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UPON THE BACTERIOLOGY OF PROGRESSIVE CIRRHOSIS OF THE LIVER.

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It is needless for me here to enter into a discussion of the various theories which have been adduced to explain the development of cirrhosis of the liver. I need only say that the experience of a large number of observers, who for weeks and months have inoculated and treated animals with various alcohols has shown that alcohol itself induces at most the fatty liver with, it may be, a very slight amount of fibroid change in the portal areas, and that not a single observer has by this means been able to produce anything at all resembling the extreme deposit of fibrous tissue which we meet with in the hobnailed liver.

Alcohol in the main leads to the fatty liver, while on the other hand the evidence has steadily accumulated, notably in India, that extreme cirrhosis may attack children and adults who have not taken a particle of alcohol either medicinally or otherwise.

Within the last few years, the French school of pathologists headed by Hanot, has regarded the enlarged cirrhotic liver with jaundice as being of infectious origin, and it is common in France, now-a-days, to speak of "*le foie infectieux*," but to the best of my knowledge no one has as yet described any one micro-organism as being found frequently associated with these cases of so-called infectious liver. At

[1] A paper read for the author by Professor Osler, in the Section of Medicine, at the meeting of the British Medical Association at Edinburgh, July, 1898.

most, Levi[1] from a case of cirrhosis in a 17 year old male, with marked periportal fibrosis and enlarged spleen, obtained a diplococcus pathogenic for guinea pigs. The age of the patient, the proliferation of the bile ducts and the absence of ascites, would indicate that his case was one of what is termed " Hanot's Cirrhosis" but the bacteriology is rendered somewhat doubtful in that there were also present bacterial endocarditis of the pulmonary valve and suppurative meningitis. Unfortunately I have not been able to obtain the original paper, nevertheless, this brief statement of the main features of the case, makes it at least possible, as Paltauf has urged, that the endocarditis and meningitis and the presence of diplococci in all the organs, may have been due to a complication.

On the other hand there is a somewhat suggestive relationship between these cases of Hanot's cirrhosis and epidemic jaundice, in some cases of which observers have noticed the presence of a diplococcus or bacillus with polar staining.

To the best of my knowledge, no one has as yet recognised the frequent presence of any one form of micro-organism in the commonest form of hepatic cirrhosis—the so-called portal cirrhosis, tending to the production of the hobnailed liver, with or without marked atrophy of the liver.

On behalf of the Government of the Dominion, I spent the summers of 1894 and 1895 in Nova Scotia investigating a very remarkable disease affecting the cattle in a limited area of the country—the so-called " Pictou cattle disease"—of which the main lesion is a singularly extensive cirrhosis of the liver. The disease is only found in a district spreading along the northern coast of the peninsula, in a tract of country about 40 miles long by from 5 to 12 miles broad. There apparently it has been noticed for some 40 years, now at one end of this area now at another. The disease would seem to be very chronic and not to affect all the cattle on a farm simultaneously, but unless due precautions are taken, in the course of three or four years most of the animals upon a farm will, one after the other, be affected. It would seem further that the disease does not spread directly from animal to animal, for there appears to be no special incidence of cases following upon the long winter sojourn of the animals in the byres, which, with rare exceptions, are miserably dark and ill-ventilated, the attempt being to keep these as warm as possible in consequence of the severity of the winter.

One or two cases are on record in which the disease has broken out in a neighbourhood after the body of a cow affected with the disease

[1] Arch. Gen. de Med., March and April, 1894.

has been washed down by one of the streams and stranded upon the farm lands. The gradual extension from farm to farm, through any given district, seems to be largely brought about by the fact that each farm has at the back of it a belt of woodland into which the cattle roam during the summer. The belts are badly fenced off from each other, and here, if an animal is affected, it attempts to wander off into the woodland and there die in some remote corner. Thus, unless precautions are taken, the carcasses of these animals remain uninterred and appear to act as centres of infection. Under the present Government regulations, notification is given of every suspicious animal, and the Government Inspector, if satisfied that it is a case of the disease, immediately destroys the beast and burns the carcass, or has it buried in quicklime. By this means the number of animals affected is rapidly being reduced, so that within the last few years the number of cases occurring annually has sunk from 150 to under 30.

As for the symptoms of the disease, the first symptom which is noticed is that the milk has a somewhat acrid odour upon boiling and acquires a pecular bitter taste; within a few days the animal becomes dry, it is weak and restless, the coat stares and the limbs are dragged, the bowels loose, the abdomen a little swollen, the eyes are staring, the conjunctivæ subicteroid. The animal becoming weaker and weaker dies apparently in a condition of complete exhaustion. In some few cases death is preceded by a period of intense excitement almost maniacal in character, the animal rushing about charging at obstacles and then falling into a condition of paresis followed rapidly by death.

I killed and made post-mortem examinations upon some 30 animals during two years and found, as Dr. Osler and Dr. Wyatt Johnston previously determined, that the main lesions are an extreme condition of generalised cirrhosis, not only periportal and pericellular, the organ being somewhat enlarged and having a smooth and rarely a finely granular surface. There is evidently an abundant production of thin bile, for with scarce an exception the gall-bladder was found very full and the fæces well stained. The periportal and abdominal lymph glands in general are large and succulent, there is a moderate amount of ascites, the fluid being perfectly clear and limpid, and together with this there is a rather remarkable condition of a gelatinous œdema of the mesenteries and intestinal walls. A further constant lesion is the presence of numerous follicular ulcers in the 4th or true stomach. These, save in the very acute cases, are found in a cicatrised condition, giving strongly the impression that the earliest

lesion in the case has been gastric and has been followed by infection of the abdominal lymphatic system and the portal area.

