is important to recognize that such an increase in toxicity does not constitute proof that the cause of this augmented toxicity is the cause of the obtrusive cerebral symptoms of uræmia. It is conceivable that alterations may occur in the blood which possess little pathological significance for the human organism, but which are nevertheless capable of rendering the serum more toxic than normal when introduced into the circulation of rabbits This does not, however, seem a probable explanation of the phenomenon of augmented serum toxicity, and is especially at variance with the fact that our uræmic serums have, in some instances, exhibited very striking toxic properties when introduced into dogs and monkeys, which do not possess the peculiar susceptibility to normal human serum that is observed in the case of rabbits. It is much more rational to regard the increase in the toxic properties of the blood in certain, if not in all, cases of uræmia as evidence of a toxæmia, which is in some way connected with the symptoms of the uræmic state. It is possible that this toxæmia is distinctive of uræmia and always of the same character, but there are certain differences in the behaviour of different serums which make it likely that the toxæmia is not always the same. It is, moreover, certain that the toxic properties of the blood are augmented in conditions not uræmic in nature, for example, in acute lobar pneumonia, in scarlet fever, etc.

Urea being by far the largest and most important constituent of the urine and representing the terminal product of proteid metabolism, it is not singular that this substance should have been for a long time regarded as the main factor in the production of uræmia. It is thus of the highest importance to determine the actual relation of urea to uræmic states. The conclusions reached by me in reference to this relation are based upon a considerable number of determinations of urea in the blood of uræmic persons, of persons with other pathological conditions than uræmia, and of entirely normal persons. Many of these observations were made upon blood drawn during life, but these were supplemented by others upon post-mortem blood, after it was demonstrated both in man and in animals that the urea content of ante- and post-mortem blood corresponds closely in the case of blood taken from well preserved bodies. In addition to making seventy

observations on the urea of human blood, an endeavour was made to determine to what extent chemically pure urea possesses toxic properties. The results of these studies may be briefly stated as follows:

(*a*) In a small proportion of typical cases of uræmia, characterized by the occurrence of convulsions, the urea content of the blood was found to be well within the normal limits, notwithstanding that in these same cases the blood serum was distinctly more toxic than normal. It is plain that in these cases there is no ground for looking with suspicion upon urea as a factor in producing symptoms.

(*b*) In the majority of cases of uræmia, especially in those cases in which the secretion of urine has for a long time been scanty, the urea of the blood was distinctly increased, this increase sometimes reaching to 5 or 10 or even 20 times the normal urea content. It is, however, a very striking fact that many cases of chronic nephritis were found to be characterized by a markedly excessive urea content, even where there were no symptoms that would ordinarily be called uræmic. This is merely a confirmation of an old observation by Bright and Christison which has not received the attention which it deserves. Among the cases in which the urea was increased in the absence of typical uræmic symptoms were 14 cases of acute lobar pneumonia with fatal termination. These cases make it clear that renal inadequacy is a feature of many fatal pneumonias. Whether such inadequacy is to be considered uræmic in the absence of the usual symptoms of uræmia will be considered later.

(*c*) Experimental studies upon dogs and monkeys show that pure urea is toxic when infused intravenously, but only when very large quantities are employed, *i.e.*, quantities equal to many times the daily urea excretion of the animal. The symptoms produced by such infusions are fairly constant in dogs, and consist in initial slower and stronger heart action, copious diuresis, diarrhœa, contraction of the pupils, irregular fibrillary contractions of the muscles, and finally general and severe tonic or clonic spasms and death. If we make the bold assumption that in human nephritis the susceptibility of the nervous system to the influence of urea is similar to that observed in dogs, we would expect convulsive seizures to arise in man when the urea content of the blood reaches about .5 per cent. It was found however, that in many of the cases of human nephritis, in which convulsions occurred, the percentage of urea was considerably below this point, while in a few cases in which this percentage was much exceeded, convulsions were absent.

It is, of course, obvious from the foregoing facts that urea does not play a necessary part in the causation of the symptoms of human

convulsive uræmia. This does not, however, prove that the accumulation of the urea in the blood in large excess is of little importance. There is good evidence that such an accumulation points to a considerable degree of degeneration of the secreting epithelium, and the degeneration which permits the storage of urea, permits the storage of other constituents of the blood, including sodium chloride, potassium salts, nitrogenous extractives, and possibly a toxic proteid substance. It is partly on acconnt of this multiplicity of substances retained in the blood at the same time with urea that we are unable to fix more definitely on the part which urea plays as a toxic substance. It is on the whole very likely that urea in conjunction with the accumulation of other substances in the blood, as the result of renal insufficiency, exerts an influence in the production of uræmic symptoms—especially uræmic vomiting and diarrhœa. The urea of the blood has been greatly increased in all the instances of uræmic vomiting and diarrhœa that I have had an opportunity to study.

It is desirable to indicate here that the customary determination of urea in the urine in cases of nephritis gives no more indication of the quantity of urea in the blood than does a mere record of the volume and specific gravity of the urine passed by such patients, and that it is hence an unnecessary procedure. If the kidneys are incompetent a large reduction in the urea excreted is indicated sufficiently by the reduction in the total solids, this being expressed by the volume and specific gravity. If there is only a moderate daily reduction in the urea excretion this cannot be discovered by the ordinary methods used. To determine this it would be necessary to keep a daily record of the nitrogen taken into the body, of the nitrogen of the urine and of the fæces, and also of the body weight. It is easy to see how, in the course of a few months of mild renal incompetency, the urea of the blood would increase enormously if the kidney lagged only to the extent of a few grams of urea daily—too small an amount to miss by ordinary examinations. It is no exaggeration to state that for practical purposes the consideration of the volume and specific gravity of the urine yields all the information that can be obtained by determining the urea of the urine. What we really require is an estimate of the urea of the blood in our nephritic patients, and this is entirely practicable, for only a few cubic centimetres of blood are necessary for this purpose. I have no doubt that this procedure will in time be frequently employed, as the urea content of the blood is a most important indication of the competency or incompetency of the kidneys.

In recent years there has been some disposition to regard the

extractive substances as the cause of uræmic symptoms, but the evidence in support of this view has never been strong. The results of a personal study of this question may be briefly referred to. The extractives of the blood, that is, the substances which can be extracted by means of ether and alcohol, were determined in more than one hundred instances, including normal human and dog's blood, blood from nephritis with and without uræmic symptoms, from septicæmia, acute lobar pneumonia, etc. It was found that there is no definite relation between uræmia and the quantity of extractives in the blood.

In general the extractives are somewhat increased where the quantity of urea is increased, but there are cases of uræmia where the extractives are apparently normal in amount, and there are cases which would not usually be classed as uræmic where the extractives are markedly increased. The evidence indicates that while extractive substances in excess cannot be regarded as entirely harmless for the organism, they certainly cannot be looked upon as playing other than an auxiliary part in the production of uræmic symptoms. In this connection it may be stated that Dr. A. J. Wakeman, at my request, made a series of laborious observations on the blood of uræmic patients with the use of the Otto-Stas method, for the purpose of isolating any alkaloidal substances which might exist there. The injection into guinea pigs of the material recovered by the Otto-Stas method yielded wholly negative results.

The conclusions that have been stated regarding the extractives of the blood are applicable to the potassium salts theory of uræmia, which was originally advanced by Felz and Ritter, and which constitutes a most instructive chapter in the history of theories of uræmia. Numerous observations made by me confirm the statement of Horbaczewski that the content of potassium salts in uræmic blood may be quite normal in amount. This seems to be especially true of the blood of puerperal eclampsia. These salts are, however, distinctly increased in many instances of uræmia, but apparently never enough to make them wholly responsible for grave nervous symptoms. The potassium theory as an *exclusive* cause of uræmia has recently been revived in France by Charrier, but upon wholly insufficient grounds. It may be said at present that, while the potassium salts cannot be considered to play a leading part in the production of uræmic symptoms, their presence in excess in the blood must be regarded as a possible factor in precipitating symptoms of intoxication.

The ammonium carbonate theory of Frerichs, once so popular, has now only a historical interest and need not be discussed here. An allied hypothesis has, however, been suggested, namely, that the cause

of uræmia is the presence in the blood of the ammonium salt of carbamic acid—ammonium carbamate. The recent investigations of Hahn Pawlow, Massen and Nencki render it probable that urea is formed in the liver by the dehydration of ammonium carbonate, and this fact has led some physiologists to suspect that the highly toxic ammonium carbamate may be responsible for uræmic states. This view appears to me to be at variance with the following facts:

1. In watery solution ammonium carbamate is very unstable and is rapidly converted into ammonium carbonate. We know, however, that ammonium carbonate does not occur in uræmic blood in sufficient amount to produce symptoms, and usually cannot be found at all.

2. The toxicity of uræmic blood is not lessened by dialysis, as it would be if the toxicity depended on a diffusible ammonium salt; nor does the diffusate contain ammonium.

3. The urine of uræmic patients does not necessarily contain an increased proportion of N. of ammonia, as it should do if the synthesis of urea were impaired. On the other hand, in liver diseases in which there is extensive parenchymatous destruction, the N. of ammonia may be greatly increased, even in the absence of uræmic symptoms.

Owing to the instability of ammonium carbamate its isolation from the blood is impracticable, and inferences as to its occurrence there depend chiefly on indirect evidence. The conclusion seems justified that such knowledge as we possess does not support the supposition that ammonium carbamate is concerned with the production of uræmic intoxications.

Before passing to the more constructive consideration of the uræmic problem, it is proper to make brief reference to two widely different theories of the nature of uræmia. One of these is the celebrated hypothesis of Traube that renal disease causes thinning of the blood plasma, hypertrophy of the left ventricle and excessive arterial pressure. If the arterial tension is increased beyond a certain point or the plasma of the blood becomes further thinned, œdema and anæmia of the brain are produced and uræmic symptoms result. There are fatal objections to this theory. These are: 1. That there may be marked cerebral symptoms without arterial tension. 2. That the specific gravity of the serum is often normal in typical uræmia. 3. That there are uræmic patients in whom neither cerebral anæmia nor cerebral œdema are found at autopsy. 4. That a marked degree of anæmia of the brain and of œdema is occasionally found in the absence of all symptoms resembling uræmia.

It is, however, clear from clinical study that there is often a close association between certain uræmic symptoms, especially convulsions

and dyspnœa and high arterial tension. Nor is there any doubt that when we reduce excessive vascular tension by means of vaso-dilators, such as nitro-glycerine, we often relieve the symptoms in the case of dyspnœa, sometimes in a striking degree. At present it appears probable that the high arterial tension of uræmia is due to the action of toxic material in the blood. It is not at all inconsistent with this view that variations in the circulation of the central nervous system should influence, in important ways, symptoms which, like dyspnœa, are of central origin.

Although we cannot accept the theory of Traube as advanced by him, the appearances observed in the central nervous system in persons dying of uræmia[1] (especially the loss of chlorophyllic substance seen in nerve cells) indicate that mechanical conditions, such as local anæmia, congestion or œdema, have been operative in damaging the nerve elements. It seems probable that these conditions are not primary, but depend on toxæmic states.

Another theory of uræmia which cannot be passed by, is that of Brown-Sequard, who holds that the kidney elaborates an internal secretion which is essential to health, and the suppression of which is largely responsible for the phenomena of uræmia; the accumulation in the blood of toxic substances which should be excreted by the urine having little or no influence on the causation of these phenomena. This conception of uræmia rests mainly on the alleged fact that the injection of kidney extract into the circulation of a nephrectomized dog causes the temporary disappearance of uræmic phenomena. The evidence which has been advanced to establish this fact must be regarded as insufficient. Thus the observation of Brown-Sequard that the injection of kidney extract causes an increase in the muscular power of nephrectomized dogs, rests on a small number of experiments which appear neither to have yielded decided results nor to have been subjected to careful control, and Meyer's contention that the injection of renal extract gives marked relief to the dyspnœa of double nephrectomy likewise rests on a small number of observations that seem distinctly to call for proper controls. Nor can we place much reliance on the claims of Teissier and Frenkel, in a recent publication, that the injection of a few cubic centimeters of renal extract in the human uræmic subject is capable of rendering a hypotoxic urine hypertoxic by stimulating the elimination of toxines through the urine at the same time that the symptoms of uræmia are ameliorated. Consider-

[1] These changes are not by any means distinctive of uræmia, but occur in a variety of conditions. According to Dr. James Ewing they are best seen where the nerve elements have been subjected to pressure, as in cerebral hemorrhage.

able personal experience makes me highly skeptical as to the propriety of our drawing inferences as to the condition of the blood from the effects of intravenous infusions of urine in animals. A very obvious and serious gap in the experiments of Teissier and Frenkel is the absence of observations on the toxic salts ingested with the food and eliminated with the urine, the toxicity of the urine, both in health and disease, being largely dependent on its potassium salts. Future investigations may show that the kidney elaborates an internal secretion, but at present we are justified in taking the position that the observations now relating to this question do not help us in explaining the pathology of uræmia.

Passing now to a consideration of the clinical types of uræmia with a view to the discussion of their pathology, it is desirable first to make reference to the phenomena of double nephrectomy in dogs and their relation to human uræmia of obstructive origin.

The alterations in the composition of the blood that are entailed by double nephrectomy are of the greatest interest in the study of the pathology of uræmia, for they necessarily represent the results of the most extreme degree of renal incompetency *per se* and without complicating factors such as are commonly present in human uræmia. The following description of the symptoms and pathological alterations incidental to experimental uræmia, is based on a series of 10 successful cases in dogs, as well as on cases in the pig and rabbit—and also upon a number of instances in which the ureters were tied upon both sides. It may be stated at the outset that the symptoms were essentially the same in the case of double nephrectomy as in ligation of the ureters. These symptoms consist, in a typical case, of moderate prostration following the operation, of repeated vomiting[1] sometimes associated with diarrhœa, of slow and deep respiration, of slow, full and high tension pulse and, not rarely, of fibrillary twitchings. In only one instance did true convulsive seizures occur. Death is usually preceded by a period of drowsiness or actual coma. In none of my animals was the operation survived more than four and a half days, and most of them lived less than three days. In cases unaccompanied by infection the temperature is generally one or two degrees below normal for one or two days before death.

A considerable number of observations have been made by me to determine whether the blood of nephrectomized dogs is more toxic to rabbits than the blood of normal dogs; or, to put it a little differently,

[1] The vomiting referable to the removal of the kidneys must be distinguishable from that which results from peritonitis accompanying accidental infection in these cases.

to determine whether the experimental uræmia of double nephrectomy is comparable with human uræmia of the convulsive type as regards the toxicity of the blood. There can be little doubt that this is a most important question in the pathology of uræmia, and I regret that it is not possible for me to make an unqualified statement in regard to it. Owing to the crudeness of our methods of studying the toxic properties of the blood, it is not possible to detect moderate deviations from the normal toxicity. It can, therefore, only be said that there does not seem to be a marked difference in the toxic properties of the blood within 48 hours after nephrectomy as compared with the blood of the same animal previous to nephrectomy, but that the toxicity of the blood seems to be increased in dogs that live a longer period.

As regards the changes in the chemical composition of the blood, our information is much more positive. We know, for example, that the urea of the blood is remarkably increased after double nephrectomy —often reaching ten times the normal percentage at the end of three days. The extractives are also distinctly increased. A moderate increase in the total salts of the blood is probably a regular feature of the blood of nephrectomized animals. The potassium salts may be somewhat increased, but on the other hand may not be appreciably changed. The total proteids undergo no alteration in amount. A very interesting feature of the blood has been the marked increase in fibrin which was noted in a number of the nephrectomized dogs. This observation, though one of much interest if confirmed, has not yet been subjected to the controls which are necessary to establish it as a fact, for a very definite source of error remains to be eliminated. This consists in the fact that a part of the increase in fibrin noted after nephrectomy may be due to the bleeding which was practised several days before nephrectomy for the purpose of establishing a basis of comparison before and after operation, for it is known that the fibrin of the blood is increased by bleeding.[1]

In order to be able to compare the symptoms of double nephrectomy with the obstructive type of human uræmia, the cases of

[1] Since this paper was read I have succeeded in several instances in performing double nephrectomies and ureter ligations without losing more than a few c.c. of blood, through hemorrhage. All these animals have shown a doubling of the normal fibrin content of the blood after a few days. A dog subjected to laparotomy without nephrectomy, but with a moderate loss of blood, showed no increase in the fibrin content of the blood.

These observations seem of especial interest in connection with the altered toxicity of the blood after nephrectomy, but other sources of error remain to be eliminated before the increase in fibrin can be positively attributed solely to the suppression of renal functions.

prolonged anuria from obstruction accessible in literature were subjected to analysis. Of the 41 apparently reliable cases in which anuria lasted four days, 35 occurred in males. This striking difference in sexual incidence is probably explained by the nature of the obstruction to the escape of urine. In 14 of the 21 cases in which an autopsy was made the ureter or pelvis of the kidney was obstructed by a calculus, on one or both sides, the obstruction thus created being the cause of the anuria. I have been unable to find the record of a case in which anuria in a female was due to obstruction of the ureter or pelvis by a calculus. Of 36 cases in which there was either absolute anuria (if we can trust the histories) or in which only an insignificant quantity of urine was passed, the condition in 11 cases lasted more than 4 days and less than 7, in 18 cases lasted from 7 to 14 days, and in 7 cases lasted longer than 14 days.

Although the records are not wholly satisfactory, they serve to bring out clearly some important facts regarding the symptoms of obstructive uræmia. It is interesting to note that in seven of our forty-one cases it is definitely stated that no uræmic symptoms occurred, although some of the cases were of considerable duration (5, 5, 6, 7, 8, 9 and 11 days). Although it is not unlikely that some of the unobtrusive indications of uræmia were overlooked in these cases, it is fair to suppose that there were no well-marked uræmic symptoms. It seems clear that it is the rule for uræmic symptoms not to begin for several days after the commencement of the anuria. In a number of cases more than a week elapsed before pronounced indications of uræmia began. In twelve of the forty-one cases it is noted that vomiting was present at some period of the anuria. In one case (that of Russell, lasting twenty days) it is said that vomiting was present from the beginning. Diarrhœa does not appear to be so frequent a symptom as vomiting. It was noted in only six cases. Headache was described in only six cases. Insomnia, with restlessness, was observed in several instances, and may be present from the beginning. Muscular paralysis was not recorded in any of the cases, although a considerable degree of muscular prostration was repeatedly observed, and is probably a relatively early symptom in most instances. Pronounced delirium was a rare symptom. General convulsions is another uncommon symptom, having been noted in only five of the forty-one cases. Twitchings of the muscles, not sufficiently wide in range to constitute convulsions, were observed in eleven cases. According to Roberts this is a highly characteristic symptom of obstructive anuria. As regards the state of the mental faculties it seems safe to say that death is usually preceded by drowsiness, if life lasts more than

a week, but that the patient may in most instances be roused at any time.

In four cases a urinous odor of the breath was noticeable and in one of these the skin also had a urinous odor. In one instance the breath is described as having an ammoniacal character. In one patient, not included in the collection, the suppression lasted four days and the skin of the neck and face was covered by crystals of urea. An important clinical feature of obstructive uræmia is that the temperature is seldom elevated. In only one case is there a record of any fever, and in this the rise was slight. It is clearly the rule for the temperature to remain normal throughout or to be a little subnormal during the last days of life.

On comparing the symptoms of these two sets of cases, the human obstructive uræmia and the experimental uræmia following double nephrectomy or bilateral ligation of the ureters, several important resemblances become apparent. Thus vomiting is an early and frequent symptom, while diarrhœa, though not rare, is distinctively less common. In both groups of cases marked muscular prostration is usual from the beginning. Occasionally, however, there is early restlessness. Indications of delirium are absent in the experimental as in the human cases and paralyses have not been observed. In the terminal stage, fibrillary tremors are common in both the human and the canine cases, while general convulsions are exceptional. Terminal coma may occur in either group, but consciousness can usually be aroused at any time. An important clinical resemblance lies in the fact that the temperature is either normal throughout or slightly subnormal. There are, however, some points of difference. Thus, a patient with both ureters obstructed may live more than two weeks, while a dog with both ureters tied or with both kidneys extirpated lives less than one week. We can hardly attribute this difference in the duration of life to the shock of operation. It may depend on the activity of the skin in man. The ammoniacal breath of human patients depends doubtless on the decomposition of urea in the gastro-enteric tract and the odor of the skin arises from the decomposition of urea in the sweat. It may happen that a greater accumulation of urea occurs in the blood in man than in the dog, owing to his longer survival, and that this occasions the excretion of urea by the gut in the case of man. Notwithstanding these clinical differences, it seems probable that the pathological conditions which are responsible for the symptoms in nephrectomized dogs are essentially those that are responsible for the symptoms of obstructive uræmia—namely, the accumulation in the blood of urea, extractives, inorganic salts, and

perhaps of a toxic proteid material the nature of which is at present unknown.

Coming now to the consideration of other types of human uræmia, we find ourselves upon uncertain ground when we try to bring the various clinical phenomena into relation with the pathological state or states which constitute their basis. This is because the pathological knowledge which we possess is still exceedingly meagre and probably inadequate to form the basis of a permanent pathological classification of the different combinations of systems which we call uræmic. There are, however, certain facts, some of which have already been alluded to, that seem to me to help us in the interpretation of the phenomena of human uræmia, and to these I wish to direct your attention.

There is a well recognized group of patients with chronic nephritis whose leading characteristics clinically are high arterial tension, dyspnœa and slight albuminuria, and sometimes headache. Although the kidneys of such patients present considerable variations in their gross character, there is in all cases widespread degeneration of the secreting tubules, fibrous changes in the tufts, and a distinct increase in the intertubular connective tissue. Cases of this character are often benefited by venesection (at least temporarily) and it has thus become possible to obtain the blood for study in a number of instances. As already stated, it is not possible to say whether or not the serum from such patients is regularly more toxic than normal, although it appears as if this were the case in some instances at least. It is usual in these cases for the blood to contain an increased percentage of urea, thus affording a positive indication that the kidney is not wholly competent to perform its excretory functions. Cases of nephritis of this type may be the distant consequences of infection, but there is no reason to think that pathogenic bacterial products are present in the blood at the period when these cases run a chronic and entirely afebrile course. The only obvious pathological condition of the blood that is likely to be connected with the characteristic exacerbations of dyspnœa and the increase in arterial tension, is the retention in the blood of constituents that should be excreted, perhaps including an unknown toxic proteid material. In other words (leaving aside the fact that the water of the plasma may be increased in such cases) the condition of the blood in the cases described is probably analagous to the condition which was described as characteristic of double nephrectomy, and which, in all likelihood, is the basis of human obstructive uræmia. At least this much is certain—in the three different conditions which we have considered, double nephrectomy, obstructive uræmia and chronic nephritis, with high tension and uræmic dyspnœa—there is an

actual retention of urea in the blood and not improbably an increased toxicity of the blood due to a proteid constituent. It is, of course, obvious that there are clinical differences between human obstructive uræmia and the dyspnœic type which this pathological conception does not explain. We must, however, remember that in the one case we have to do with an acute condition arising sometimes in persons whose vascular system is not markedly altered, while in the second case the toxæmia is a chronic state arising in a person who, simultaneously, and for reasons not understood, has developed cardio-vascular fibrosis. It is possible that this cardio-vascular fibrosis plays a mechanical part in the production of dyspnœa in the presence of a uræmic toxæmia like that referred to.

In the course of the arterio-sclerotic type of chronic nephritis, with uræmic dyspnœa, etc., as well as in other types of nephritis, gastro-enteric disturbances, especially nausea, vomiting, and diarrhœa of an intractable character, are occasionally observed. It will be remembered that vomiting and diarrhœa are features of experimental uræmia from nephrectomy and of obstructive uræmia.

There can be no doubt that these symptoms are due to a retention uræmia in which urea, extractives, etc., accumulate in the blood in large excess and are finally excreted by the gastro-enteric mucous membrane, causing diarrhœa, and in which vomiting is caused by the action of these toxic substances upon the medulla. I cannot undertake to say whether the known retained constituents of the blood (urea, extractives, salts) are in themselves responsible for these symptoms or whether unknown substances contribute to determine these symptoms. There are several facts which are of significance in this connection. One is that the injection of urea into the blood eventually causes diarrhœal discharges containing urea. Another fact is that in every case of uræmia that I have studied in which uræmic vomiting or diarrhœa has been a feature, the blood has contained a marked excess of urea, etc. Again we find that vomiting and diarrhœa are characteristic symptoms both of obstructive uræmia and of double nephrectomy. We know that in the former cases crystals of urea may be found on the skin and that in the latter urea may be found in the intestine. Considering these facts together we cannot but feel justified in believing that the known retained constituents of the blood play a part in the production of the digestive symptoms of uræmia, possibly a leading part.

In the course of a small proportion of cases of nephritis, convulsions constitute an obtrusive occurrence. The convulsive seizures may form part of the history of almost any type of nephritis—of nephritis

with preponderant parenchymatous change to nephritis with extreme connective tissue alterations. In a certain number of cases the symptoms previous to the convulsive seizures have been those of the type already referred to, with high tension pulse, dyspnœa, moderate albuminuria, etc. In other words, this type of uræmia is liable at any time to become modified by spastic phenomena. It should be noted that in some of these cases, where convulsions are thus superposed, the temperature remains normal until the seizure, and is then only slightly elevated—not more than we might expect from violent muscular action. How do these cases differ pathologically from the high tension type of uræmia without convulsive seizures? At the beginning of this paper reference was made to the fact that the toxicity of the blood was found to be markedly increased in many of eighteen cases of convulsive uræmia and at least apparently increased in all. It was found that the toxic properties of the serum in this group of cases were more pronounced than in the non-convulsive group with high tension. Moreover, it was found that in some of these convulsive cases the urea was not increased beyond the normal percentage. In a very few instances the urea, the extractives and the potassium salts were apparently within normal limits. It is plain that if the convulsions in these cases are of toxæmic origin they must depend upon some other substance than urea, and it is not unlikely that they depend on the presence of the proteid substance to which the exaggerated toxicity of the blood appears to be due. There does not, however, appear to be any significant difference between the convulsive and the non-convulsive group of cases, the difference in the toxicity of the blood being probably one of degree rather than of kind. Again, the clinical facts lend support to the view that the pathological basis of the two sets of cases cannot be very different, for the spastic phenomena are often so slight as to constitute only fibrillary twitchings that recur infrequently and bring about no noticeable change in the condition of the patient. It may be that the presence or absence of these nervous phenomena is connected with slight variations in the degree of toxæmia or with temporary alterations in the circulation of the brain.

The evidence thus seems to favour the view that in the group of cases which has been discussed, the symptoms are dependent largely upon renal insufficiency and upon alterations in the blood that are secondary to this condition. It is important to realize that although a kidney may be competent to excrete urea so actively as to prevent the accumulation of urea in the blood, it does not necessarily follow that it is competent to excrete, or to transform and excrete other sub

stances which a healthy kidney would not permit to remain in the blood.[1]

It may be that further studies will show that the essential pathological element in the forms of uræmia already considered is the presence of the proteid serum poison to which reference has been made; although in the form of uræmia characterized by gastro-enteric derangements, the accumulation of urea, salts, etc., appears to be a regular and probably a determining factor.

An element quite different from simple renal insufficiency enters into many cases of uræmia, namely that of infection.

There is a small but suggestive group of patients who, after exposure to cold or wet, develop high fever, partial suppression of urine, albuminuria and perhaps hæmaturia, with headache, delirium and coma. The peculiarity of these cases is that the kidneys have previously been normal so far as can be determined by clinical methods. There seems little doubt that the cerebral symptoms in such cases of acute degeneration of the kidney or acute exudative nephritis are due wholly to the action of toxines and not to the retention of substances in the blood which are normally eliminated by the kidney.

These unusual but instructive cases appear to me to represent the type of uræmia most widely removed from human obstructive uræmia in its pathological basis. As might be expected, these cases retain their purely infective type only a short time, for the damage to the kidney soon leads to pronounced insufficiency and to the accumulation of urea, extractives, etc., in the blood in marked excess. A condition analogous to that just described can be produced in monkeys by the subcutaneous injection of pathogenic bacterial filtrates.

In a considerable number of cases of chronic nephritis which have run an afebrile course there is a sudden development of fever, partial suppression with increase in the albumen of the urine and cerebral symptoms such as delirium, coma or convulsions. At autopsy the kidney may show the lesions of an acute nephritis grafted upon those of a chronic nephritis. Post-mortem cultures made from the blood and various organs frequently show the presence of pyogenic or other pathogenic bacteria. In short we have in these cases both clinical and pathological evidence of the occurrence of an acute infection. It seems reasonable to suppose that many of the symptoms which we call uræmic in these terminal cases are due to the combination of this infection with a pre-existing toxæmia due to chronic renal insuffi-

[1] The increase in the fibrin content of the blood which I have found in some cases of this sort is of interest in this connection, though its significance is still uncertain.

ciency. But such infections are by no means always terminal states. It has been shown by Welch and others that patients with chronic nephritis are especially susceptible to infection, and it often happens that a patient with chronic diffuse nephritis develops grave cerebral symptoms at the time of a trivial infection which causes a tonsilitis, a slight bronchitis or an otitis,—symptoms which we very properly look upon as uræmic, but from which there is apparently complete recovery.

Reference has already been made to the fact that the urea content of the blood was found to be almost regularly increased in persons dying of acute lobar pneumonia, in other words, that renal insufficiency for urea is a characteristic of fatal pneumonias. This observation suggests the question whether we are to regard a markedly excessive accumulation of urea in the blood as an indication of uræmia even in the absence of typical clinical indications of uræmia. I strongly incline to the view that we should extend our conception of the term uræmia to include every case of renal insufficiency for urea although well defined uræmic symptoms be wanting. It has been made clear that typical uræmic symptoms may arise in persons whose blood shows no increase in urea, but this fact does not deprive the accumulation of urea, salts, etc., of clinical significance ; it merely illustrates that the pathological basis of what is clinically termed uræmia is not always the same. It seems to me desirable that we should regard any toxæmia as uræmic which can be shown to depend on the incapacity of the kidney to perform the functions of a healthy kidney, whether these functions consist simply in the elimination of substances as they exist in the blood furnished by the renal artery, or whether they shall be shown also to consist in the transformation of certain elements of the blood previous to elimination.

Again it is only rational that we should recognize that the essential elements of a uræmic intoxication may exist without being present in such a degree as to cause obtrusive and typical uræmic symptoms. Or, to restate the fact in a different form, *we should recognize that there is such a thing as a latent uræmic intoxication.* Such a latent uræmia is probably present in many forms of disease, especially acute disease, such as pneumonia, where the kidney is the seat of lesions, and in chronic nephritis. In the former condition it constitutes a complicating state.

The fact that such a toxæmia may be masked by associated conditions or may be in itself unrecognizable clinically does not prove that it is a state which exerts no influence in determining prognosis.

In conclusion a word must be said about the most obscure type of

uræmia—puerperal eclampsia. Efforts have been made to connect this state with the formation of toxic products formed by the chemical activities of the living cells of the embryo, with the absorption of toxic material formed in the intestine and with the accumulation of urea in the blood as the result of nephritis or of pressure on the renal vessels, but the efficacy of these supposed agencies still remains unproved.

My personal experience with puerperal eclampsia is limited to the study of the blood of six victims of this state.[1] In at least three of these cases the urea of the blood was not increased in percentage. It seems highly probable that the toxicity of the blood was distinctly increased in at least two of these cases. Of the other cases it cannot be positively stated that the blood was more toxic to animals than is ever the case with the blood of non-eclamptic puerperal women, nor, on the other hand, can it be stated that the blood was not more toxic than normal.

At the present time there is a controversy as to the toxicity of the blood of eclamptic women, which can be definitely settled only by numerous and very carefully conducted observations. Although there is thus considerable uncertainty as to whether an increased toxicity of the blood is an essential feature of puerperal eclampsia there is important indirect evidence of the existence of such a toxæmia. This consists in the presence of anæmic and hemorrhagic areas of necrosis in the livers of women dying of eclampsia.[2]

Schmorl, who first described these striking lesions, regards the thromboses of the capillaries and small periportal veins with which they are associated as dependent on the passage into the blood of placental elements and products of placental degeneration.

Flexner has succeeded in producing similar alterations in the liver by means of experimental intoxications, and there can be little doubt that we must regard the necrotic changes in the organs of eclamptic women as dependent on a toxæmia. How this toxæmia arises and how it is related to the toxæmias of nephritis already discussed remains to be discovered.

Although this sketch of the pathology of uræmic conditions, made from a somewhat personal standpoint, shows us to be in possession of a meagre fund of knowledge respecting the pathological basis of uræmia, we may confidently hope for further enlightenment from experimental pathology. It seems to me that future researches should have refer-

[1] The blood from these patients was obtained through the courtesy of the attending physicians of the Lying-in Hospital of New York.

[2] I have never met with these lesions in the livers of persons dying from other forms of uræmia than puerperal eclampsia.

ence especially to the following topics: The toxic properties of the blood of uræmic patients, the physiological and chemical changes induced in the blood by nephrectomy, and the influence of intoxications of intestinal origin upon the normal organism and upon organisms which are the seat of nephritis. That the state of bacterial activity in the intestine is capable of exerting an important influence upon uræmic conditions is suggested by the observation which I have made that the albuminuria of a dog with chronic nephritis can be strikingly increased by feeding with cultures from the stools of entero-colitis. It is also suggested by the exacerbation of symptoms which we sometimes observe clinically in human patients after gross errors in diet.[1] This relation deserves further attention, as it is of the utmost practical importance in chronic uræmias.

I had hoped to refer this evening to methods of treatment in uræmia, but am conscious of having already overstepped the limit of time imposed by reasonable usage.