From all the animals which I killed, I was more fortunate than my predecessors in gaining a characteristic micro-organism. This may have been due to the fact that I employed a somewhat different method of gaining my cultures. Instead of taking the media and inoculating on the spot, all I employed was a series of sterilised glass pipettes in which I collected relatively large amounts of the juices of the various organs ; ascitic fluid, blood, etc., and then when back in my temporary laboratory, either upon that or the following day, I inoculated my media. By this means, constantly from the lymph juice of the abdominal glands and from the liver juice or bile and more rarely from other organs and fluids, I obtained in each case growths of a characteristic micro-organism ; small, polymorphous, at times appearing as a diplococcus and at others as a diplobacillus which by its polymorphous character gave me a considerable amount of trouble, until I found that employing the same broth tube, at the end of 24 hours I obtained the one form, at the end of 48, the other. Further study showed me that this micro-organism was in reality a short bacillus with polar staining, in this resembling to some extent the micro-organisms of hæmorrhagic septicæmia in the lower animals, but unlike them, possessing a slight capsule. I was able to grow this upon all the ordinary media of the laboratory. Into the character of this micro-organism I will not here further enter, beyond stating that I found it pathogenic for rabbits, guinea pigs and mice, rabbits dying in from 15 to 35 days, guinea pigs in from 30 to 35 on the average.

The characteristic features of this disease—the ascites without jaundice, the gastric and intestinal disturbance and the condition of the liver—led me seriously to consider the points of similarity between the course and symptoms of these cases and those present in portal cirrhosis in man, and though it may seem a small matter, I was especially struck by the fact that the first post-mortem which I performed upon a case of atrophic cirrhosis upon my return from Nova Scotia in 1895, presented the same gelatinous œdema of the mesenteries and intestinal walls which was so prominent a feature in the Pictou cattle disease.

Thus on and off for the last three years my attention has been directed towards this possibility of discovering bacteria in ordinary progressive portal cirrhosis. Upon three occasions I have thought that I have gained specific micro-organisms. In two, unfortunately, the growth became contaminated with the colon bacillus, and as this occurred on the eve of my vacation I was unable to continue the

search further. In the third, which occurred a little over a month ago, the growth was very slight, and although pure, it had apparently died out on the fifth day and I was unable to gain any further cultures, if indeed what I saw was anything beyond the frequent presence of diplococci already existing in this liver juice at the time of extraction.

The difficulty that has pursued me in this search has been that which has prevented me from publishing so far any extensive report of my studies upon the Pictou cattle disease, namely, the extraordinary difficulty in staining the micro-organism in the tissues. I have tried a very great number of methods, and while with many I have been able to recognise the bacteria, the results obtained have been so inconstant that I have felt that others following me might very possibly have negative results; thus I have been unwilling to make any full statement until I should be able to state clearly how to be able to recognise the micro-organism. While this micro-organism stains deeply it appears to lose its stain even more rapidly than does the tissue. Sometimes Gram's or Weigert's method shows them perfectly, but while the iodine appears to have a deterrent effect upon the decolorisation of the microbes, the stain is not properly fixed by its means. And while again I have obtained good results by staining with methylene blue dissolved in anilin oil, a momentary passage of sections so stained, through a mixture of anilin oil and xylol and so through xylol into Canada balsam, yet even here the colour appears to fade out rapidly so that in a few days the micro-organisms are unrecognizable. Eventually the thought struck me that bleaching in the sunlight might be a possible means. By this process there would be no diffusion currents set up, and if, as my previous work had shown, the bacilli took up the stain with rapidity then the deeply stained sections would have so much of the dye in the bacilli that, upon bleaching out, the bacilli would be left stained when the tissue itself had become colourless.

My laboratory assistant, Mr. E. W. Hammond, prepared a large series of sections in this way and obtained some excellent results. He found that, as I had suggested, strong staining with carbolised fuchsin followed by bleaching for a short time each day for a period of a fortnight or more, demonstrated the bacteria admirably. While the process is a slow one it has the undeniable advantage that each day the mounted section can be examined to see how far the process of bleaching has progressed. By this means I was able to find out that in the Pictou cattle disease the micro-organisms, while present scattered through the new fibrous tissue, are present also in large numbers

within the liver cells, and in the liver of a rabbit which had been inoculated with the micro-organism isolated by me, although the animal died before any marked cirrhosis had developed, the liver cells were seen to contain these microbes in very great numbers. As to how the micro-organisms enter these cells, that is a point on which at present I can throw no light, but the appearances given, as will be seen in a specimen under the microscope in the Pathological Exhibit, is that these cells contain large numbers of extremely minute diplococci.

Recently, within the last month, a remarkable case of cirrhosis with pigmentation unaccompanied by diabetes has again drawn my attention to the bacteriology of atrophic cirrhosis. Dr. Maude Abbott, who is working in my laboratory at the Royal Victoria Hospital, showed me some sections of the abdominal lymphatic glands, stained by Weigert's fibrin stain in which, under high power, I noticed a peculiar fine granulation, and upon examining under the 18th inch immersion, these fine granules resolved themselves into minute diplococci.

Examining the liver stained the same way, I there noted large numbers of the same micro-organism, and since then I have gone through all my five cases of cirrhosis which I have had during the last three years; through specimens of four well marked cases of hobnailed liver received from Professor Hektoen, of the Rush Medical College, Chicago, and through a series of sixteen livers, some of well marked atrophic cirrhosis, others of milder stages of cirrhosis sent to me by Dr. Flexner from the Johns Hopkins Hospital. So far in every case of well marked portal cirrhosis whether of the small shrunken type or of the large hobnailed type, whether associated with jaundice without ascites or with ascites without jaundice, I came across constantly one characteristic form of micro-organism, obtaining the best and most permanent results by the method already mentioned, of staining in carbolised fuchsin and bleaching or partially bleaching in the sunlight.