[1] Nephritis and uræmia may also arise in children as a consequence of intense entero-colitis.

Clinical Reports.

INTESTINAL OBSTRUCTION FROM GALL-STONE.[1]

BY

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I saw Mrs. A., 43 years of age, married, multipara, for the first time on Sunday, 10th April, 1898. She complained of nausea and vomiting, abdominal pain and constipation. Her previous health had not been good. At 18 years of age she suffered from acute inflammatory rheumatism, with endocarditis, resulting in mitral valve disease. For many years she had frequent attacks of hæmoptysis. She has had four living and four still-born children.

In the winter of 1896-7 she suffered from an attack of what her family physician diagnosed as appendicitis. At this time she was confined to bed for three months. She tells me, however, that the pain and tenderness during this attack were high up, more in the region of the gall-bladder than of the appendix vermiformis. Since then she has never been free from soreness in the right hypocondrium, aggravated by exercise and cold.

The present illness began with vomiting on the previous Friday, and had kept up almost continuously during Friday night and Saturday and Saturday night. She had taken of her own accord a dose of salts and two enemas of soap-suds, without much effect, as only one small stool had passed after the first enema. Notwithstanding medical treatment, and the stopping of food by the mouth, the vomiting continued during Monday and Tuesday. On Tuesday evening her general condition, which up to this time had been good, began to fail. The pulse became more rapid, the temperature rose to 100°F., the abdomen was perceptibly distended and there developed tympanies, with general abdominal tenderness and a most anxious expression of countenance. The vomited matter was of a green bilious character, and very abundant. At no time had it any fæcal odor.

I decided that I had to deal with an intestinal obstruction; that I had already done all that could be done by medical treatment, that my patient was entering upon a condition in which any operative measure

[1] Read before the Montreal Medico-Chirurgical Society, April 29, 1898.

would be hazardous, and that an exploratory incision, and subsequent treatment *secundum artem* of the condition found, would give the best chance of bringing about a relief of the symptoms.

I had her removed to the Montreal General Hospital and operated on the evening of Tuesday, the 12th April, 100 hours after the onset of pain and vomiting. Dr. Shepherd very kindly gave me his assistance.

I opened the abdomen in the median line, below the umbilicus. Distended and collapsed small bowel came immediately into view. After following the collapsed bowel for a short distance, the portion containing the stone came up from the region of the pelvis on the left side. After emptying the bowel by pressure, and protecting the field by gauze pads, an assistant grasped it on each side and I removed the stone through an incision in the long axis of the gut. The opening in the bowel was subsequently closed by a double row of continuous sutures.

The green bilious vomiting continued for 72 hours after the operation. Extract of belladonna was given continuously every four hours for a week to overcome the dilated condition of the bowel above the obstruction. The bowels did not move until the fourth day after the operation, notwithstanding the frequent administration of copious enemata and occasional salines. The patient is now quite well, eating heartily and passing a well formed stool each day.

I do not know that it is possible to differentiate obstruction by a gall-stone from that due to bands or a volvulus or internal hernia. A history of cholelithiasis would be very suggestive, however. In the present instance the history was of a previous attack of appendicitis. There had never been any jaundice observed. One would rather have expected to find strangulation by bands.

In a case of intestinal obstruction occuring subsequent to a definite history of recurring attacks of hepatic colic rendering it probable that gall-stone might be a likely cause, it would be a nice question to decide when to operate. The mortality in gall-stone obstruction, following the medical and expectant plan of treatment is, according to Mayo Robson, about 52 per cent., and if surgeons have not been able in the past to show a larger percentage of recoveries, it is probably because operations have been too long postponed. Operations done as a *dernier resort* will always be followed by a large death rate. It is remarkable what small stones have caused fatal obstruction, as shown by specimens in the London Hospitals. On the other hand some very large stones have been successfully passed. I should say that in every case of intestinal obstruction from gall-stone or any other un-

discoverable cause, the attendant was in duty bound to advise an exploratory incision as soon as the patient's general condition began to fail, and under no circumstances should a patient be allowed to drift along until even the smallest operative procedure would necessarily be attended by very great danger.

These large stones do not pass into the gut through the common duct, but ulcerate their way through from the gall-bladder into the duodenum or colon after an adhesive inflammation has united the two. I operated upon a case some years ago where the gall-bladder had become adherent to the colon underneath. The adhesions had not been very strong, however, as several stones were found lying free in the peritoneal cavity just beside the opening between the gall-bladder and colon.

Although intestinal obstruction from gall-stone is generally caused by the stone blocking the lumen of the bowel, yet there are other ways in which the same result is brought about. There may be lighted up a localized peritonitis, leading to obstruction from paralysis of the intestinal wall. Again, obstruction may follow from bands, and fistulæ, the result of gall-stone ulceration.

Lastly, one or two cases have been successfully operated upon where the obstruction was found to be due to volvulus resulting from the violent irritation and irregular peristalsis due to the presence of a gall-stone.

Mayo Robson speaks highly of the value of extract of belladonna given in doses of gr. $\frac{1}{4}$ every four hours. This drug may be of value in conjunction with morphia, in favouring the passage of a stone, and again after operation, in aiding the restoration of function in a bowel that has been for some time over distended.

LOBAR PNEUMONIA IN A CHILD AGED THREE, HIGH AND PROLONGED PYREXIA AFTER ALL PHYSICAL EVIDENCE OF THE PNEUMONIA HAD DISAPPEARED.

BY

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AND

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The following case of pneumonia presents several features of more than ordinary interest. The course of the disease may be briefly summarized as follows:

A previously healthy child, aged 3 years, was suddenly taken ill on the 3rd of December, 1897. The general symptoms were those of an acute pulmonary affection.

On admission to hospital on the 4th of December, and on subsequent examinations, it was definitely determined that we had to deal with a lobar pneumonia of the left lower lobe. On the 6th day of the disease the temperature suddenly dropped to below normal, where it remained for about three days.

In the course of the next few days the physical signs of consolidation gradually disappeared, but the temperature began to present the features of a marked and characteristic septicæmic process. For a period of six weeks it varied from subnormal to 108°.

On several occasions the latter point was reached. In spite of the high pyrexia, the child took nourishment and stimulants freely, and did not appear to suffer particularly. He was bright and cheerful throughout his prolonged illness. When the temperature rose after the crisis, it was naturally thought that we had to deal with a pneumococcus pleurisy but repeated tappings proved negative. Repeated cultures from the blood were also negative, as was also Widal's test for typhoid. We were unable to discover any likely focus for the septicæmic process. There was no evidence of unusually delayed resolution or of any pleural, pericardial, peritoneal or meningitic complication.

C. H., aged 3, was admitted to the Royal Victoria Hospital on December 4th, 1897, complaining of pain in left side of chest (2), cough (3), sore throat.

History of Recent Illness.—From his mother it was learned that he had been well till Friday, 3rd December, when she noticed that he seemed out of sorts and said that the left side of his chest and neck were sore. That night he was restless and cried with pain in left side of chest. He also began coughing during the night. Cough was frequent and caused considerable pain. The throat was also painful during the night. No chill or rigor occurred.

Personal History.—Born in Montreal three years ago. Has always lived here. Has always been a healthy child. Except for an attack of acute lobar pneumonia, which involved the lower lobe of right lung in April, 1897, has never suffered from any disease.

Family History.—Father alive and well. Mother had pleurisy five years ago, but is healthy. Other children are well. No history of rheumatism or tuberculosis.

On admission patient was a well nourished child of average size. Visible mucous membranes of fair colour. Face flushed. Frequently unilateral flushing was noted; the left cheek was principally involved. No herpetic eruption was present. Child assumed the dorsal decubitus and lay quietly, except when paroxysm of coughing ensued. The cough was hard and dry and caused considerable pain in left side of chest. He slept well and took nourishment in fair quantity. Temperature 103°; pulse, 128; respiration, 60.

Respiratory System—Respirations were short and quick. (Respiration ratio, 2—1). There was no cyanosis of face or finger tips. At times expiration was accompanied by a short grunt. The cough was hard and dry and came on in paroxysms. There was no expectoration.

Anteriorly.—Expansion of chest was fair, but was decidedly limited at the right apex and infraclavicular region. Expansion behind at the apex was also diminished. Local fremitus could not be elicited.

Percussion note was impaired from apex to upper border of 3rd rib anteriorly.

Posteriorly, note was impaired to mid scapula in left side. Note over right lung was slightly hyperresonant, but otherwise normal.

Auscultation—Blowing breathing was heard over the whole of the dull area, and posteriorly a few dry *râles* were heard with expiration. Right lung, breath sounds normal.

Cardiac Vascular System.—Pulse 129, of good volume; tension high; regular in rhythm.

Heart—Apex beat visible and palpable in 6th interspace. Dulness was not increased. Sounds at apex normal, at base the second pulmonary sound was accentuated.

Digestive System.—Lips dry and covered with sordes. Teeth in fair condition. Tongue heavily coated on dorsum with yellowish fur Breath was foul. Throat, slight redness of left tonsil and left pillar of fauces. Left tonsil was slightly enlarged. Appetite fair. Thirst increased. There was no vomiting

Abdomen.—Skin hot and dry. Abdomen full but not distended. Neither liver nor spleen was palpable.

Locomotor System—Skin hot and dry. Face flushed unilaterally. No herpes on lips or nose. Vaccination mark seen on left arm. Subcutaneous fat present in fair amount. Muscles of good size and muscular power good. Bones and joints normal.

Nervous System.—Intelligence good. Mental state normal. Sleep rather disturbed. Child restless during both day and night.

Subsequent Events.—Condition was much the same with distressed respiration and cough till 8th December, when a drop in temperature occurred to normal from 104⅗°. The cough was less troublesome and the child seemed somewhat better. The condition of the lungs was not changed, save that the blowing breathing was less distinct. On the 10th the patient was much brighter. Respiration 34. Cough less severe.

The temperature did not remain normal, but began gradually to rise, ranging from normal to 101⅘°. The general condition was somewhat improved and the child was brighter, Respiratory rate was 28—30. Cough no longer present.

Examination of chest showed slightly impaired note from base of left lung to angle of the scapula, with weak voice and breath sounds. A needle was inserted on several occasions, but no fluid at any time withdrawn.

During the last week in December the temperature was very irregular, on several occasions reaching 108°. The general condition of the child did not suffer. He was bright and the mental state was normal. The Widal test was negative, as were also cultures taken from the blood on several occasions.

Throughout January the same irregularity of temperature was noted. The child lost in weight, but did not seem to suffer any inconvenience from the pyrexia. The urine on repeated examinations was normal.

Early in February the temperature became less elevated. The child rapidly gained in flesh. Appetite was excellent. Examination of chest showed that the dullness had entirely cleared up. He was discharged on 27th February, 1898.

INTUSSUSCEPTION IN AN INFANT, AGED 9 MONTHS—OPERATION—RECOVERY.

BY

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MR. PRESIDENT AND GENTLEMEN,—The case which I venture to bring before the Society this evening has the following history:—Baby M., aged 9 months, was breast-fed until a few weeks ago, when nursing was supplemented by artificial feeding. The baby has never been ill until the present attack, and her nutrition has always been excellent. There is nothing in the family history showing any predisposition to bowel trouble. The present attack began at midnight December 15th, when the infant awoke, crying, as if suffering pain. and soon vomited; the pain was intermittent in character, and the vomiting recurred only a few times during the night and following day. December 17th, in the evening, the nausea, with occasional vomiting and tenesmus, increased, and a couple of blood-stained and slimy stools were passed. At midnight I was sent for, but happened to be out at the time, so Dr. George Fisk kindly saw the case for me. The symptoms then were indicative of intestinal obstruction; there was retching, with occasional vomiting and tenesmus.

December 18th, at 11.30 a.m., I saw the patient for the first time, The baby appeared to be very ill; the face was pale, drawn and pinched, the eyes were sunken, the pulse was small and rapid, 150 per minute; temperature, 99½° F.; there was almost constant retching, with straining at stool without effect; no abdominal distention. On palpation a distinct elongated tumor could be felt in the left lumbar region, just above the crest of the ilium. It was movable and yielding to the touch.

Diagnosis.—Intussusception.—Immediate operation was advised. The child was accordingly removed to a private ward in the Western Hospital, where, at 1.30 p.m., assisted by Dr. George Fisk, I did a cœliotomy, making a two-inch median incision below the umbilicus, On opening the peritoneal cavity two or more ounces of straw-colored fluid escaped. The small intestines were red and injected; a number of coils were allowed to escape from the abdomen, but were protected and kept warm while the tumor was being dealt with. The invaginated bowel was next seized and brought out through the wound.

[1] Read before the Montreal Medico-Chirurgical Society, April 1, 1898.

The intussusception was found to be of the ileo-cæcal variety; the cæcum had been swallowed by the ascending colon, the tumor increasing in size at the expense of the intussuscipiens or outer tube. The invagination was reduced without any particular difficulty by pressure from below the mass, combined with gentle traction on the ileum and cæcum; the adhesions being recent, were separated without damage to the bowel wall. The cæcum was much swollen, and at the point of greatest constriction was bloodless, and of an ashy grey color. The remainder of the cæcum, together with the ascending and transverse colon, was very red, with extensive extravasations of blood beneath the serous coat. The ascending, transverse, and upper part of the descending colon had been much dilated to receive the intussusceptum. The meso-cæcum and meso-colon were unusually long. It was thought advisable to remove the red and greatly swollen appendix, but, as the circulation was seen to be gradually returning to the blanched portion of the cæcum, the latter was fastened by suturing it to the parietal incision. Finally the small intestines were returned, the peritoneal cavity dried with sponges, and the abdominal incision closed without drainage. Little or no shock followed the operation. The patient came out of the anæsthetic quietly (A. C. E. mixture); no vomiting. The temperature, which was 104° F. at mid-day, or just before the operation, fell gradually, and at midnight was only 100° F.; the pulse, too, improved in character and became slower, dropping to 120 per minute. The bowels moved satisfactorily thirty hours after the operation, after an enema of glycerine and warm water, and they continued to act either naturally or by the aid of enemata once or twice daily. After the first twenty-four hours the child was allowed the breast.

December 28th.—Two sutures were removed, which were found to be cutting. There was also a small stitch abscess.

December 30.—The remaining sutures were removed. The incision healed by primary union.

January 1, 1898, fourteen days after the operation, the patient was allowed to be taken to her home, where I saw her on the following day, playful and perfectly well.

Remarks.—Intussusception may occur at any age, but 50 per cent. of all cases are said to occur before the age of 10 years, and half of these occur during the first year of life. It is the most common cause of intestinal obstruction in children. According to the statistics of Treves 70 per cent. of all cases terminate fatally. In the more acute cases death may occur in from one to two days from intestinal strangulation, with or without perforation and peritonitis. In the less

acute cases there is not complete obstruction of the bowel, but gangrene of the intussusceptun is very likely to occur, with possible perforation and septic peritonitis, causing death in from four to seven days in children, and in from three to four weeks in adults.

If these cases are to be treated with greater suceess in the future than they have been in the past, it must be through early recognition and more prompt interference. Treves says that when in an acute case days have been allowed to elapse, the prospect of success by operation is so slight that, so far as statistics at present indicate, it is better to leave the case to nature. Recovery is rare in those cases where reduction is very difficult or impossible, or where gangrene has occurred, making a resection of the bowel necessary. Charles Clubbe, B. M. J., November 6th, 1897, reports fifteen cases of intussusception, with seven recoveries. Three of his successful cases were seen early, and reduced by means of olive oil injections by rectum, and in only one of the remaining four cases was the bowel materially injured.

In my own case, where the operation was performed fairly early, the invagination was found to be extensive, and the wall of the cæcum barely escaped necrosis. A few hours' delay under treatment, say with opium, or by attempts at reduction by rectal injections, and I am satisfied that there would have been a less happy result.

PNEUMONIA, MALIGNANT ENDOCARDITIS OF TRICUSPID VALVE.[1]

BY

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Mrs. L., æt 40, was admitted to the Montreal General Hospital on March 25th, 1898, complaining of pain in the left side and difficulty in breathing. Two years ago she had an attack of pneumonia; with this exception she has always enjoyed good health.

Her present illness began on March 18th, with a chill, lasting for 10 or 15 minutes, and followed by profuse sweating. She took to bed and woke up the following morning with severe pain in the left side.

Note on admission.—The patient is a fairly nourished woman, the face is flushed especially on the right side. The skin is moist and cool, the temperature 102.5°, the panniculus and muscles fairly developed. There is a short cough without expectoration, the respirations are 28 and accompanied by dilatation of the alæ nasi.

There is marked dulness over the lower lobe of the left lung (*i.e.* from a line running from the third spine to the lower axillary region), with blowing breathing and bronchophony over the dull area, and a few fine crepitations in the lower axilla.

The apex impulse is in the normal site, the sounds are normal, and there is no pulmonary accentuation. The pulse is compressible and of fair value, 136 on admission and 120 two hours later.

The tongue is thickly coated anteriorly, clean posteriorly. The abdomen is moderately full and tympanitic, but not rigid. Hepatic dulness extends from the 7th rib to the costal border, measuring 2 in. The spleen is not palpable, and its area of dulness not increased. The urine is acid, 1012, dark amber color, a large trace of albumen, and a few granular and hyaline casts.

March 28th. Crepitation is added to the tubular breathing on the left side. At the base of the right lung a small area of tubular breathing and crepitation, but with no obvious dulness. The patient is dusky, the pulse small and varying from 100 to 120, the temperature irregular, the highest point since the 25th being 102⅖°, the lowest at 4 a.m. to-day 98.4°. Diarrhœa set in to-day, there being nine loose

[1] Read before the Montreal Medico-Chirurgical Society, April 27, 1898.

stools. At 3.55 this afternoon she had a rigor, the temperature rising to 104⅘°, lasting for five minutes, and followed by profuse sweating.

March 30. There was a slight rigor at midnight, severe headache, and followed by profuse sweating. the temperature rose to 104⅕°, and the pulse to 144 at 4 a.m.; ten minutes later the temperature fell to 102. She slept badly, had a dry cough, and the diarrhœa continues, being somewhat controlled by starch and opium enemata. A pleuritic to and fro friction is present at the right base; otherwise the physical signs in the chest are unchanged. The splenic dulness reaches the costal border, but the organ is not palpable.

April 2. Two rigors occurred yesterday, the rectal temperatures reaching 105⅘° to 106⅕°. Following and preceding the rigors the temperature fell to normal. During the high temperature, the pulse became very weak and rapid, 160 to 168, and the respiration very labored, increasing from 24 to 28 up to 40 or 44.

The lungs as before, and the heart, which has been carefully examined daily, presents no murmur.

April 3. Dr. Gardner examined the fundi and reports them normal. A culture from the blood shows diplococci and staphylococci. Prostration is very marked, the 2nd sound is feeble, the first accentuated. The pulse varies with the temperature from 104 to 170, and once fell to 80. The temperature is remitting, rising from 103⅘° to 106° in the latter part of the day, and falling as low as 99⅘° in the morning. The last rigor, there being five altogether, took place on the 3rd. A dry cough without expectoration continues, and there are from three to four stools daily.

April 8. Lies propped up in bed owing to dyspnœa. Complains of severe pain at back of left knee; nothing made out objectively.

April 13. Breath extremely offensive for some days. Examination by Dr. Birkett shows atrophic catarrh and ozæna.

April 16. Prostration during last few days has become extreme. Temperature 105° to 106° in the afternoon without rigors, the minimum temperatures being 102° to 103°. Yesterday and to-day temperature 105° to 106°. The pulse rapid, 124 to 170, and weak. The mind has been clear throughout. The lungs when examined yesterday still showed the same evidence of consolidation. The heart, which has been daily examined, has been normal. Diarrhœa, 3 or 4 stools daily.

Death took place at 2 a.m. on the 17th April, the temperature rising before death to 108°.

Autopsy by Dr. Wyatt Johnston, showed a very unusual condition of the heart, there being acute endocarditis confined to the tricuspid valve. This valve was covered with polypoid vegetations as large

as cherries, forming a cluster and having a general appearance analogous to condylomata round an orifice. The tricuspid orifice though somewhat obstructed by these vegetations, was neither dilated nor stenosed, the other orifices were of normal size. The mitral valve was very slightly thickened, but free from vegetations. None of the heart cavities were dilated. The character of the vegetations was peculiar. They were white, rounded and very firmly attached to the valve and had not led to destruction or perforation, their appearance being rather that of mural thrombi in the heart than usual vegetation. This made it appear as if the peculiar lesions in this case resulted from an antecedent right heart thrombosis. The auricular surface of the tricuspid was the part effected; the auricle itself being free except for a small thrombosis the size of a pea about one-half inch above the ring. Microscopical examination showed large numbers of large lancet shaped diplococci staining by Grams' method about twice the size of the pneumococcus, also a number of short coccus chains of four elements staining by Gram. The diplococci grew on blood serum and gave an abundant greyish growth; injections of the cultures into mice failed to kill them. It was suggested by Dr. Finley that they might be involution forms of the pneumococcus which had lost virulence during the chronic course of the case.

The spleen and kidneys showed extreme cloudy swelling, but neither showed emboli. On the other hand in the small branches of the pulmonary artery of both lungs, there were several areas of necrosis and softening surrounded by areas of pneumonia. In other parts of the lungs partly decolourised infarcts existed surrounded by pneumonic areas. Near the root of the lung were firm areas of interstitial pneumonia, the lung process showing different dates or recurrences of infection. The cultures from the lungs showed pneumococci, staphylococci, auris and streptococci; The thrombi in the lung arteries had the same white rounded appearance as the cardiac vegetations.

On the entry of the patient the case presented the typical picture of acute lobar pneumonia of a moderately severe type. It was not until the 11th day, when the rigor took place, that a complication was suspected, and after the second rigor I was strongly inclined to regard the condition as one of malignant endocarditis. This seemed to be the only explanation for the septic condition of the patient, and the preceding pneumonia also supported this supposition. The marked and early prostration was a striking feature and was a strong point in favour of this opinion. The spleen, which was of normal size on admission, was first noticed to be enlarged on the 30th and was in accord with a septic condition.

The case lacked the conclusive evidence of the development of cardiac murmurs and of emboli.

Although carefully examined daily there were no murmurs, and this was fairly well explained by the condition of the tricuspid valve which was competent, whilst the heart's action was doubtless too weak to generate a direct murmur, and beyond the evidence of cardiac weakness present in any severe septic state, there was no signs of any abnormality.

The limitation of the endocarditis to the tricuspid valve explained the absence of arterial emboli, which is such a marked feature of most cases of ulcerative endocarditis.

"OBITER SCRIPTA" II.

Casual notes from the Medical Clinic of the Royal Victoria Hospital.)

BY

C. F. MARTIN, B.A., M.D.,

Lecturer in Medicine, McGill University; Assistant Physician to the Royal Victoria Hospital.

SOME FORMS OF HYSTERIA.

The protean manifestations of this malady have always formed a very large element in the statistics of disease ever since Plato first taught that the globus hystericus was induced by pressure of the uterus against the diaphragm, and others, coming later, believed the condition to be due to the existence of some new form of life existing in the human body. Within a very short period recently in our clinics, there have been numerous examples of the various forms of this malady, some, perhaps, rather unusual and worthy of more than a passing notice. Of these Dr. James Stewart has already made record of the coughing or barking girl, whose intermittent uproars have been perpetuated on the hospital phonograph. So also of the hysterical contracture of the arm and leg permanently, so far as we are aware, cured by means of hypnotism. Others admitted quite recently have well illustrated some of the characteristic varieties of motor and sensory disturbance, cases which are always of interest and which at times present some difficulties in diagnosis to those not much engaged in the study of nervous diseases. This applies naturally rather to the motor than to the sensory manifestations, inasmuch as the irregular distribution of the latter or its localisation to areas not corresponding in any way to definite series of nerve supply makes the diagnosis in most cases quite obvious. In either case, moreover, it is as a rule not difficult to detect other "stigmata diaboli" which help to elucidate the true nature of these affections.

A few not very uncommon examples are here noted, not because of their rarity by any means, but as illustrating in a group some of the various forms.

CASE I.

Hysterical paresis of the lower extremities with foot drop.

A man, 36 years of age, entered the hospital complaining of weakness in the ankles and difficulty in walking. He was a Canadian by birth, and had been variously employed as a machinist, baker and

bookkeeper. His habits had always been moderate, and apart from the usual diseases of children, he had had no maladies of importance; there was absolutely no specific history nor evidence of hereditary tendencies to disease in the family. Some three years before admission he had fallen, striking his head somewhat severely; as a result he was somewhat dazed, but did not lose consciousness for a moment. Shortly after this he complained of a "pins and needles" feeling in the forearms, a condition which persisted for months, and was soon followed by a severe pain in the back, which he described as intermittent and excruciating while it lasted. Two months after the accident, he complained for the first time of the difficulty in walking, due, as would be surmised from his description, to marked "foot-drop." On level ground there was but little difficulty in walking, while under other conditions he stumbled readily, and in order to lift his leg he was obliged to aid himself with his hands. Ever since that time, now more than three years ago, the patient has been more or less thus afflicted.

On entering the hospital he was seen to be in every way well nourished and apparently healthy, apart from the conditions of which he complained. His gait was the most characteristic feature; the feet, during walking, were lifted high in the air, the toes pointing to the ground. On returning them to the ground when raised, the toes first came into contact with the floor, the heels later, and with a sharp thud. There was a most obvious effort in walking to lift the toes well above the ground, though at times the patient utterly failed, leaving them meanwhile to drag, with inversion of the feet. This condition was marked in both legs, though much more so in the left. A slight ataxia was likewise prominent.

Examination of the nervous system revealed good voluntary power in the muscles of the upper extremities, as also in those of the right thigh; the muscles of the left thigh, however, were distinctly weakened, as well as those of both lower legs. The condition was briefly as follows: Right leg, complete inability to flex the ankles, slight power to flex the toes; extension fair but distinctly weakened. Left leg, absolute paralysis for extension and flexion.

The reflexes were throughout normal, except for some slight exaggeration of the plantar and patellar reflexes on the right side, and marked diminution of the patellar reflex on the left. *Electrical reactions* were normal. Romberg's symptom was slightly present. *Co-ordination* and muscular sense were otherwise normal; there was no disturbance of *sensation*. The *tâches cerebrales* were well marked.

After a short stay in the hospital of three weeks, the patient was discharged, being slightly improved. Six weeks later he returned practically in the same condition. An effort had been made by Dr. Stewart to hypnotise him but with only moderate success. Complete paralysis was now evident in the flexor muscles of the left foot. There was no evidence of atrophy nor of advance in the condition in any other way whatsoever.

The treatment employed throughout was unsatisfactory, inasmuch as after his second sojourn he was again discharged unimproved.

The question of diagnosis in such a case is not a difficult one, resting as it does mainly between three conditions, peripheral neuritis, anterior poliomyelitis, and functional or hysterical paraplegia. The condition having lasted for so great a length of time without atrophy and with but slightly altered reflexes and a total absence of progressive changes, as well as the healthy condition of the muscles in their reaction to electrical tests, would be quite sufficient to exclude the anterior poliomyelitis, or any changes whatsover in the condition of the ganglion cells in the anterior horns of the spinal cord. Multiple neuritis, too, is readily excluded from the absence of all sensory symptoms in the lower extremities, both subjective and objective; well preserved muscles, no atrophy, normal electrical reaction, the absence of any known cause, etc. The course and symptoms of the malady, moreover, would also render a transverse myelitis quite improbable. The mere fact that such a condition had gone on for three years or more without appreciable change in the nutrition of the parts, makes the diagnosis of hysteria absolute, and the prognosis could not be considered serious.

CASE II.

Hysterical paralysis of the lower extremities following each effort to walk a short distance.

The victim of this malady was, as might be expected! a girl of about 30 years of age, who was admitted to Dr. Stewart's clinic because of inability to walk.

The first manifestations appeared some 7 years ago with dragging of the left leg, from which, however, she partially recovered for two years or more. The recurrence ensued, and in a graver form of the disease, the patient being quite unable to walk for one year. Partial recovery again took place, and the patient was in the habit of taking fairly long walks every week for several years.

The condition persisted thus till the middle of 1895, when she again became worse and remained almost constantly in bed from July, 1895,

to February, 1896. At this time marked weakness developed in the right leg, and the left became quite useless. Crutches were now employed till November, 1896, and since that period she had been fairly well till last year.

Her gait, as observed on admittance, was quite remarkable. Being held up by the nurse at first she would exhibit obvious efforts in beginning to walk, and progression was characterized by distinct shuffling and dragging of the dorsum of the toes over the ground with inversion of the feet: this was far more marked on the right side.

Although the first few steps were taken fairly well, until obvious weakness developed, each step was then succeeded by a weaker, till the patient fell into the attendant's arms. After a prolonged sojourn in the hospital the condition became gradually improved till by February, 1898, the patient left the hospital with complete use of her limbs.

The treatment was in the main directed on general principles, without the application of local remedies of any kind whatsoever.

CASE III.

Hysteria following operation for appendicitis; geometrical (glove and stocking) anæsthesia.

Among the less common forms of functional anæsthesia, though by no means a rare variety, is that affecting one or two extremities completely up to a certain well defined limit—such for example as the areas included in the whole forearm to the elbow—or the lower leg to above the knee—in other words, the condition described so aptly by French writers as glove or gauntlet anæsthesia and stocking anæsthesia.

A young girl who had successfully passed through an operation for appendicitis, complained two and a half weeks later of soreness in the right arm and leg, more particularly in the region of the elbow and knee. With this, there was numbness and weakness of the affected limbs. Examination revealed distinct paresis of both leg and arm, though without evidence of atrophy, or joint disturbance. Sensation, however, was quite absent over the whole forarm to a zone immediately above the elbow, while the same was found in the leg to just above the knee joint. In each case the limiting line was astonishingly well defined, and the anæsthesia of a general nature, *i.e.*, touch, pain and temperature. Furthermore, the skin was absolutely insensible to the faradic brush (electro-anæsthesia) and pin pricks would scarcely bleed at all, evidencing marked disturbance of the vasomotor system as well.

Examination elsewhere revealed no other evidences of hysteria except anæsthesia of the pharynx.

There was no history of lead intoxication.

The treatment now being adopted is directed to general improvement of her moral, mental and physical condition, with local application of the faradic wire brush.

CASE IV.

Hysterical tremor with marked affection of special senses.

In this instance there was no etiological factor discernible, there being no history of trauma or intoxications. The patient had suffered from several hysterical convulsions since three or four months, and later on developed a marked and coarse tremor, chiefly of the arms and hands—less so of the lower extremities. Even while lying quietly in her bed the arms and legs could be seen to tremble, often violently the oscillations always being coarse and rapid. At times there were distinct contractures of the arms and legs with variable degrees of paralysis.

The gait is uncertain—at times markedly ataxic and at others undertaken with comparative ease.

With this are other stigmata, such as defective color vision, lost taste and smell and distinct alteration in hearing. The pharyngeal reflex is absent. Sensation to pain is variable from time to time, though the tactile and thermic sense seem present normally.

Notes on Treatment.

UNDER THIS HEADING ARE INCLUDED BOTH ORIGINAL SUGGESTIONS AND THE ENDORSATION OF METHODS ALREADY PUBLISHED.

Appendicitis.

In the treatment of appendicitis I have found the local application of ice more satisfactory than hot poultices or fomentations, in relieving the pain and limiting the inflammation. It may be applied by means of a Leiter's coil, or in a rubber bag suspended over the patient in such a way as to partially take off the weight, or the ice may be pounded up and rolled in a large towel and then laid over the region of the appendix.

I believe that fewer cases would come to require operation if cold instead of heat were more generally used as a local application.

Geo. E. Armstrong.

Simple Anæmia or Chlorosis.

Iron in some form seems to influence the formation of hæmoglobin more than any other drug.

The older and plainer preparations of iron seem to be falling into disuse, but a prescription which has been given in a large number of cases under close observation, with much satisfaction, and scarcely ever with any sign of untoward effects, is as follows :

℞	Tincturæ Ferri Perchloridi	ʒ iv
	Acidi Hydrochlorici diluti	ʒ iv
	Glycerini	ʒ i
	Aquæ ad	ʒ vi

m

Sig: ʒii three times daily in water, after food.

The dose of the tincture of iron is gradually increased up to twenty, thirty or forty minums and even higher, during the regular menstrual period the treatment is suspended. Care of the teeth is always enjoined while this mixture is being used. The use of the glass tube is recommended, and after each dose the mouth should be washed out with some alkaline solution.

W. F. Hamilton

RETROSPECT

OF

CURRENT LITERATURE.

Medicine.

UNDER THE CHARGE OF JAMES STEWART.

Recurrent Idiopathic Pneumothorax.

J. McGee Finny, M.D., of Dublin. "A case of recurrent idiopathic pneumothorax without effusion, ending in recovery."—*The Dublin Journal of Medical Sciences*, April 1, 1898.

Dr. Finny reports to some length this very interesting and certainly very rare type of case of pneumothorax. The subject of this condition was a young man, aged eighteen, previously in good health, who, on getting up one morning felt a heavy weight across his chest, and on going to work was compelled to return home, because of a violent seizure of pain in the chest and dyspnœa. In the patient's previous history there was absolutely no event or condition to which the present attack could be referred. The pain and dyspnœa lasted but a day.