This micro-organism is extraordinarily minute; by the trained eye, in well stained specimens, it can be recognised under the 12th inch immersion, but for satisfactory work it is absolutely necessary to employ the 18th or 20th inch immersion lens. According to the depth of the stain, so does it appear either as an ovoid bacillus, which might easily be mistaken for some stained deposit in the liver cells, or as a minute diplococcus surrounded by a halo, the explanation being that with strong staining the the bacillus and capsule are stained throughout, with weak, the body of the micro-organism and the capsule are decolorised, leaving simply the polar staining. Even in the tissues

this micro-organism is somewhat polymorphous, that is to say, that at times one sees the two stained portions so close together as to resemble a minute edition of the gonococcus, at other times they are further apart and appear rounded like the coccus form of pneumococcus, while in the same specimen a rare form may be seen in which the two stained portions are even slightly elongated. These are present in greatest numbers within the cells. A remarkable feature about them, and one which years ago I noted in connection with the Pictou cattle disease, is whether they be seen in the lymphatic glands or in the liver, in the unstained condition many have distinctly a brownish tinge, so that in the liver especially these bodies may at first sight be mistaken for minute granules of precipitated bile pigment. They vary in number; in two cases in which the disease appeared to be of very slow progress but few were present; in those cases in which the bands of portal connective tissue showed an abundance of small round cells and in which the disease according to all indications was active and progressing, the number was remarkable, in fact so numerous were they that it was impossible for me to arrive at any other conclusion than that there is a distinct association between the presence of this micro-organism and the development of the disease.

So minute are these micro-organisms that it is difficult to focus them, and I would strongly urge those attempting to confirm these observations to take, if necessary, from twenty minutes to an hour studying an individual field of the microscope before arriving at any definite conclusion.

Here, perhaps, I should correct myself. In the fully stained condition the micro-organisms while small are not so very much smaller than the ordinary run of pathogenic bacteria. But in this fully stained condition, as already stated, they are very difficult to distinguish from granules scattered through the cell protoplasm ; it is in the partly decolorised condition in which the polar staining alone is recognisable and is peculiarly characteristic, that they appear so very minute. Indeed, I know of no form so minute, save that recently described by Nocard and Roux as being the causative agent in the contagious pleuro-pneumonia of cattle, and the strain upon the eyes in studying these microbes is most severe. This adds greatly to the difficulty of photographing the micro-organisms.

I am indebted to Dr. Patrick, the photographer of our hospital, for the accompanying lantern slides, in which despite great difficulties he has managed, I think successfully, to demonstrate the organisms in the tissues; but with regard to this I may say that where he shows

one micro-organism the slightest change of focus would bring others into view, so that his slides show but about 1-20th of the number recognisable in any given field.

As to whether the micro-organisms in the human and in the bovine liver are identical it is impossible for me to affirm. At Johns Hopkins, as in our own hospital and in a large number of foreign hospitals, not to mention the leading hospitals in the old country, it is now the custom to obtain cultures from half a dozen or more regions, including the liver, in every autopsy performed within fifteen hours after death. And, while the methods employed for obtaining cultures are in many cases faulty, to the extent that an insufficient amount of tissue juice is taken, it seems to me unlikely that had this form been cultivable upon the ordinary media, it would not before now have been isolated. Nevertheless, there is this to be said, that very frequently the colon bacillus grows upon cultures made from the liver; isolated colonies of the micro-organisms from the Pictou cattle disease, while growing more slowly, are not unlike those of the colon bacillus, and thus possibly the micro-organism if growing in a manner similar to that of the Pictou cattle disease, might be neglected on account of this similarity in appearance.

It so happens that here in Montreal cases of the disease are few and far between; five cases only have come under me in four years, and in a series of 934 autopsies made during twelve years at the Montreal General Hospital and indexed by Professor Wyatt Johnston, I find that altogether 31 cases of cirrhosis of the liver are recorded and 14 of the cirrhotic and fatty liver, with one recorded as "hypertrophic cirrhosis." I have thus thought it wise to publish these observations, even though I can at the present moment make no absolute statement with regard to the isolated micro-organism and its character, beyond the statement that, as already mentioned, in one agar tube made from the live juice, I was able to recognise the form, although in not very great numbers and with the absence of any visible growth.

Lastly, as to the cases in association with which I have found this micro-organism. If future observers confirm the observations given above, then we must conclude that many of the divisions and distinctions attempted to be drawn between the forms of advanced cirrhosis of the liver, must be broken down for, in the first place, I have found the same appearance in the large liver with moderate granulation or slight hobnailed condition, which some would speak of as "hypertrophic cirrhosis," as again in the small contracted typical hobnailed liver; in cases frankly multilobular with sharply defined bands of connective tissue cutting off relatively large areas of liver substance

and showing relatively few bile ducts ; as again in cases of the more unilobular type with ill-defined edges to the lobules and abundant bile ducts ; in cases which have shown jaundice without ascites, ascites without jaundice, and again both jaundice and ascites ; lastly, in cases with a pronounced alcoholic history and others in which no history of alcoholism could be obtained.

I am far from wishing it to be understood that I am here laying down that all cases of fibroid change in the liver present these minute micro-organisms ; to make any such suggestion would be absurd. Nor again am I prepared to say that Hanot's cirrhosis affecting the young adult and presenting the enlarged liver with smooth surface and accompanying this, crises of icterus, is identical with the more ordinary form of progressive cirrhosis affecting the adult. It may be so or it may not. All that I at present am prepared to lay down is this, that the progressive and extensive cirrhosis affecting the adult at or after forty years of age is, according to my investigations, accompanied by the presence in the liver cells, as again in the newly formed connective tissue, of an extraordinarily minute bacillus, having a polar staining and resembling greatly in its appearance under the microscope a form which I have isolated from cases of infective cirrhosis among cattle.