The physical examination of the chest gave the characteristic signs of pneumothorax of the left side, including slight amphoric breathing, tinkling, faintly heard, and the *bruit d'airain* beautifully demonstrated. Succussion signs were absent. The signs present gradually disappeared, the *bruit d'airain* being lost at the end of a fortnight, while the heart is reported in normal position at the end of three weeks. The temperature and pulse rate were practically normal throughout, and the other functions undisturbed. During the progress of the case a double friction sound became audible over the lower portion of the sternum and synchronous with the heart sounds, and increased on inspiration and diminished on expiration. Doubt arose as to the origin of this friction sound, but Dr. Finny considered

it as exo pericardial in origin, arising from the left parietal pleura. The patient having entered the hospital on November 6th, was discharged December 17th, looking well and healthy, the respiratory and vocal sounds being fairly audible over the back and axilla, while the left side measured an inch less than the right. He returned to his work as a stableman, and two weeks afterwards, while engaged in lifting with a fork, he felt a little "crackle" at the top of his left chest. The following morning, December 31st, while getting out of bed he experienced the same pain as before with dyspnœa and weakness to the degree of fainting. When examined five days afterwards, the same physical signs were found as in November. He remained in the hospital for four weeks, and was discharged again while the process of air absorption was yet incomplete. On March 4th the heart was in its normal position. Vocal fremitus and resonance were feeble on the affected side, and respiration was not audible under the clavicle where the percussion note was somewhat tympanitic. Dr. Finny thought that, while the lower part of the chest was well filled by the expanding lung, the upper part still contained some air in the pleura.

In the review of this Dr. Finny calls special attention to the following physical signs :

1. The existence of amorphic respiration in the earlier periods when the aperture was closed.

2. The metallic tinkling audible for ten days without other satisfactory signs of the presence of a fluid.

3. The friction sound audible over the lower left sternal region, synchronous with the movements or the heart.

After referring to writings of West, Allbutt F. de H. Hall and Brünnicke, Dr. Finny states that from the foregoing facts and references he is able to deduce the following conclusions :

1. That simple or idopathic pneumothorax is a very rare disease of the lungs and pleura.

2. That a repetition of the disease in the same lung is of still greater rarity,

3. That in a very small number of cases the entrance of air into the pleura—to stretch it to its utmost limit—does occur *without any effusion* of fluid, and this even may happen the second time in the same lung.

4 That the absence of fluid renders the disease less fatal than when air and fluid has effused.

5. That the presence of air in the pleura may occur without any febrile or constitutional disturbance.

6. That in the face of such possibilities we should be cautious as to giving too grave a prognosis when evidence of a ruptured lung and pleura are present, and particularly so when there is no previous disease.

8. That the tendency of such cases is towards spontaneous recovery and in the absence of urgent symptoms calling for relief, it is wiser not to employ surgical means to let off the effused air.

Serum Treatment of Diphtheria.

C. E. MICHAEL, M A., M.B., of Homerton. "Complications attending the serum treatment of diphtheria."—*The Practitioner*, April, 1898.

Under two parts Dr. Michael discusses this subject: 1. The effect of antitoxin upon the incidence of those complications which commonly occur in diphtheria and: 2. The effect of antitoxin in producing complications peculiar to those cases treated with it.

His information for the first part is derived from the reports of the Metropolitan Asylums Board for 1895 and 1896, and includes all cases treated with antitoxin from six fever hospitals, while that for the second part is drawn from the same reports, together with a record of personal clinical experience and observations of cases, with three exceptions, under his own care in the wards of the Eastern Fever Hospital.

1. The question, whether antitoxin of itself effects in any wise the incidence of ordinary complications, and if so, in what direction, is both a difficult and an important one. Dr. Michael, facing the difficulty, remarks that in the year 1895 and 1896 all the ordinary complications, except nephritis, are increased over the previous year 1894, during which no antitoxin was used, and that the increase is most marked in cases of albuminuria and paralysis. He believes, however, that this increase may be more apparent than real, since any method of treatment, tiding the patient over the acute stage of the disease leaves him more exposed to complications, and, since it would appear that the average type of the disease of 1895 was more conducive to certain complications, and further, the increased vigilance of those reporting the cases since the antitoxin treatment may have swelled the statistics of complications.

Renal inflammation as a result of antitoxin treatment has not been established.

2. *The effect of antitoxin in producing complications peculiar to those cases treated without it.*—There were 4946 cases treated by injection, and of this number 3,542, or 71.6 per cent. suffered from one or more complications, while the balance, 1404, escaped.

The complications noted are : Rash, joint pains, pyrexia, with or without rash or joint pains, abscess at the seat of injection and, more rarely, albuminuria, rigors, vomiting and coma.

Dr. Michael's, in his tabulated statement of these complications, show that a considerable decrease is observed in 1896 as compared with 1895, and accounts for this by the difference in the bulk of the serum ; its antitoxic effects being the same each year, the complications, therefore, are ascribed not to the antitoxin itself, nor to any substance concerned in its elaboration, but to the vehicle in which it is administered—viz., horse serum. He illustrates the statement by cases.

Under the rarer complications Dr. Michael's remarks upon albumuria, that it appears to be indisputably connected with the use of antitoxin. Coma was observed in but one instance, lasting for forty-eight hours, and was completely recovered from.

It will be seen from these cases that complications directly referable to the use of antitoxin are both transient and insignificant.

W. F. Hamilton.

The Treatment of Diphtheria.

H. KOSSEL. "Zur Diphtheriestatisk."—*Deutsch. Med. Woch.*, April 14, 1898.

Kossel, assistant in the institute for infectious diseases in Berlin gives the result of the treatment of diphtheria in that institution for the past few years.

The results of the antoxine treatment have been so universally favourable in the practice of those who have had an extensive experience with it that it would appear almost unnecessary to further add testimony to its usefulness, were it not that now and then one sees contributions from the pens of medical men with the object of endeavouring to lessen the confidence of the profession in its efficacy. We are not aware of any physician who has had much practical experience with the serum treatment of diphtheria, writing in any other strain but a favourable. Its opponents appear to be solely those who write without experience.

The following table shows the number of children with diphtheria admitted into the Charité Hospital of Berlin, from the 1st of April, 1878, to the 31st March, 1898, together with the number of deaths in each year:

Year.	No. Admitted.	No. of Fatal Cases.
From April 1st, 1888, to 31st March, 1889.....	163	92
1889-1890.....	167	87
1890-1891.....	140	83
1891-1892.....	104	65
1892-1893.....	152	83
1893-1894.....	168	77
1894-1895.....	306	41
1895-1896.....	265	39
1896-1897.....	115	20
1897-1898.....	156	34

The serum treatment covers the period, 1894-98, and it will be noticed that the number of deaths is less than one-half of that of a similar period previous to the introduction of this treatment.

The following interesting table shows a still more favourable result. It is a list of the number of deaths in German cities of 15,000 inhabitants and upwards:

Year.	No. of Deaths from Diphtheria.	No. in every 100,000 inhabitants who died from diphtheria.	
1886.....	12,211	124	
1887.....	10,970	107	
1888.....	10,142	96	
1889.....	11,919	108	
1890.....	11,915	105	average 106
1891.....	10,484	84	
1892.....	12,365	97	
1893.....	16,557	130	
1984.....	13,790	101	
1895.....	7,611	53	
1896.....	6,262	43	average 44
1897.....	5,208	35	

The following table shows a similar falling off in the number of deaths from diphtheria.

Deaths from diphtheria in Paris during the last twelve years :

Year.	No. of Deaths from Diphtheria.	Year.	No. of Deaths from Diphtheria.
1886.	1,524	1892.....	1,338
1887..	1,565	1893.....	1,262
1888..... ....,	1,718	1894.....	993
1889.....	1,706	1895.....	411
1890.....	1,639	1896.....	445
1891.....	1,363	1897.....	274

The above figures are surely sufficient proof, as Kossel says, of the marked beneficial effect of the new therapeutic agent, and that there is no ground whatever for the statement that the lessened death rate is an accidental circumstance.

James Stewart.

Surgery.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

Lung Surgery.

DOYEN. "Chirurgie du Poumon."—*Revue de Thérapeutique Medico-Chirurgicale*, 15 Janvier, 1898.

The surgery of the lungs is no longer a novelty, although in the Montreal General Hospital but few cases are sent to the surgeons.

Dr. Doyen speaks particularly of the diagnosis and operative treatment of hydatid cysts of the lung, and cavities.

In regard to diagnosis, while undoubtedly a great advance has been made in the diagnosis of pulmonary lesions by the use of the X rays, yet it is interesting, especially to those who have not ready access to an X ray machine, to know that Dr. Doyen has found it of meagre and almost inappreciable service in diagnosis. He has always by percussion and auscultation been able to locate with precision the exact point at which to operate. He has located tuberculous cavities, a purulent pneumonic area between the two lower lobes of the right lung, and a whole series of cases of sacciform bronchial dilatation, accurately.

He has also diagnosed a hydatid cyst and definitely located it in the neighbourhood of the diaphragm. Such good work shows what can be done by one who will sufficiently perfect himself in the familiar methods of physical examination of the chest.

Operations about the chest are particularly dangerous when the lesion lessens considerably the space usually occupied by the lungs. Respiration and the aëration of the blood are interfered with, and anæsthesia and the turning of the patient on to the side, often embarrasses the breathing to a dangerous degree. The danger is greater in children than in adults.

The condition renders it necessary to proceed with the different stages of the operation with great rapidity. Dr. Doyen allows one minute for each rib resected. If the intercostal arteries give trouble, he clamps them. If the pleural surfaces are found adherent as the result of a previous adhesive inflammation well and good. Otherwise the pleural cavity above and below must be packed with dry sterilized

pads, the same as in operations in the peritoneal cavity. The compresses used must be dry, because the entrance of the smallest quantity of any irritating liquid into any branches of the bronchial tree provokes instantly a violent cough, and may determine a secondary broncho-pneumonia. A pulmonary abscess should be opened, provided there are no complications and the opposing pleural surfaces are adherent, in about six or eight minutes. As a rule there is very little hæmorrhage from the wound in the lung. If the bleeding is considerable, the opening must be tamponed with dry pads, or if the bleeding persists, surrounded by a ligature carried by a strong curved needle. In this way necrotic areas may be removed and abscess cavities drained.

If, notwithstanding the greatest care and despatch, respiration ceases, resort may be had to : I. Tubage of the larynx. II. Insufflation of the bronchial tree. III. Aspiration of the air in the pleural cavity after closure of the wound, and IV. Artificial respiration.

It has sometimes been found that with a large external opening communicating with a large bronchus, the air during respiratory effort whistles right through without ærating the blood. Under such circumstances tight closure of the external wound by tampons has the desired effect, the air being forced into the air cells and the cyanosis passing off. Undoubtedly much remains to be learned concerning lung surgery, but that good work may be done has already been proved.

Miniature Hammers and the Suture of the Bile Ducts.

HALSTED. Bulletin of the Johns Hopkins Hospital, April, 1898.

A very catching title. One wonders how hammers can be used in the application of sutures. The title ensures the reading of the article if only out of curiosity. The surgeons of the Johns Hopkins Hospital can teach more than surgery and teach it well. Professor Halsted inserts an aluminum tool into the common bile duct to facilitate the closure of an incision. To this aluminum rod he attaches a slender handle, the whole bearing some resemblance to a hammer. It will be interesting now to note the number of operators who have devised similar contrivances with which to attain the same object.

Prof. Halsted described in the *Philadelphia Medical Journal*, for January 8th, 1898, *an inflated rubber cylinder for circular suture of the intestines.* Since then four others have claimed the same invention. In the *Philadelphia Medical Journal*, March 5th, 1898, Dr. U. C. Lynde, of Buffalo, N.Y., claims that he had sent to him by

his directions, from the Davol Rubber Co., of Providence, R.I., a similar rubber bag on February 11th, 1897. It is now in order for a Spaniard to prove that he made and learned how to use an aluminum hammer years ago.

Drainage through Fourth Ventricle.

BRUCE AND STILES. "Drainage through the fourth ventricle in a case of acquired hydrocephalus due to chronic non-tubercular basal meningitis."—*The Scottish Medical and Surgical Journal*, March, 1898.

A horse-shoe shaped incision was made, extending from a little behind the apex of the mastoid process on one side to a corresponding point on the opposite side. The integument and muscles being turned down, a ¾ inch trephine was applied to the occipital bone in the mesial line, a little above the foramen magnum. After the trephine opening had been enlarged by gouge forceps, a curved needle, threaded with silk, was passed through the dura at the upper and lower extremities of the wound, so as to enclose and ligature the small sinus in the falx cerebelli. The dura was incised transversely between the ligatures and additional vertical incisions being made, the dural flaps were turned back so as to expose the arachnoid covering the posterior extremities of the cerebellar tonsils and its reflection from them downwards over the lower part of the medulla. The arachnoid was slightly thickened and more opaque than normal. The opposed surfaces of the tonsils were found bound together by adhesions. Immediately they were separated several ounces of the cerebro-spinal fluid spurted out, and continued to well up copiously whenever the child retched or strained in any way. After the fluid had escaped, the posterior medullary velum, the choroid plexuses, the foramen of Magendie, and the lower part of the medulla could all be distinctly seen.

The operation in this case was undertaken to relieve symptoms which had become critical, in a case of syphilitic basal meningitis, with secondary hydrocephalus. In this way the surgeon can relieve the tension of the accumulated fluid in the ventricles. The most frequent causes of the obstruction, as shown by *post-mortem* examination, are :

1. Simple fibrous closure of the foramen of Magendie.
2. The adhesion of the surfaces of the tonsils of the cerebellum to each other and to the margins of the fourth ventricle.
3. Cysts formed by adhesions between the arachnoid and the pia

at the posterior inferior aspect of the cerebellum, in which case the foramen of Magendie may be open.

Drainage of the fourth ventricle is probably a much more efficient and scientific operation for relieving intracranial tension than lumbar puncture of the cord.

It has been employed in cases diagnosed as tubercular meningitis with apparent success. Why should it not prove as successful as opening and drainage of the peritoneal cavity in tubercular peritonitis? Certainly the subject is worthy of most careful study and investigation.

George E. Armstrong.

Canadian Medical Literature.

UNDER THE CHARGE OF KENNETH CAMERON.

[The editors will be glad to receive any reprints, monographs, etc., by Canadian writers, on medical or allied subjects (including Canadian work published in other countries) for notice in this department of the JOURNAL. Such reprints should preferably be addressed to Dr. Kenneth Cameron 903 Dorchester street, Montreal.]

The Canada Lancet.

March, 1898.

1. A Fatal Pneumonia Without Elevation of Temperature or Pulse. GEO. S. RENNIE.

2. Erosion and Split of the Virgin Cervix. J. L. DAVISON.

April, 1898.

3. The Present Status of the Radical Cure of Hernia. GEO. A. BINGHAM.

4. A Case of Malignant Endocarditis due to Pneumococcus Infection through the Appendix Vermiformis, with Remarks on Infections by this Organism. H. B. ANDERSON.

1. The patient, a hardy man of 72, was brought to the Hamilton City Hospital suffering from strangulated hernia of six days duration. Immediate operation was performed, giving relief, but the man died suddenly three days later. The temperature had never been above normal from the commencement of his illness, until a few hours before he died, when it reached 99½°. The pulse never reached 100 until the morning of his death. There had been no cough, expectoration or pain, and only a slight rise in respiration. The autopsy showed the cause of death to be a double pneumonia, which must have been present for some days before his admission, as it was in the stage of grey hepatization.

2. DAVISON states that in a recent trial several physicians swore that a laceration of the cervix was undoubtedly caused by child-birth, and with which opinion he was quite ready to agree. Recently, however, an article by Dr. Penrose, of Philadelphia, had naturally changed his views regarding laceration and erosion of the cervix. There were quoted two cases, with every probability of virginity, where well marked erosions and splits were found. The work of Dr. Fischel in 1880, on the morphology of the cervix, is referred to, where that author sums up that in thirty-six per cent. of new born infants, the vaginal surface of the cervix, from the external os towards the vaginal

fornices is covered more or less extensively with a mucous membrane, which from the form of its epithelium, from its papillary character and from its possession of mucous glands and crypts, must be regarded as a direct continuation of the cervical mucous membrane. This aberrant mucous membrane is due to a faulty development, and it is owing to its presence that we have erosions which are thus readily and naturally accounted for in the new-born child. The importance of recognising this condition is of the greatest importance from a jurist's point of view.

4. ANDERSON reports the case of a man who died with symptoms of septic infection. Recent vegetations were found upon the aortic valves, from which were cultivated the micrococcus lanceolatus, but cultures from the blood were negative. The vermiform appendix showed marked injection of the vessels in its peritoneal covering, but no lymph deposits or adhesions, a necrotic patch was present about its middle, and on cutting through it muco-purulent matter escaped. This was undoubtedly the point of entry of the organism into the system. No pneumonia or other local lesions were present. Hereditary weakness of the heart and an antecedent syphilis, no doubt determined the localization of the infection to that organ.

The Canadian Journal of Medicine and Surgery.

February, 1898.

1. Recurrent Fugitive Swellings of the Eyelids. JAMES M. MACCALLUM.
2. A Clinical Case of Interest. R. T. MATTHEWS.

March, 1898.

3. Some Cases of Colored Vision. JAMES M. MACCALLUM.
4. The Systematic and Continuous Use of Art in all Cases and Stages of Labor. JOHN HUNTER.
5. Conservatism in the Treatment of Tumours. THOS. H. MANLEY.

April, 1898.

6. Perversion. EZRA HURLBURT STAFFORD.
7. A Machine for Manufacturing Plaster-of-Paris Bandages. H. P. H. GALLOWAY.

1. Five cases of recurrent swelling of the eyelids are related, the clinical pictures being swelling without any pitting, not sharply circumscribed but gradually fading away into the surrounding skin, without change in colour, unless the vasomotor disturbance had been unusually great. That this condition was not due to inflammation in the structures in the lid, conjunctiva, eyeball, or orbit, was at once muni-

fest upon examination. In two of the cases there were marked disturbances of the nervous system, an association which, if looked for, will be frequently observed. Recurrent œdemas due to nervous influences are well known in connection with tabes, hysteria, neuralgia and migrain. It is quite possible that these attacks may occur in patients with some errors of refraction, but that error must not be regarded as a causal factor, for its correction by proper glasses has no influence in preventing the recurrence of the œdema. These swellings have been described under the name of angio-neurotic œdema, but the term has generally been applied only to the more marked conditions, where the swellings have involved many and other parts of the body, and have been accompanied by severe gastro-intestinal symptoms. The minor attacks occurring only about the eyes are really of the same nature, and may or may not be associated with gastric or intestinal symptoms.

2. A puff for a much advertised propriety medicine.

3. Xanthopsia, or yellow vision, is usually toxic, but red vision is of much graver import, as it may be due to hæmorrhage into the vitreous. A case of this condition is cited. The red vision may change into green as the extravasated blood undergoes its usual colour changes. In the production of coloured vision a dilated pupil is an important factor, as it permits an unusual amount of light to reach the retina. If to this is added nerve fatigue, be it peripheral or central, coloured vision might be produced at will. In all such cases one may discover the three factors, a dilated pupil, a dazzling by strong light, fatigue or hyperæsthesia of the retina or fatigue of the central nervous system.

4. After advising physicians, especially the youngest ones, to acquire by wide reading and close observation, a full knowledge of the resources of the obstetric art, and to obtain the fullest possible control over their mental faculties, HUNTER draws the startling conclusion that a case should never be left to nature, but that the physician should always be ready to aid merely physical forces with anæsthestics and forceps and so secure for every patient as painless and as prompt delivery, as is consistent with the greatest possible safety to both mother and child.

6. Perversion is the term set aside by writers on mental diseases to signify an apparent distortion of the sexual instincts. STAFFORD discusses how far these changes or perversions are really the result of disease, and how far they may be explained by evolution, to what extent they are purely morbid, and to what extent not.

7. GALLOWAY'S device for manufacturing plaster-of-Paris bandages

consists of a piece of board, nine inches wide by two feet in length, with two sides made of aluminum attached to it. Riveted to each of these metal sides are two cleats, inclined at an angle of 75°, in which a metal scraper can slide. At each side of the board are placed a couple of screws upon which the scraper rests and thus a very small space is left between the scraper and the board. The end of the bandage material is placed underneath the scraper, a heap of plaster is then deposited upon it and both hands are left free to roll up the bandage which is automatically filled with just a sufficient amount of plaster. The best materials for making bandages are dental plaster and book-muslin which is not very closely woven and will tear without leaving ragged edges.

The Canadian Medical Review.

February, 1898.

1. Traumatic Neurasthenia. WM. BRITTON.
2. Two Cases of Tuberculosis of Peritoneum Mistaken for Appendicitis. ROBERT HALL.

March, 1898.

3. Cardiac Weakness in Elderly People. J. E. GRAHAM.

April, 1898.

4. A Case of Suprapubic Lithotomy. W. J. GIBSON.
5. A Case of Graves' Disease, Chorea, Confinement and Heart Failure. F. H. KALBFLEISCH.

1. BRITTON says that the term neurasthenia had fallen into desuetude for a time, but has recently been re-introduced to fill the place of such terms as nervous debility and nervous prostration. He defines it as a loss of power of the nerve centres, together with abnormal excitability—an unusual susceptibility to be influenced by outside impressions and defective volition. Not much has as yet been found out about the pathology for the disease rarely, if ever, proves fatal. The consideration of symptoms is most important on account of its medico-legal bearing. No individual line of therapeutic measures could be considered suitable in all cases. Tonics and diversion of the mind were indicated. Enforced rest is frequently depressing.

2. HALL reports the cases of two girls, 17 and 21 respectively. For some days there had been abdominal pain, localized tenderness and elevation of temperature. The diagnosis of acute appendicitis was made, but on opening the abdomen, the peritoneum was found to be thickened and studded with tuberculous nodules. In one case the

appendix was compressed by fibrous bands, but the circulation was not impeded, in the other it was contracted to a fibrous band. Both cases made good recoveries, and were in excellent health nine months later.

3. In the course of a short paper, GRAHAM points out the many circumstances in life which, acting upon the heart, produce greater or less dilatation. Among the most frequent are depressing mental emotions, which may produce their effects gradually or suddenly. The habits of a patient in the latter half of life are also a frequent cause Over-eating and over-drinking, by distending the blood vessels give the heart an extra amount of work which may lead to dilatation and hypertrophy. Over-indulgence in alcoholic beverages, by producing arterial disease, and thus obstructing the circulation, tend to changes in the myocardium. The effect of tobacco is also marked. He is of the opinion that very few who have used tobacco freely can continue the habit with impunity long after the age of fifty. It is also probable that individuals who, in early life, have indulged in violent athletic exercises to such an extent as to cause hypertrophy will, in their later years, have dilatation from the fatty degeneration which so often follows such hypertrophied conditions. There are many diseases which assist in producing dilation, Bright's, arterio-sclerosis, infectious diseases, typhoid and la grippe. The latter of late years has been the primary cause of a large number of cases. The treatment should consist in carefully regulated diet and regime, and suitable remedies, the most valuable being iodide of potash, strychnine, digitalis, strophanthus and nitro-glycerine.

4. GIBSON gives the history of a man, aged 70, from whose bladder he removed by the suprapubic method a phosphatic stone, weighing seven hundred grains. Its largest circumference was five and a half inches, and its greatest diameter two and a quarter inches. The recovery was uninterrupted, but the man has been unable to empty the bladder without the use of a catheter.

5. KALBFLEISCH confined a woman, aged 27, who had been suffering from exophthalmic gôitre for about three years. She had formerly had several attacks of chorea during pregnancy, but which disappeared after the child was born. She was found in labour and a diagnosis of a breach-presentation was made. As her pulse was very feeble, and she was in a critical condition, the membranes were ruptured and she was rapidly delivered. Stimulants were freely given, but she died a few hours later from heart failure.

The Maritime Medical News.

February 1898.

1. Migrain, with Special Reference to the Gastric Contents. ANDREW HALLIDAY.
2. Shock. J. H. SCAMMELL.

March, 1898.

3. Acute Intestinal Strangulation, with Report of Two Cases. N. E. MACKAY.
4. Malpractice. A. J. MURRAY.

1. HALLIDAY having been a sufferer from migrain for years has made an interesting series of investigations upon his own gastric contents and is of the opinion that the disease is due either to weakened nervous impulses causing a diminished secretion of gastric juice, particularly hydrochloric acid, or to the ingestion of such food in quantity or quality that the ordinary amount of gastric secretion cannot completely digest. This is the primary condition. The secondary is auto-intoxication from fermentation as the common result of either of these failures to maintain the physiological balance. With the idea that migrain is a nerve storm analogous to epilepsy he has no sympathy. Consequently the treatment is to supply the difficiency of acid, and he believes that he has averted several attacks by the administration of hydrochloric acid in ♏x doses, repeated one or two hours after meals, and that the systematic use of the acid has been of great benefit A proper dietary should be observed, never allowing more food to be taken than can be properly digested and reducing the amount still more when subjective feelings that indicate the vicious cycle is about to be established. For the immediate relief of the headache, phenacetin and its congeners may be given, while for the subsequent toxæmia, purgatives, cholagogues, and possibly diuretics, are indicated to eliminate the poison.

2. SCAMMELL discusses shock from several standpoints, but especially that form which is the result of an accident and when the question of operation arises. It is unphilosophical and fatal to operate in cases of primary shock before reaction has come on. Anæsthesia does not diminish existing shock, but prevents the pain of the operation from increasing the shock already present but it adds to the secondary shock if the anæsthesia is prolonged. The plan to follow is to await the reaction, give stimulants, make anæsthesia as short as possible, and avoid all chilling of the patient, afterwards apply dry heat, administer liquid nourishment and stimulants, and obtain quiet and sleep.

3. MacKay reports two cases of acute intestinal strangulation. The one a young man with volvulus, upon whom he operated on the ninth day after the onset of the symptoms. The loop was easily found but was gangrenous, the section was removed and the ends brought together with Murphy's button, and a layer of Lembert's sutures. The other was one of obstruction caused by Meckel's diverticulum. Both died shortly after the operation.

4. Murray in the course of an address on "Malpractice" says that the grounds of an action for malpractice is unskillful work on the part of the physician, whereby the health or general comfort of the patient has sustained injury. It matters not whether the tort is due to *wilfulness*, to *carelessness*, or to *ignorance*. The physician, in holding himself out to the world as such, gives expression to the general inference that he possesses ordinary skill in the practice of his profession. "It is his duty, therefore, to exercise all reasonable care in the manner and performance of treatment, for he contracts to use his best judgment and also promises ordinary skill and diligence. In fulfillment of these he discharges his legal duty" (Cooley on Torts). The matter of compensation is not material. Gratuitous service does not render the physician free from liability.

Kenneth Cameron.

Reviews and Notices of Books.

The Surgical Complications and Sequels of Typhoid Fever.

By William W. Keen, M.D., LL.D., Professor of the Principles of Surgery and of Clinical Surgery, Jefferson Medical College, Philadelphia; Vice-President of the College of Physicians of Philadelphia; Membre Correspondant Étranger De La Société De Chirurgie De Paris; Membre Honoraire De La Société Belge De Chirurgie. Based upon tables of 1700 cases compiled by the author and by Thompson S. Westcott, M.D., Instructor in Diseases of Children, University of Pennsylvania; Visiting Physician to the Methodist Episcopal Hospital, Philadelphia. With a chapter on the Ocular Complications of Typhoid Fever. By George E. de Schweinitz, A.M., M.D., and as an appendix the Toner Lectures, No. V. Philadelphia: W. B. Saunders, 925 Walnut St., 1898. Canadian Agents: J. A. Carveth & Co., Toronto.

Seldom is a book of such great interest published. The authors have gathered together in this volume an immense amount of most useful information and presented it in a style at once interesting and instructive.

The title may be a little misleading in that it is called, rightly, Surgical Complications and Sequels, but the matter is even more important to the physician than to the surgeon, because typhoid and the complications and sequels occur under his care, and on his watchfulness and alertness in recognizing these unusual conditions, the patient is dependent as well as the surgeon.

In the first chapter an interesting *resumé* is given of our knowledge of the typhoid bacillus alone and mixed with other pathogenic organisms. In subsequent chapters, typhoid gangrene, affections of joints and bones, typhoid abscesses and hæmatomata, cerebral complications of typhoid, affections of the ear, parotid, thyroid gland, larynx, pleura, lungs and heart are fully described, and the diagnostic signs and appropriate treatment given in detail.

The chapters on stricture of the œsophagus, cholecystitis and perforation of the gall-bladder and intestine discuss these conditions fully, taking up the question, always a most important one, of diagnosis, and lastly their treatment.

Of the treatment of perforations of the gall bladder and intestine, Dr. Keen speaks in a hopeful tone. Of four cases of gall-bladder perforation operated upon, three recovered. Dr. Westcott has collected 83 well-authenticated cases of typhoid perforation of the intestine operated upon,

with 16 recoveries, or 19·36 per cent. of cases and 80·64 per cent. of deaths. When this is contrasted with Murchison's unchallenged figures of 90 to 95 per cent. of deaths after perforation without operation, we may well take courage for the future.

Then follow chapters on the affections of the spleen, and sexual organs, and lastly the very able treatment of the subject of ocular complications of typhoid by de Schweinitz.

By permission of the Smithsonian Institution, Dr. Keen has added as an appendix the fifth Toner lecture delivered by him in 1876.

The book is of very great interest, dealing with an ever present disease, and should be read by all physicians as well as surgeons. G. E. A.

A Manual of Legal Medicine. By JUSTIN HEROLD, M.D. J. B. Lippincott, Philadelphia. 1898, pp. 678. Canadian Agent, Charles Roberts, 593A Cadieux Street, Montreal.

The author has given us a well arranged and readable book, which, without being lengthy contains a vast deal of information hitherto only accessible in larger medico-legal works. This result has been largely obtained by abstracting and condensing the valuable material which has appeared of recent years in the various systems by American writers, it being stated in the preface that "no pretensions are made to originality." The sources of information are throughout acknowledged with a scrupulous care that leans in the direction of crediting living authors for matters, which have long formed medico-legal aphorisms. Recent views which have not yet found their way into the standard text-books are in most cases ignored. This lessens the value of the book to those engaged in active medico-legal work, and we do not agree with the author that questions still *sub judice* are consequently "idle and superfluous."

One of the many good points of the book is that quotations from authorities are given fully on the more important subjects, condensation being skilfully effected at the expense of those of minor importance. The chief criticism we have to make is that the work follows rather than guides current medico-legal opinion throughout. W. J.

The Elements of Clinical Diagnosis. By PROF. DR. G. KLEMPERER. Professor of Medicine at the University of Berlin. First American edition. Translated from the seventh and last German edition by NATHAN E. BRILL, A.M., M.D., Adjunct Attending Physician, Mount Sinai Hospital, New York, and SAMUEL M. BRICKNER, A.M., M.D., Assistant Gynæcologist, Mount Sinai Hospital, Out-Patient Department. New York: The MacMillan Co.

Several books of this class have recently appeared either in their first edition or in revision,—Vierordt, Von Jaksch, Simon, Bury and others

That now under review appears for the first time in translation, and to Doctors Brill and Brickner the medical profession owes much for placing so excellent a translation before its members.

As the title implies, this book embraces the elements of clinical diagnosis and these are presented in a manner so direct that the work is pre-eminently adapted to the use of students and general practitioners. Including the index, there are less than three hundred 8vo pages.

The work is divided into twelve chapters, under eight of which special systems are examined while the remaining four chapters are devoted to: 1. Anamnesis and General Conditions. 2. Special Symptomatology of the Acute Febrile and Acute Infectious Diseases. 3. Animal and Vegetable Parasites. 4. The Röentgen Rays as Diagnostic Aids.

This last chapter is new.

Sixty-one illustrations are found throughout this little book, some thirteen of which represent the various fever curves. Those devoted to the section on bacteria are rather imperfect, affording mere suggestions of morphology.

This work is valuable for its systematic arrangement of matter, and its directness of style, by means of which, in consideration of the size of the book, the author secures to his work a surprising degree of comprehensiveness. W. F. H.

Saunders Medical Hand-Atlases, Internal Medicine and Diagnosis. Atlas of Methods of Clinical Investigation, with an Epitome of Clinical Diagnosis and the Special Pathology and Treatment of Internal Diseases. By Dr. Christfried Jacob, Formerly First Assistant in the Medical Clinic at Erlangen. Authorized translation from the German. Edited by Augustus A. Eshner, M.D., Professor of Clinical Medicine in the Philadelphia Polyclinic; Physician to the Philadelphia Hospital. With 182 coloured illustrations in 68 plates and 64 illustrations in the text. Philadelphia: W. B. Saunders, 1898. Canadian Agents, J. A. Carveth & Co. Price $3.50.

The idea of translating into English the "Lehman medicinische Handatlanten" was an extremely good one, and this the first volume of the series to appear, shows that the promises made by the publishers have been faithfully carried out and the work has lost nothing in value. The first six plates contain thirty figures of cover-glass preparations of the blood from various diseases, both freshly drawn and stained by different media; and plate vii. shows the various alterations in blood spectra and the crystals of hematoidin and hemin. Of this series too much cannot be said in praise. The colouring is excellent, and, with the single exception of malaria, the appearances are strikingly like those actually observed under the microscope. There is one plate of the microscopy of the mouth and nasal passages and three of the sputum. Besides the microscopical appearances of the stomach and intestinal contents, the most important

colour reactions are shown and the same plan is carried out in regard to the urine. Though undoubtedly of aid to the student these are not as well depicted as are the microscopical appearances.

The urinary sediments are given in six plates containing forty-one separate fields and are quite in keeping with the rest of the book in regard to accuracy. One plate is devoted to the pyogenic micro-organisms.

The remainder of this portion of the book shows the normal projection of the viscera and a diagrammatic representation of the diseases of the lungs, heart and abdominal organs. The plates are well executed and in this as in the part already described the value of the drawings is greatly increased by having a short account of the case from which the diagram was made, together with the physical examination and further history, on the opposite page.