I cannot conclude without again expressing the debt under which I labour to several helpers. To Dr. Maude Abbott and Dr. Patrick ; to my Laboratory Assistant at the University, Mr. E. W. Hammond, who aided me very materially in Nova Scotia ; Mr. Howell, my assistant at the Royal Victoria Hospital, but for whose energy I should have been unable to prepare and examine all my material ; to Mr. Nicholson, who has most gladly crossed the Atlantic to demonstrate my specimens during the course of the meeting ; and above all, on this occasion am I indebted to a member of McGill University, my predecessor not only in the teaching of Pathology, but also in the investigations in the Pictou cattle disease, than none, not even myself could more willingly or more appropriately, or better, have brought this subject before you.

Appendix, (July 12th, 1898.)

By a remarkable coincidence, upon the afternoon of the day upon which I completed the dictation of the foregoing in order that I might have it complete for Dr. Osler to take with him to Edinburgh, I was called to perform a post-mortem upon a case apparently of heart failure which turned out to be one of atrophic cirrhosis of the liver. I should here add that a diagnosis of cirrhosis of the liver had been

considered and had been left in doubt; while clearly, from the condition of the heart, death had resulted from failure of that organ.

Not to enter too fully into the details of the case, for the clinical notes of which I am indebted to Dr. James Stewart, I may say that the body was that of a female of 56, who had always lived in Canada, and who, after the diseases of childhood had, until two years previously, enjoyed good health. She had 10 children with no miscarriages, and there was no history of inherited disease. She gave a moderate history of alcoholism, stating that she chiefly drank beer, but if one may base any argument upon the frequent presence of minute whitish plaques which were found scattered along the œsophagus, she was a pronounced alcoholic.

For the last two years she had not been well, dating her impaired health from a fall while out walking, when she injured her back somewhat. For the last year her heart had been very weak and upon exercise her feet and legs became swollen. Since last April, the weakness, swelling of the legs and abdomen, shortness of breath and palpitation have been much worse, and for three days before admission, dyspnœa, sleeplessness and weakness had been extreme, while for months she had steadily been losing flesh.

Upon examination she was found sallow, with moderate anæmia of mucous membranes, the sclerotics were icteroid with distension of the superficial vessels; the face was emaciated and there was orthopnœa; the temperature was normal, the pulse rapid and the respirations were 36. The skin, more especially the face, neck and arms, was of a peculiar ashy colour; this, she stated had been noticeable for some years; there was slight general œdema, marked œdema of the lower extremities, and definite ascites. The pulse was 100, very irregular in volume and rhythm; the apex beat was unrecognisable; there were no murmurs. There was evidence of right-sided pleurisy and numerous coarse and fine râles with expectoration of frothy mucus. There was frequent vomiting and retching, though this had begun only a few days before admission to hospital. The urine was dark, amber coloured, with flocculent sediment, a fine ring of albumin and contained some bile. For a week or more her condition improved; the heart became more powerful, the ascites diminished. Suddenly upon the 6th, the patient died.

The autopsy was held six hours after death, and showed the following conditions.

Heart.—Large, full, with dilatation of the cavities, the muscle being somewhat atrophied and fibroid. The coronary vessels were atheromatous. All the valves were normal and in both auricles were puri-

form and breaking down ball thrombi indicating a very feeble circulation.

Lungs.—Both showed adhesions to the diaphragm and elsewhere, and on section presented little beyond œdema, save that the lower lobe of the right lung was almost completely compressed and airless as a result of the right-sided pleursy. The right pleural cavity contained about 700 ccm. of red stained fluid without flocculi.

Abdomen.—The abdomen contained between 900 and 1,000 ccm. of turbid and greenish ascitic fluid. Neither liver nor spleen were visible.

Stomach.—This was long and narrow with mucosa thickened, the cardiac portion having a curious strawberry-like appearance with fine white dots standing out, but not projecting from the generally reddened surface. This faded off in the pyloric portion of the stomach where there was a fair amount of mucus.

Duodenum.—The first three inches presented an identical strawberry-like appearance to that seen in the cardia.

Intestines.—The small intestines in general were congested and the last three inches before the ileo-cæcal valve showed large prominent solitary follicles. The walls of the small intestine had a distinctly brownish tinge as of von Recklinghausen's Hæmochromatosis. The mesentery of the small intestine was distinctly fatty and swollen, and upon section abundant milky lymph poured out wherever it was cut.

The abdominal lymph glands were in general reddened and succulent. The retroperitoneal glands, especially those in the neighbourhood of the portal fissure and of the pancreas, were markedly enlarged.

Liver.—The liver was distinctly small, weighing 1045 grams or a little over two pounds; the two lobes were correspondingly diminished in size, the organ was pale and had a finely granular surface; there were abundant old fine veil-like adhesions over the upper surface to the diaphragm. On section the organ cut fairly firmly more especially along the lower half of the right lobe and the under surface. On the whole the appearance on section was more fatty than fibroid. Microscopically, the organ presented along with fibroid thickening of the portal sheaths, a somewhat diffuse cirrhosis, the bands of fibrous tissue not being sharply cut and being infiltrated with a considerable number of small round cells. The cirrhosis was very obvious but not of the more usual type and the diffuse nature of the change may explain why the surface was finely granular rather than distinctly hobnailed.

Gall Bladder.—This had œdematous thickened walls.

Spleen.—Of normal size and rather soft, although on section the trabeculæ were seen larger and more prominent than usual.

Pancreas.—Voluminous and moderately firm.

Suprarenals.—Of fair size.

Kidneys.—These were the hog-backed type of mixed interstitial and parenchymatous nephritis. This so-called 'hog-backed' appearance, is that which, as I believe, Formad of Philadelphia, was the first to point out, is the more common form of alcoholic kidney in North America. The organs were large with a finely granular surface and full and firm cortex. There were white infarcts both in the kidney and the spleen.

The body was still warm at the time of autopsy and I obtained numerous sterilised pipettes of tissue juice from the liver, spleen, kidneys, abdominal lymph glands, ascitic fluid, pleural fluid, pericardial fluid, blood, and lymph from the mesentery, and with these made a series of inoculations on the surface of sloping glycerinated agar tubes, as also some into broth.

Portions of the collected ascitic and pleural fluid were centrifugalised, the cellular debris dissolved by caustic potash and after further centrifugalisation the deposit examined under the microscope after staining with carbolised fuchsin. This deposit showed rather rare minute diplococcus forms with a slight halo round them, similar in all respects to those recognised in the tissues.

A series of slide preparations were made from the various pipettes direct, fixed in the usual method and stained with carbol fuchsin, which was warmed until definite vapour was given off, then washed with water just cool enough to bear the hand in it, and mounted. As a result the characteristic diplococcus form was found in the preparations made from the liver, lymph from the mesentery, the ascitic fluid, the heart blood, the left kidney and the mesenteric glands; they were not found in the pleural cavity, the bile or the pericardial fluid.

Next, using a fair amount of the fluid out of each pipette, I allowed this to flow over the surface of slanting glycerinated agar tubes, my experience with the Pictou cattle disease having shown me, that while the fluid in the pipettes could show numerous diplococci, apparently the majority of those are dead, and only a few remain alive. By this means, in 24 hours I obtained fairly frequent growths in tubes from the spleen and left kidney, and rare growths in the mesenteric glands and heart blood. Four colonies only appeared upon the tube prepared from the liver, and two from the ascitic fluid and these latter did not show clearly till the expiration of 48 hours.

Subcultures made again directly upon the glycerinated agar surface,

showed a fine rather thin growth at first of minute discrete colonies; later these ran together into thin waxy lines which upon the expiration of four or five days assumed a faint yellowish tinge. Other tubes were made directly from the pipettes of the kidney and spleen into beef broth. This upon the following day showed a faint turbidity, which, just as in the case of the Pictou cattle disease, if anything, lessened with further growth, while a whitish deposit formed at the bottom. Since then, using the remaining pipettes, I have obtained a great number of broth cultures, the growth being much more free upon this medium than upon the agar, and further, yielding forms which are more characteristic and less liable to cause confusion; for the micro-organism is most remarkable in its characters.

Grown upon broth, in 24 hours it is present in the form of minute diplococci surrounded with a faint halo or capsule. Often these tend to be arranged in irregular chains in which the separate appearance of the dots are not quite regularly arranged, the long axis joining the two dots not of necessity coinciding with the long axis of the chain.

Grown upon glycerinated agar, the appearance is most puzzling, and although I had similar experience when working out the character of the micro-organism of the Pictou cattle disease, these agar cultures have given me a week of profound anxiety, until within the last 24 hours I have solved the problem. A 24 hour culture at 37° upon glycerinated agar, reveals minute forms which upon careful staining with fuchsin, not too deep, are clearly forms of diplococci. One gets every transition from the frank diplococcus form through one in which only very careful focussing shows that the somewhat oval bacterium has at either pole a deeper stained mass, to forms in which the polar staining cannot be made out so that one appears to deal with true short bacilli. Add to this, a certain number of oval forms can be seen still smaller than the diplococcus, in which the distinction between the two ends cannot be made out.

In 48 hours, and still more in 72 hours, the same culture which had given this appearance at the end of 24 hours appears to be contaminated by the presence of long distinct bacilli; that is, if sections be well stained with fuchsin, while this is still more the case after staining with Loeffler's methylene blue. At first sight, a culture from this variety showing these bacilli of irregular length with rounded ends, often lying side by side, appears to be undoubtedly of the colon bacillus or some allied form. And here I gain an explanation of the contrary results obtained by a bacteriological *confrère* and myself in London two years ago. I took to him cultures isolated from two cases of cirrhosis which, on examination in Montreal, seemed to be

diplococci, and his statement that he found only colon bacilli made me cease my investigations for the time. I can now well understand his most pardonable mistake.

Yesterday upon examining the agar plate culture from the spleen which had been made upon the 7th inst, and had been left for 24 hours in the incubator and there apparently yielded no growths and which thus had remained for four days at the ordinary temperature in the shade, I recognised one form of growth alone present, extremely minute, the colonies well separated from each other.

Upon removing one colony and making a coverslip preparation stained with fuchsin, I found that I had to deal with long chain-like bacilli interspersed with some shorter forms of the same breadth. The appearance was so wholly unlike anything that I had previously made out in the broth cultures, that I neglected this colony and made a culture from another identical in appearance and equally isolated, and in this case after staining with fuchsin, and as I thought over-staining, I washed in absolute alcohol. The result obtained was most remarkable. The long bacillary forms could still be recognized in this as in the other specimen and if anything they were longer, but each long filament showed a discoloured sheath in which, scattered at perfectly regular intervals, were pairs of dots deeply stained. In some places individual dots could be clearly recognised elongated and replacing the pairs. These pairs of dots in size resembled the diplococcus-like forms seen in the broth cultures and in the tissues to which I have already so frequently drawn attention. I regret that time has forbidden that I should obtain photographs of this very curious appearance so that they could be demonstrated with the lantern. In the series of preparations which will be found in the Pathological Museum, this form will be placed under the microscope and there will also be a series of sketches made by me under Zeiss's Camera Lucida showing this appearance.

I touched the same colony with a platinum needle and inoculated a broth tube from it and eight hours later, the broth, which had in the meantime been kept at 37°, showed a faint turbidity, and now some specimens treated with carbolised fuchsin in the same way, showed in place of the singularly long filaments, numerous diplococcus forms, fairly large, in which the connecting more colourless portion could be well seen, while here and there a rarer form showed three instead of two dots along the course of the bacillus. These observations satisfactorily explain the curious condition of affairs.

The microbe which is seen in the tissues as a diplococcus surrounded by a faint halo, is in broth after 24 hours present also as a diplococcus

but rather larger, showing or not showing the halo according to the extent of the stain.