The second part of the book treats of the examination of the patient and methods of investigations together with the special diagnosis of diseases of the internal organs and is intended to supplement the plates. It is necessarily very much condensed and is not expected to take the place of the larger works on the subject but is a concisely arranged compendium as explained in the preface.

That in books of this class, good illustrations convey far more information than the most elaborate descriptions is admitted by every one and we have much pleasure in recommending it to our readers as first class in this particular. G. G. C.

Annual and Analytical Cyclopædia of Practical Medicine. By CHARLES E. DEM. SAJOUS, M.D., and One Hundred Associate Editors, assisted by Corresponding Editors, Collaborators and Correspondents. Illustrated with chromo-lithographs, engravings and maps. Volume 1. Philadelphia, New York, Chicago: The F, A. Davis Company, Publishers. 1898.

The present is quite different from the former Sajous' Annual. The Annual in its old form was found to be expensive and in other ways unsatisfactory. For example, a disease might be found omitted altogether; the reason being that nothing new had appeared during the year. Nevertheless, its absence was at the time a source of annoyance. In the present scheme all diseases will receive attention. Their "Etiology," "Pathology," "Treatment," etc., will be given, in all cases to be followed by excerpts, indicating recent progress. These excerpts will be made to cover the advance made during the last ten years. If nothing new has been done, then the disease will be described as understood, fifteen or twenty years ago. Thus it will be seen, the present scheme is to publish an annual plus an encyclopedic history of each and every disease. The diseases will be taken up in alphabetical order. The whole to be published in six volumes. Volume 1 contains one sixth of the whole.

Very great facility of reference is obtained by publishing the main

body of an article in large type and the excerpt in small type. The article on "Abdominal Injuries," for instance, contains one hundred and sixty article excerpts besides the general text; that on "Appendicitis," a still larger number.

The articles in the present volume on Anæmia, Albuminuria and Alcoholism, are of great interest.

Therapeutic agents also receive full attention. The old obsolete drugs are omitted, and the newer remedies treated of very fully. For instance, there is a very full article on that interesting group of "Animal Extracts."

The book is well illustrated. The Publishers as well as the Authors are certainly to be congratulated on the handsome appearance of the the first volume. G. E. A.

Society Proceedings.

Stated Meeting, March 18th, 1898.

ROBERT CRAIK, M.D., PRESIDENT, IN THE CHAIR.

Excision of the Tongue.

Dr. G. E. ARMSTRONG exhibited two patients from whom he had excised the tongue, and reported the results of five cases on which he had operated during the winter. The reports will be published later.

The Static Machine in X Ray Work.

Dr. ROBERT WILSON showed a small Tœpler-Holtz static machine (made by himself), to illustrate the use of the static current to illuminate a medium-sized *x*-ray tube. The two revolving plates of $\frac{1}{8}$ in. hard rubber, were 18 ins. in diameter, with six German-silver sectors on the front one. The machine was cased in, containing a tray with 2 lbs. calcium chloride, well dried. The necessary speed (500 to 900 revolutions) was easily obtained by a hand-driving gear, or (this being removable) by an electro motor, or small waterwheel. The latter was the method adopted by himself, a speed of 900 revolutions being easily obtained from the office water-tap. The machine was not intended to compete with a large coil, but gave, with an Edison "medium" high vacuum focus tube, perfect definition of the bones of the extremities, up to the shoulder and pelvis. Among the radiographs shown were: Ununited fracture of tibia, with faulty union of fibula; point of a scalpel (1-32 ins.) broken in finger while amputating terminal phalanx, etc., etc.

In reply to questions, Dr. Wilson said the entire outfit had cost him less than $25, including 6 by 8 calcium tungstate fluoroscope (home-made), and one Edison "medium" focus tube. He thought a similar outfit could be placed on the market for $50. He had never had any trouble from dampness; in fact, it had been raining slightly when the machine was brought from his home, still it excited immediately. He did not use Leyden jars and spark-interruptors, although convinced these devices would increase the power of the machine; it worked sufficiently well without them. A machine of this size was absolutely useless for medical diagnostic work, but indispensable to one doing general surgery. One glance at an arm, leg, hand, etc., without disturbing

the clothing, being sufficient to satisfy one as to presence of fractures, dislocations, foreign bodies, etc. He preferred the static current, as being less dangerous, less liable to give way at a critical moment, less trouble, less expensive to operate, less liable to puncture the tube, and of immensely higher voltage than the coil, with the further advantage of being able to use the current therapeutically. In Dr. Monell's office in Brooklyn, he had seen the doctor's heart pulsating perfectly at a distance of seven feet four inches from the tube; the pelvis, shoulder-girdle, etc., perfectly outlined at 4 feet from the tube. Dr. Monell used an 8-plate 30-inch machine, driven by a one-sixth h. p. electro motor at 250 revolutions; such a machine was used for medical purposes as well as X ray work. The results obtained far excelled anything done by coils. The advantage of getting a distance away from the tube was the elimination of error due to enlargement of the shadows when too close. The speaker had ordered, and expected delivered by the middle of May, an identical machine. The barium-platino cyanide screens, on stretched vellum, were preferable where one wished to *see* the shadows; the calcium tungstate screens were the best for skiagraphic work. As to focussing the rays outside the tube, a question of vital interest to scientists, and on which he had, in a small way, been experimenting, he said he thought it would be premature to make any definite statement, but thought he was justified in saying that we were within measureable distance of its achievement, and hoped at some future time to lay the results of his work before them

The Neuron and the Chrome Silver Method.

Dr. N. D. GUNN showed several photographs of ganglion and neuroglia cells, stained according to the Andriezen method.

The general conformation of the cells was then taken up, and the protoplasmic and axis-cylinder processes described, according to latest researches by Cajal, Forel and others. The independence of each cell was then dwelt upon, showing that there was no anastomosis between the various cells, as was taught by Gerlach. He claims that protoplasmic processes or dendrites possess a well marked nervous function and are not merely aids to cell-metabolism, as seemed proven by the experiments of certain French authorities; for there are nerve cells which are adendritic and others whose axis-cylinders have not yet been demonstrated. The collateral fibrils of axon were then shown to possess great anatomical interest as being concerned in the grouping of cells into centres and areas. Hill's work upon the chrome silver method was referred to, and many of the theories held as regards the method were shown to be either erroneous or not proven.

The beautiful pictures produced by this stain have not yet clearly established the anatomical basis as a true index to the physiological significance of the parts of the neuron. However, there can be no doubt that this method has established many facts, not the least being that contact and not continuity is the controlling idea of the cell structure of the brain and cord.

Stated Meeting, April 1st, 1898.

ROBERT CRAIK, M.D., PRESIDENT, IN THE CHAIR.

Drs. A. D. Aubry, E. R. Brown, and Gustave Lewis, of Montreal were elected ordinary members.

Cardiac Embolism.

Dr. WYATT JOHNSTON showed a specimen where degeneration of the heart muscle involving the half wall of the left ventricle due to embolism of the coronary artery was the cause of sudden death. The affected area of the myocardium showed subendocardial ecchymosis and was of a greyish, yellow colour. Microscopically, fibres showed granular and fatty degeneration, and the nuclei did not stain well. The source of the embolus proved to be a small thrombosis in the left auriclar appendix from which a portion had become detached and lodged in the left coronary artery bifurcation. Suspicions of poisoning had arisen in this case owing to the patient having suffered from vomiting, diarrhœa and weakness for several days before death. The presence of tænia in the ileum was perhaps the explanation of the gastro intestinal symptoms and the congestion and catarrh of the stomach and intestines which was found post-mortem. No analysis was ordered by the jury, as the actual cause of death could not have originated through poisoning.

A Case of Laryngectomy.

Dr. JAMES BELL presented a patient from whom he had removed the larynx for epithelioma, and gave the following history: G. P., æt. 65, was quite well until September, 1897, when he contracted a "cold," from which he soon recovered, but some soreness of the throat persisted in spite of sprays and other local treatment. In November his voice first became distinctly husky. In January his throat was examined, and a small warty projection removed and examined, and found to be epithelioma. A preliminary low tracheotomy was done on the 7th of February, and on the 16th of February the whole larynx, including the epiglottis and the cricord cortilage, was removed. A Hahn's tampon canula was employed during the operation, and

replaced next day by an ordinary silver tracheotomy tube. The stump of the trachea was drawn well forward and attached to the skin all around and packed with iodoform gauze to protect the air passages from wound and pharyngeal secretions. The transverse incision was sutured, with the exception of an opening at either end, through which the phrayngeal portion of the wound was packed with iodoform gauze, as was also the vertical wound, which was left unsutured. A large, soft rubber catheter was fixed into the œsophagus by suture, and at the end of twenty hours the patient was fed through this tube for the first time. He was fed regularly through this tube for 48 hours, when it was removed, and from that time he was fed regularly and without difficulty by introducing a stomach tube into the œsophagus through the mouth. There was no vomiting, and he always enjoyed his food. The wound packing was changed daily and no secretion ever entered the trachea. On the 21st, five days after operation, a mild delirium of a jocular character developed and increased, with considerable restlessness at night, until, on the 23rd, iodoform was completely abandoned and chinosol gauze used in its stead. The delirium immediately began to grow less, and in three days, February 26th, he was quite rational again. In the meantime all the skin union had given way and the flaps were held only by the sutures.

On the 27th he had a very restless night. Complained of itching over the body and arms, and the pulse and temperature, which had throughout been practically normal, rose a little.

On the 2nd of March he began, in the very early morning, to perspire freely and to complain of weakness. The pulse was rapid, 120 and he felt miserable. Nothing could be discovered to account for the change in his condition, and he was given a dose of cascara, followed by an enema, which brought away a dark stool with some black fluid, about midnight. He felt better and slept for five or six hours after this. About noon, on the 3rd of March, he began to complain of some discomfort in the lower part of the abdomen, and his midday meal was omitted. Between 3 and 5 o'clock in the afternoon he had three most alarming syncopal attacks, the cause of which was explained during his third attack by an involuntary evacuation of a very large quantity of dark clotted blood. From this time he began to rally, and he has had no further trouble since. This is undoubtedly the history of iodoform toxication,—at least up to the attack of intestinal hæmorrhage, which I see no other explanation for. I could not, at first, believe that the mere packing of a moderate sized wound for a few days with iodoform gauze could produce this result, but the fact remains that the symptoms promptly subsided when the iodo-

form was abandoned. It must also be borne in mind that probably much of the iodoform was swallowed with the saliva. The subsequent history of the case has been uneventful. On the 19th of March the edges of the skin wound were pared and sutured, and union took place without difficulty. On account of the gaping pharyngeal wound no food was given, except by stomach tube, until the 25th of March, when he took solid food without difficulty, and in a day or two liquids were also swallowed with ease. Before the pharyngeal wound was resutured, the action of the œsophagus in swallowing the saliva could be observed through the wound. He is now practically perfectly well.

The larynx, when removed, was examined by Dr. Bradley, who described it as follows:

The free surface of the epiglottis, near its root, is occupied by a roughened, rather nodular ulcerated surface, with somewhat undermined edges; the extent of the ulceration is 4 cm. in a vertical direction by 3.5 cm. transversely. There is an absence of induration about the periphery of the affected area. Both false vocal cords are involved by lateral extension, the right being completely ulcerated through at about its centre, exposing both ventricle and saccule; the left is not so deeply affected, the epithelium alone being eroded. The left true cord is unaffected; the right shows a loss of epithelium over an extent of 15 mm. transversely by 5 mm. vertically.

The disease had not extended beyond the larynx in any direction, and there was no lymphatic involvement.

Dr. Bell referred briefly to the recent literature of the subject, especially to a paper read by Dr. Graf, of Berlin, before the German Surgical Association in April, 1897. This paper was based upon the experience of Prof. Von Bergmann, of 20 total extirpations and 28 partial resections of the larynx for malignant disease.

Removal of a Fibroid Tumour at the Second Month of Pregnancy.

Dr. LAPTHORN SMITH reported a case of removal of a fibroid tumour from the pregnant uterus, by myomectomy, without causing a miscarriage. He also showed the tumour, a nodular one, larger than an orange and very dense. The patient was 25 years of age and had been married six months. Three months after marriage she had a miscarriage, but became pregnant again immediately, for she had no flow since the 10th January, when it stopped. About middle of March she began to suffer severe pain in the right side, and she noticed a lump pressing forward the abdominal wall in right lumbar region. When seen by Dr. Lapthorn Smith, in consultation with her

family physician, he found her about 2½ months pregnant, with a nodular subperitoneal fibroid attached to right corner of uterus. As it was growing rapidly and was not only painful, but affecting the *morale* of the patient, he advised early operation, which was performed on the 1st April. The tumour was larger than the pregnant uterus, so that the abdominal incision which permitted the tumour to be extracted, also permitted the uterus to be lifted out, thus enabling him to remove the tumor and to close up the hole in the uterus very deliberately. Clamps were applied gently to the uterine wall, and thus the operation was almost a bloodless one, although the hole, two inches long, had to have two rows of Lembert sutures before the clamps could be taken off, and then a third row had to be applied to completely stop the oozing. She made a splendid recovery, hardly requiring any anodyne, and there has not been the slightest attempt at a miscarriage. As far as he was aware this was the only case of the kind ever reported in Canada.

Malignant Endocarditis.

Dr. H. A. LAFLEUR read the report of this case. (See page 249 of the April number.)

Intestinal Obstruction by Meckel's Diverticulum.

Dr. JAMES BELL read the following report of a case of intestinal obstruction by Meckel's diverticulum, and presented the specimen:

H. P., æt. 16, a well-developed and well-nourished girl, was brought to the Royal Victoria Hospital from the country, at 10 o'clock on the evening of Friday, March 18th, with well-marked symptoms of intestinal obstruction, and operated upon two hours later. She had always enjoyed good health, with the exception of occasional attacks of pain in the abdomen and vomiting, sometimes accompanied by headaches These were called bilious attacks, and she had suffered from them "all her life." She had had a long walk on the previous Monday, and was quite well on Tuesday, but began to have general abdominal pain on Tuesday evening, which kept her awake most of the night. She got up on Wednesday morning and vomited, for the first time, immediately after breakfast, about 7 a.m. The vomiting continued from this time till admission, and about 10 a.m., Friday, it was first noticed to be distinctly fæcal. The bowels were moved early on Wednesday morning, but neither flatus nor fæces was passed afterwards. On Thursday afternoon the temperature was 99.2° and on Friday morning 101.3°. On admission it was 102°, and the pulse, 112. Distension was first noticed on Friday morning, and on admission it was quite marked, but limited to the central region of the abdomen. These

facts pointed very clearly to a complete obstruction, low down in the small intestines, probably of a mechanical nature, and, from the history, probably due to some congenital condition, suggesting a Meckel's diverticulum as the cause. On opening the abdomen, in the middle line a cord-like structure was found attached to the right of the umbilicus, which, on being withdrawn, was found to be a Meckel's diverticulum. The cord-like portion was cut off between ligatures and the point of obstruction was found in the ileum, about an inch above the ileo-cæcal valve. There was a deep furrow in the wall of the intestine, where the construction had been applied, which was suggestive of long continued presence. The diverticulum was attached close to the mesenteric border of the small intestine, at least three feet from the ileo-cæcal valve. The exact site was not determined, but at least two feet of the ileum was withdrawn and the attachment was still considerably higher up. It was cut off close to its attachment, where it was about three-quarters of an inch in diameter, sutured and inverted into the lumen of the bowel by Lembert sutures. There was a free evacuation of the bowels a couple of hours after operation, and the patient's progress has been entirely satisfactory.

Meckel's diverticulum is frequently met with and is a very common cause of obstruction, especially in children and young people. In 3,400 post mortem examinations in St. Bartholomew's Hospital it was found 27 times (Sajous). It arises nearly always within two feet of the ileo-cæcal valve and produces obstruction in many different ways, depending upon the point of attachment of its extremity. Its extremity is often free.

Intussusception.

Dr. F. R. ENGLAND read the report of this case. (See page 347.)

Empyæma of the Maxillary Antrum.

Dr. H. D. HAMILTON read a paper on this subject. It will be published later.

THE

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REGISTRATION CONSIDERED AS A FINE ART.

To return to the proxy system! It has been usual for the Registrar and others connected with the present government of the College of Physicians and Surgeons of this province to obtain from practitioners, and more especially from the newly licensed practitioner, a proxy, at periods varying from three years to as many months, before the Triennial election. In obtaining these proxies we find they have, in a large number of instances, been gained from those who have not in the least realised the full significance of their act. Immediately after a young practitioner has obtained his license, he has been approached by the Registrar, or some one who has aided him in obtaining his diploma, and in the fulness of the heart he has gladly acceded to the wish expressed, that he should give his proxy to this or that individual. In so doing he has regarded the matter as being purely a personal one, and he has imagined that he has simply been giving a personal vote to the applicant. There has been not the least idea that this proxy could be used, and would be used, to determine the election of the entire Board of Governors—of thirty-two individuals instead of one—and assuredly it has never been imagined by the giver that he was conferring more than a personal favor upon the applicant or debarring himself from voting as he pleased with regard to other members of the Board. Apparently, however, the Registrar is of the opinion, and has laid down the law that a proxy once given covers the election of the whole Board, and, what is more, cannot be annulled save by personal presence at the election.