Upon agar agar, while first present as a diplococcus form, it gradually extends and each day is seen as a longer bacillary form, but if stained and decolourised with carbolised fuchsin and decolourised to the right extent, each long filament is seen to be made up of diplococcus-like members lying in the common sheath. I made out a similar condition of affairs in connection with the Pictou cattle disease, but do not remember to have come across such long fillamentous forms.

We seem thus to be dealing with a form totally unlike any which to the best of my knowledge, has been described; the polymorphism is remarkable. It is most difficult, however, to determine how to describe the appearances seen, and I am at a loss whether to state that we are dealing with an encapsuled diplococcus or with a bacillus having inclusions taking a peculiar deep staining, just as in the ordinary cell, the nucleus stains deeper than the surrounding protoplasm. The general appearance in the tissue is certainly that of an encapsuled diplococcus, but on the other hand, grown outside the body and upon agar and then treated with Loeffler's methylene blue, the whole of that portion which plays the part of a capsule to the diplococci takes on a stain with as great intensity as do ordinary bacteria. On the whole at present, I am inclined to the latter view, because examining tubes in which proliferation is most rapidly proceeding, I find upon staining with carbol fuchsin and decolourising with alcohol, that one has in the youngest ovoid forms what is most suggestive of the polar staining such as one sees in the bacteria of hæmorrhagic septicæmia, that is to say, there is at either pole not a complete coccus form, but a generally deep staining concavo-convex segment, the two parts being separated by a clear space and the membrane joining the ends of the opposite crescents being clearly visible.

If this form coincides in other respects with the micro-organism of Pictou cattle disease, it will grow rather more easily upon slightly acid media, it will grow upon serum and very slowly in gelatine without marked liquifaction, and will be fatal for animals of the laboratory at a relatively long period after inoculation.

It so closely resembles the micro-organism of the Pictou cattle disease that I feel that I may safely prophesy this, for the time taken in unravelling the mutability of growth upon agar agar has prevented me from working out these points till the last few days.

The great similarity in appearance presented by growths upon agar agar under ordinary staining to the colon bacillus may perhaps make

it necessary to say a few words about the relationship of the micro-organism isolated by me, to the bacillus in question.

I have made growths side by side, and find that in broth the colon causes a greater turbidity and appears to grow more freely upon agar agar and also to be endued with greater motility. While upon staining an 18 hour broth culture of the micro-organism by the Nicolle Morax method, in order to demonstrate flagella, I found that the micro-organism, which are even stumpier than the colon bacillus, under similar circumstances to be possessed of terminal flagella, either one or two, and not of lateral. This, if it were necessary, would seem distinctly to prove that the micro-organism is wholly distinct from the colon group. However, I make this statement provisionally, and will give fuller details as to the characters of the micro-organism within the next few months, probably in the *Journal of Experimental Medicine*.[1]

I trust, however, that I have said sufficient to prove: 1st, That in at least a very large number of well-marked cases of progressive cirrhosis in man, there is to be found largely within the liver cells, also in the lymph spaces in the newly formed connective tissue, a peculiar and very minute form of micro-organism, present on staining to the proper extent, as a diplococcus surrounded by a faint halo, or when stained deeply, being a rather obscure bacterium, which may easily be mistaken for stained deposits within the cells.

2nd. That in the infective cirrhosis of cattle, a very similar micro-organism is recognisable, present in like positions within the tissues and showing similar appearances when stained.

3rd. That from at least 30 cattle affected with this disease I have been able the isolate the micro-organism—from the liver, bile, abdominal lymph glands, and in some cases from the various organs of the body.

4th That the micro-organism isolated is a polymorphous micro-organism, appearing as a small diplococcus when grown in broth, tending to assume a distinctly bacillary form when grown for a few hours on other media, or in broth for a longer period.

5th. That this micro-organism is pathogenic for the animals of the laboratory, and that in them it is to be recognised within the hepatic cells as in other regions.

[1] August 20th.—Fuller studies have shown me that these statements need amending. While the bacilli at first caused no fermentation of glucose and lactose broths, later growths gave definite gas production, though not so extensive as the atypical colon bacillus. The broth growths also remain atypical, but undoubtedly the bacilli when growing freely have, like the colon bacillus, lateral flagella. The germ belongs to the colon group. Fuller details of its characters will be given in a later communication.

6th. That from a case of distinct atrophic cirrhosis in the human being, I have been able to isolate from various organs of the body a similar micro-organism, which grown in broth has a diplococcus form, grown upon agar, is present as a short or longer bacillus according to the age of growth.

This is not the occasion for me to discuss at length the bearing of these observations upon the nature of progressive cirrhosis in man. It is only necessary for me to say that if they are confirmed, as personally I feel they must be confirmed by everyone who proceeds with sufficient caution to follow the methods employed by me, then cirrhosis of the liver assumes an entirely new aspect. We gain a satisfactory explanation at once of such phenomena as the enlargement of the spleen, which, as has already been noted by more than one observer, may be made out before there is any sign of portal obstruction; we see why so frequently there should be right-sided pleurisy, and may even find that the question as to whether a case is complicated with ascites or jaundice, depends upon this micro-organism; depends upon whether it sets up a low inflammation of the peritoneum, or whether it more especially affects the liver cells and bile ducts; while disturbances which may occur not immediately in connection with the liver, in the pancreas and in the kidney, would seem to gain a possible explanation from the fact brought out by me, that this micro-organism, common in the liver cells, is in an advanced case to be gained from the heart blood and from the kidney.

That the micro-organism only causes cirrhosis, I do not believe; indeed, we may find that it is the cause of more than one disturbance in the liver, and indeed in other organs. This I base upon the fact that in the case in which I have isolated this allied form from man, the micro-organism shows itself capable of existing in several regions of the body; in fact of setting up what bacteriologically we regard as a septicæmic condition.

The illustrations referred to together with a further note on the subject, will appear in the next number of the JOURNAL,

UPON THE SO-CALLED STRUMA SUPRARENALIS SARCOMATODES ABERRANS.

BY

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I have to thank Dr. James Bell for access to his records for the following clinical history:—

The patient a man aged 48 years, has had four distinct attacks of hæmaturia, the first in 1893, the others in the Autumn of 1897, in February 1898 and in April 1898, all lasting a few days and gradually passing off. There is a distinct history of a renal calculus in 1893 and a probable one in 1897. The tumour was first noticed in February 1898, and was very marked after the attack of hæmaturia in April last.

A preliminary operation was performed in the beginning of May, 1898, when there were removed 228 grams of a pultaceous debris mostly of a greyish colour showing here and there areas of blood clot. The gross appearance suggested little, but on microscopic examination it was diagnosed struma suprarenalis sarcomatodes aberrans. In consequence, the whole tumour mass and kidney were later removed by Dr. James Bell.

The tumour was seen occupying the place of the lower half of the left kidney and was 15 cm. vertically by 9 cm. transversely and 8 cm. deep (*i. e.*, about 6 x 3½ x 3 inches). Tumour and kidney weighed 535 grams, (with contents removed at the first operation 220 grams, making a total of 755 grams). In consistence the tumour was soft with a few gelatinous almost liquid areas, it was of a mostly greyish-yellow hue with spots of a bright canary-yellow colour and other dark hæmorrhagic areas. There was a well marked capsule sharply defining the tumour from the kidney proper, the capsule was of a firmer and more fibrous structure than its contents and in it were occasional small hæmorrhagic areas.

Microscopic Examination:—The capsule was fibrous and very vascular in parts, in parts distinctly cellular and less compressed giving the idea that it had increased and was increasing in thickness at the expense of the kidney tissue. In the meshes of the fibrous tissue were to be seen granular unstained areas consisting of fat,

necrosed cells and old hæmorrhages. There were no evidences of infiltration of the capsule with tumour cells. From the capsule large trabeculæ were given off dividing the tumour into loculi some of which were the seats of hæmorrhage, old and recent, which completely masked the cellular elements; others again were filled with non-staining degenerated necrotic cells plus fat globules; others again showed the following structure:—From the surrounding strands of loose and vascular fibrous tissue a delicate vascular stroma was given off between which were to be seen ranks of large polymorphous cells varying from cubical and low columnar to distinctly columnar cells; the cell contents were granular, the nuclei were large and contained many nucleoli. A sharp demarcation between the stroma and the cells was to be made out in typical parts and between rows of these cells there was generally an apparent lumen either empty or containing large fat globules. The cells towards the centre of these loculi were more irregularly arranged in consequence of the branching and anastomosing of the delicate stroma. Though individual areas of these loculi might resemble particular zones of the adrenal cortex there was no further definite similarity of arrangement, still, there was a marked dissimilarity between these cells and those of the renal epithelium.

Sections were stained for fat by Sudan III, (for the knowledge of which reagent I am indebted to Dr. A. G. Nicholls.) Fat was found to be universal in its distribution in the capsule, in the hæmorrhages, in the degenerated areas, as well as in the cellular loculi where it was seen as smaller globules in the cells and larger droplets in the apparent lumina. The fatty change was clearly of the character of a degeneration and not an infiltration. Attempts were also made to find glycogen by Langhans' method but without success, although some of the material was placed in reagents for this purpose immediately after the operation.

From a single specimen it is hopeless to arrive at a definite conclusion as to the nature of these adenomata which are in such intimate connection with the kidney. The first and most natural view is that of Sudeck[1] and Sabourin,[2] that they are truly renal adenomata caused by abnormal growth of the epithelium of the renal tubules. In favour of this view is the fact that in those regions where the specimen here described showed the most perfect growth and the least evidences of degeneration, the characteristic feature was

[1] Sudeck, Virchow's Archiv., Vol. 133, p. 405.

[2] Sabourin, Revue de Médecin, 1884, pp. 44 and 876; and 1885, p. 889; Arch. de Physiol., 1882.

the tendency towards the formation of definite tubules with obvious lumina, the surrounding cells being of a columnar type. Again, the position of the tumour occupying the whole lower half of the kidney region and not appearing as a parasitic outgrowth from the surface, favours this view. The other and more generally accepted theory, is that of Grawitz,[1] to the effect that these adenomata are overgrowths of aberrant portions of suprarenal tissue which have become imbedded in the kidney during the process of development. The main arguments in favour of this theory advanced by Grawitz, Horn[2], and Lubarsch[3] are:

1, The lack of a membrana propria in the apparent gland spaces, in tumours of this type.

2. The structure of the metastases.

3. The form and the colour characteristics of the nucleoli. In the kidney and the liver it is impossible to give the nucleus and the nucleoli different colours, this is easy in the suprarenals and these tumours.

4. The structure of the cell protoplasm. The cell whose structure is the same as that of the suprarenal cells must be derived from the suprarenal and not from the kidney.

5. The resemblance of these tumours to suprarenals, *e. g.* fat in the cells. They state that true kidney adenomata lack this.

6. The presence of giant cells which sometimes are seen in the normal suprarenal.

7. The presence of a capsule. There is always one in suprarenal rests.

8. Glycogen, always present. It is to be found in and between the cells in the form of granules of different shapes and sizes. Lubarsch lays the greatest stress for diagnostic purposes on the presence of glycogen.

My specimen did not present all these characters. The nuclei indeed, were more active than those of the kidney epithelium, but, the comparison should be made not with adult, but with embryonic kidney cells, and again, I was unable to detect glycogen which, according to Lubarsch, is always present. It may be urged that it is not always easy to detect glycogen, and that my failure to demonstrate it may have been due to lack of success rather than lack of glycogen, nevertheless, I proceeded with the greatest care, faithfully

[1] Grawitz, Virch. Arch., Vol. 93, p. 39.
[2] Horn, Virch. Arch., Vol. 126, p. 191.
[3] Lubarsch, Virch. Arch., Vol. 135, p. 149.

following the directions for its detection, so that my personal opinion must be that glycogen was here absent.