A proxy is, in its nature, a power of attorney, authorizing one individual to represent another, and to act for him on a given occasion. By these terms, therefore, on a given occasion, the representative can make a very wide use of the power so given to him. He can employ

it not only for his own election, but for the election of others. This much must be admitted by all. But it is always in the power of the individual to revoke such a power of attorney, and to nominate, at a later date, some individual as his representative, thereby annulling his first proxy. Indeed, if any individual is of opinion that the representative whom he has nominated will not properly represent his views, it is not only in his power, but it is his duty, to revoke the proxy, and nothing in law can prevent him so doing.

The Registrar of the College of Physicians and Surgeons of Quebec, however, holds different views, and recently he has officially refused to register the second and modified proxies of more than one practitioner; they have been returned to them rejected.

There is an innocent ignorance of the law in this action of the Registrar which it is painful to contemplate. The first proxies may, it is true, have contained upon them a statement to the effect that they were the only proxies of which the registration was authorised; but such a form of words does not bear, and cannot bear, the construction placed upon it by the Registrar, that no subsequent proxy can be registered by that individual; any more than the bringing forward of a document in which the testator has declared, say in 1883, that "this is my last will and testament," can be brought forward to invalidate a will of the present year in which the same form of words is employed.

The meaning of this move on Dr. Beausoleil's part is obvious; but such action will assuredly not serve his purpose, and already legal proceedings have been taken to enforce him to register all duly signed proxies, annulling those given at an earlier date.

We cannot but thank Dr. Beausoleil for giving us so entertaining a contest. What is to be the next move?

THE PATHOLOGY OF URÆMIC INTOXICATIONS.

We publish *in extenso* in this issue of the JOURNAL the very interesting and suggestive paper with the above title presented by Dr. C. A. Herter, of New York, at a recent meeting of the Montreal Medico-Chirurgical Society. Apart from its intrinsic merit, this communication marks an epoch in the history of the Society. It is the first occasion on which an invitation has been extended to our American *confrères* to participate in the proceedings of the Society, and the thanks of the medical profession of Montreal are due to one of the past presidents of the Society for taking the initiative in this praiseworthy innovation.

That the experiment, if it may be so called, was fully successful, cannot be doubted, judging from the large and appreciative audience that assembled to hear Dr. Herter, and if the ensuing discussion was not a very animated or critical one, this must be attributed to the fact that the practitioner of medicine is scarcely qualified to discuss the experimental side of one of the most obscure problems of pathology, however much he may be interested in the clear and lucid exposition of the subject by one who has the right to speak *ex cathedrâ*, as the lecturer in the present instance undoubtedly has. It is to be hoped, and it is almost safe to say, that Dr. Herter's contribution is but the first of a series in which other distinguished members of the medical profession in the United States will be represented, and that by this means we may be brought into intimate connection with the great medical centres of America. We are too provincial, and provincialism in medicine is anything but desirable.

Dr. Herter's paper is a summary of personal observation and experiment, and, though he has made "a study of uræmia that has extended over many years," he shows a reticence and a conservatism in drawing conclusions from his work that offer a striking contrast to much that is published on similar lines of investigation in current medical literature. Although he has purposely refrained from details of technique and extended reference to prior or contemporary labors of others on this subject, one is convinced by reading his paper that his investigations have been based upon a wide knowledge of the literature of uræmia and a proper appreciation of the fallacies of some of the experimental methods hitherto practiced, *e. g.*, that of intravenous infusions of urine in animals, which was the basis of the experiments of Bouchard, Teissier and others. It cannot be doubted that a solution of the problem of uræmia can be obtained only on the lines he has followed, viz., the experimental study of the blood in healthy human beings and in those suffering from uræmia and other allied toxic states, and the comparison of such states with those artificially produced in animals by double nephrectomy or ligation of the ureters. The increased toxicity of uræmic compared with normal blood serum may be accepted as an undoubted fact, but it is as yet uncertain which of the retention products in the blood is to be held responsible for the clinical phenomena of uræmia, or if this condition is due to the collective action of these products. The arguments advanced in favor of any of the individual constituents found in the blood serum (urea, extractives, salts, &c.) being the sole or even the chief cause of uræmia have been shown to be insufficient, though some of these probably produce some of the individual symptoms which we are

accustomed to call uræmic; notably urea, which is certainly very constantly associated with the vomiting and diarrhœa of nephritics.

Dr. Herter gives a very striking comparison between the symptoms of human obstructive uræmia and those of the experimental uræmia in dogs induced by double nephrectomy or ligation of the ureters. The similarity is almost complete, and proves not only that the pathological basis of this form of uræmia is the same in both cases, but also that the condition in the human being may be elucidated by further experiments on animals. In the dyspnœic type of uræmia, associated with cardio-vascular changes, the conditions present offer many more difficulties to the investigator, for in addition to an undoubted toxæmia there are mechanical factors at work, and it is as yet impossible to estimate the part that these different agencies play in the development of the uræmic symptom-complex.

In still other cases infection complicates the question by the introduction of bacterial toxins.

Dr. Herter, moreover, makes a strong plea for the extension of the term uræmia "to every case of renal insufficiency for urea, although well-defined uræmic symptoms be wanting."

Among the points of special interest to practitioners may be mentioned the statement that the customary estimation of the urea of the urine is an unnecessary and useless procedure, the reduction in the total solids being sufficiently indicated by the volume and specific gravity of the urine. The urea estimation of the blood on the other hand affords very important indications of renal competency or incompetency and should be adopted in clinical investigations. For this purpose only a few cubic centimeters of blood are required.

In this connection also may be noted the fact referred to in the paper, that renal insufficiency for urea is a characteristic of fatal pneumonia, a statement fully borne out by the statistics of the post-mortem room.

It is to be regretted that, for fear of wearying his audience, Dr. Herter did not carry out his first intention of including some remarks on the treatment of uræmic states. We feel sure that his hearers would willingly have listened to any corollaries of his very interesting experimental studies, and the hope may be expressed that on some future occasion we may have the pleasure of hearing Dr. Herter's views on this subject.

THE SMOKE NUISANCE.

It is a disgrace to Montreal that the by-laws of the city, with regard to smoke and smoke prevention, remain to all intents and purposes a dead letter. Small offenders, whose kitchen chimneys it may be have

misconducted themselves, are occasionally brought up and fined, but large offenders and the larger industries situated in the manufacturing parts of the city are allowed to pollute the air with impunity. For over now two months one tall chimney in the West End, probably the biggest in the city, has emitted a steady stream of thick black smoke, and apparently no steps have been taken to arrest the scandal, for scandal it is. In the East End there are offenders who, in proportion to the size of their chimneys, are equally culpable, and who are equally indifferent to the comfort and health of their neighbors and to the credit of the city. Those who live in the residential part of the city away from the river, who are the more influential portion of the community, are but rarely troubled by this matter—their sky remains unclouded—and we suppose that as they are not personally affected the nuisance has been allowed to continue.

The prevailing winds blow these clouds of smoke either up the river or down, rarely towards the mountain; one has, however, but to climb the mountain and look across the city to see the extent of the nuisance and realize the discomfort it must bring to our thick working-population. Occasionally, it is true, the smoke does cross the city in this direction. On the 19th ultimo, a dense black cloud of smoke issued from the chief offending chimney, sailed heavily across the city and stretched for at least two miles across Dominion Square, and even over Park Avenue it was still heavy and black.

The first impression of the stranger reaching Montreal by water is that he is coming to a filthy manufacturing centre in which everyone is absolutely callous of appearances. How this affects strangers was impressed upon us frequently last Summer by the remarks of our visitors at the British Medical Association meeting. One whose name and fame are world-wide, and whom we thought we had duly impressed with the position and beauty of the city, could only retort: "Don't talk about your city, its beauty and its progress, when your citizens endure placidly that heavy cloud of smoke; we may be bad in England, but we can show nothing as bad as this in cities which call themselves metropolitan." In England they have some excuse for their smokiness, for they are forced to use soft coal, giving abundance of soot. Here we have no excuse; indeed, what strikes one in looking at the city from above, is the singular freedom from smoke in the upper portions of the city.

Is this condition to continue? Our opinion, as medical men, is that it must come to an end, and that quickly. There is no reason for the smoke save this, that there is initial cost in installing good smoke consumers. It has been abundantly proved that such good smoke con-

sumers are now upon the market, and no one can excuse himself on the plea that these instruments are not sufficiently good and fully developed to be practicable. It is painful to think that the worst offenders are concerns which are making large annual profits, and which can best afford the relatively small expense of putting a stop to the nuisance. Being limited companies they have, it is true, no hearts, but they can be made to see that it is cheaper in the long run to consume their own smoke rather than to waste the substance of their shareholders in fines. It is possible that the mode of treating offenders, as regulated by our by-laws, is cumbrous, and may seem to take on the character of a persecution. On reading those by-laws we do not see that this is the case; nevertheless there are better methods of dealing with the evil.

In certain large German cities they have a method which is very prompt. Here and there throughout the city, in church steeples and other lofty positions, they have members of a corps of watchmen who, during the day, look more especially for evidences of smoking chimneys, and during the night look for outbreaks of fires. In the watch chamber there is a carefully plotted out plan of the city whereby, knowing the direction and the angle of the telescope, they can calculate to within a few yards the exact position of a chimney emitting dense smoke, and their duty is, if the smoke continue for three minutes, to telephone forthwith to the police of the district in which the nuisance occurs, and a policeman is sent round with a paper announcing a fine, that fine to be paid immediately; or, as an alternative, the offender can appear before the magistrate and appeal. If the same nuisance recurs within a week, the fine, on the second action, is raised: and if it continues, if we remember aright, there are by-laws which regulate that more severe proceedings be taken. There is a great deal of convenience in this method; where the chimney smokes by accident, the householder is saved the trouble and the annoyance of appearing at the Police Court, while the inveterate offender finds that the frequent payment of $5 or more for the privilege of allowing his chimney to smoke, becomes too much of a tax, and for his protection and economy finds it politic to stop the nuisance. We would suggest some such course as this to our City Council, for the annoyance has become altogether too extreme to allow it to continue any longer.

"THE METAMORPHOSIS OF AJAX."

We have so far not noticed in these pages the admirable work that has been performed by Mr., now Alderman, Ames in studying the hygienic conditions of the districts of our city most representative in

that it includes areas inhabited by the well-to-do, lower middle class and the artizan population of the city. Such work as Alderman Ames has performed by house to house visitation and intimate study of the conditions of life and health in the various quarters of "the city below the hill," forms truly a basis of civic legislation in all directions. Never before in Montreal has there been made so careful a study of the conditions of life and property. And, more especially, must these observations form a starting point for all of the many needed amendments in the matter of public health.

Already we are glad to see that Alderman Ames is causing his investigations to bear good fruit. They showed beyond doubt that properties upon which privy pits existed had a much higher death rate than those with no privies. His motion now before the City Council to bring about the abolition of privies and cesspools within the city limits, appears to us, as it must appear to everyone interested in the health of the city, to deal with matters of such public importance and to seek to effect a reform that is so imperative that it is unnecessary for us to bring forward any argument in its favour. We can but say that Alderman Ames in inaugurating this civic reform has the support of the whole of the medical profession.

Above all we approve of the practical way in which Alderman Ames has proceeded. Many an enthusiast might have brought forward a motion to uproot the system forthwith, heedless of the pockets of the smaller proprietors, and have failed through overeagerness. Instead of that Alderman Ames proposes that sufficient time be given to gradually effect the change, and introduces a clause permitting aid to such proprietors of small dwellings as are too poor to comply with his motion. For the present time he does not seek to introduce compulsory dealing with those properties which being near the city limits may be at a considerable distance from the sewerage mains. His proposals seems to be well thought out and to be both practicable and of great public utility.

FACT VS. FICTION AS REGARDS ABOLISHING PROXIES VOTING.

The approaching election should decide definitely the question of whether the physicians of this province are to exercise the right of voting for themselves, or must continue to depute this duty to others some months or years in advance. Of the two parties in the present contest, the one favoring reform has openly declared itself for the abolition of proxies; the other, or Beausoleil party, claims that the abolition of proxy voting will lead to the disfranchise-

ment of three-fourths of the electors. This dogma has been reiterated by the adherents of the present governing body without their bringing forward a single fact to prove it. It is really remarkable what a repugnance to facts appears to prevail among the supporters of the present board. They shun fact as a cat does water, and suffer from a chronic inability to state things correctly.

We have felt it our duty to ascertain and compare the vote polled at elections in this province during the past ten years under the proxy system with that in Ontario, where proxies do not exist. There the system of voting by a ballot paper (sent by mail or otherwise to the District Returning Officer, on or before the day of election) has been followed for many years past. This system, we may remark, is the one recommended for adoption in this province by the Electoral Committee of the Montreal Medico-Chirurgical Society, as it attains the advantages of a direct vote with a minimum loss of time and a minimum of trouble.

From official information furnished us from the College of Physicians and Surgeons of Ontario we can state that in that province, when there is an active contest in any particular district, the vote polled often includes nearly every registered physician in the district. For example, at a recent election in a district containing 200 registered practitioners, the vote was 180, or 90 per cent. of the possible total. In another recent case, a district with 150 physicians actually polled every vote.

It thus appears that under a system which the supporters of the present Board declare will have the inevitable effect of disfranchising three-fourths of our physicians, we have official evidence that votes of 90 per cent. and upwards are not only possible, but actually recorded. On the other hand, when one is told that 75 per cent. will be disfranchised by the contemplated change, one might imagine that under the present system a much larger vote was polled. But when we count the vote polled at the triennial elections in this province during the past decade, under the proxy system, which the present Board seem unwilling to change, we find it to be absurdly small. Out of 1,300 licensed physicians, the highest total vote recorded in the case of those names happening to be on all the tickets has never exceeded 314, this number being reached once only (in 1892). So that, as a matter of fact, under the existing conditions 75 per cent. or more of our physicians have been practically disfranchised by the method of election now in vogue. Indeed, 232 votes in 1895 and 206 votes in 1892, as the total vote, is only about one-sixth of the electorate.

These figures show clearly, first, that it was the stay-at-home votes

which has saddled the Beausoleil party upon us for the last ten years, second, that at no time have anything approaching a majority of the profession in this province voted for this party. We leave our readers to draw their conclusions as to why the present Board represents that doing away with proxies will necessarily disfranchise any large proportion of the electors. Can the present Board, who claim to have studied the matter during the past ten years, know absolutely nothing about the election methods of Ontario and their practical working? What is there in the proxy system as controlled by a sympathetic registrar, which so enchants them? If they knew that the abolition of proxies instead of lessening the vote would increase it, why have all their programmes and circulars kept back this information, and continued to assert that the abolition of proxy voting will disfranchise a hypothetical three-fourths of the electors? Have they a presentiment that the actual three-fourths of the profession who have not voted during the past decade may be less blind to those little peculiarities on account of which the dynasty of Beausoleil I. is now threatened with destruction?

Local representatives who faithfully serve the interests of their districts will be far more secure if proxies are done away with, than at present. In Ontario, when the contest is not keen, where the profession are well satisfied with their representative, the vote may be small or the candidates may be returned by acclamation. But we hold that a larger vote can be obtained without proxies than with them, and we challenge those who state the contrary to bring forward facts and figures to prove their side of the case, though we fear they may have some difficulty in so doing.

MEDICAL LIBRARY OF THE MEDICAL COLLEGE, McGILL UNIVERSITY.

The Library Committee acknowledges, with pleasure, the following donations for the quarter ending February 28, 1898, from authors who have presented copies of their books to the Library:

J. A. Coutts, M.B. (Cantab.) F.R.C.P.—Some Aspects of Infantile Syphilis. 1897.

F. Currier, M.D.—The Menopause. 1897.

M. L. Halbrook, M.D.—Stirpiculture, or the Improvement of Offspring Through Wiser Generation, 1897.

G. Carl Huber, M.D.—Lectures on the Sympathetic Nervous System.

A. F. A. King, A.M., M.D.—A Manual of Obstetrics, Ed. 7. 1898.

Hermann Mynter, M.D.—Appendicitis and the Surgical Treatment with a Report of Seventy-five Operative Cases. 1897.

R. Tait McKenzie, B.A., M.D.—Barnjum Bar Bell Drill.

Thomas M. Madden, M.D., F.R.C.S.E.—Notes on the Special Hygiene (Physica and Mental) of Children and Youths. 1897.

Louis C. Parks, M.D., D.P.M.—Hygiene and Public Health, Ed. 5, 1897.

H. Powers, M.B., and Leonard W. Sedgwick, M.D.—Three Volumes of the Lexicon of the New Sydenham Society.

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W. T. Slayton, M.D.—Medical Education and Registration of the United States and Canada, 1897.

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