In respect to this one specimen, accepting the description of others as regards the nature of renal and suprarenal adenomata, I cannot come to any absolute conclusion as to its origin. Here perhaps, I am in accord with the great mass of workers on this subject, for I cannot but conclude from reading over the literature that most of those publishing cases of so-called aberrant suprarenal tumours of the kidney, write not in a spirit of absolute conviction but in a somewhat nervous and hesitating manner. For myself, I must confess, that brilliant and able as are the papers of Grawitz and Lubarsch, I cannot feel sure that their arguments are absolutely convincing.

Taking more especially into consideration my own case, we must not neglect the very interesting clinical history. Here as in most of Lubarsch's cases, there is the characteristic history of hæmaturia, but here we have an explanation of the origin of this disturbance, namely, in 1893, when there was undoubted irritation of the pelvis of the kidney and undoubted presence of stone. The only doubt is as to whether one or more of the later attacks was due to the same cause Now, for the development of stone it is necessary that there be some inflammatory condition. Here then, the earliest recorded state was one of irritation and it is interesting to note that the tumour affected the lower half of the kidney.

More and more now-a-days, we are learning to associate sarcomatous and carcinomatous new growths with antecedent injury and more and more we are of the opinion that Cohnheim's theory of embryonic rests or remains is not indispensable. Or, to put it in other words, we are prepared to state that tumours can and often do arise from what may be termed 'functional cells' of an organ. *e. g.*, in epithelioma of the tongue we do not pre-suppose the existence of a collection of epithelial cells which have throughout their existence been latent and embryonic. Thus on the whole, when an adenomatous tumour grows in the kidney and that after a definite history of previous irritation, it is more rational to hold that the tumour originates from the cells of that organ. The probability is that the majority of the tumours developing in the kidneys develop from kidney tissue and not as Grawitz and Lubarsch hold, from aberrant inclusion of another organ within the kidney. Still, I freely admit that were such aberrant remains present in an organ, they might assume malignant growth quite as freely, and may be more freely than the functional tissue of the organ.

I would, however, ask whether we are perfectly secure in assuming

that the so-called suprarenal rests, minute and encapsulated as they are, which are not infrequently to be found in the kidney, are truly suprarenal tissue? What I mean is this: Embryologically, both kidney and suprarenal cortex originate from the same germ tissue and it has not yet been proved by the supporters of the suprarenal theory, that it is possible to distinguish embryonic renal cells and tubules, or more correctly columns, from suprarenal cells and columns.

There is another matter which the supporters of the suprarenal theory have not adequately rendered clear, I refer to the presence in these adenomata of what Lubarsch terms 'apparent or pseudo-lumina.' The law with regards to all forms of new growth, whether they be benign or malignant, is that the structure is of a lower type than that of the adult tissue from which they are derived; *it is never of a higher type*. Thus, it is eminently improbable that a tumour originating from the cells forming the columns of the suprarenal cortex which throughout their life history have never been regularly arranged around the lumen, should upon undertaking tumour growth, assume or tend to assume such an arrangement. Now the cells in my specimen do tend to assume this arrangement, and Lubarsch, although he speaks of the central canal as an apparent lumen, has to admit that we have this somewhat higher cell arrangement (I say higher, because I do not see how any one can call it lower), and he figures appearances somewhat resembling those which I found in my specimen. On the other hand, if tumours of this nature arise from renal tubules, the appearances are most natural and easily conceivable. They are identical with what we know to occur in connection with other tumours arising from tubular organs, namely, we find a tendency for irregular cell masses to replace well ordered tubules, while here and there, especially in malignant tumours of the mammary gland, we find "pseudo-lumina" that is to say, we find an imperfect attempt to reproduce the lumina of the parent tissue. We do not expect in an adenomatous tumour tending towards malignancy to obtain the perfect and typical lumina of the parent tissue. On again looking over Sudeck's article, I find this idea of lumina, and the evident deviation of these tumours from the kidney parenchyma, strongly supported by that authority in his discussion upon a rather more advanced form of kidney tumour; that, namely, in which there is a definite cystic development. He points out that these cysts are lined by a regular layer of epitheloid cells, and emphasies the fact that such cysts are comprehensible if these tumours originate from renal tubules, but are incompatible with any theory of development from suprarenal columns.

Upon all these grounds, though I cannot but be impressed by the strength of Lubarsch's arguments, I have to confess myself still dubious as to the nature of these tumours. It is still possible that they may be of suprarenal origin, but I cannot hold that it is yet absolutely proven that they are not direct derivatives of the renal epithelium.

NOTE.—A good example of primary adenoma of the suprarenal has been brought to my notice by Dr. Adami. It was a mass the size of a large pea included in the suprarenal proper and showing a tendency towards aberrant growth. In this there were parts which seen under the low power gave the impression of tubular masses, but with a high power what was recognisable was definite columns of cells, which cells were smaller at the periphery where the nuclei formed a ring close to the edge of the column. In the centre of the column were larger polymorphous cells undergoing fatty degeneration. While these cells were degenerated and loose, there was no space between them such as I recognised in the tumour under discussion.

REPORT ON THE CASES OF TYPHOID FEVER ADMITTED TO THE ROYAL VICTORIA HOSPITAL DURING THE YEAR 1897.

BY

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During the year 1897 there were admitted to the Hospital seventy-four cases of typhoid fever, forty-six males and twenty-eight females. There were five remaining from the previous year. Of these seventy-nine cases, seventy-five were treated to a conclusion in 1897; the four remaining cases were in the Hospital at the close of 1897, and are not included in the following notes.

There were seven deaths, or a mortality of 9.3 per cent. Two of the above seven cases died in the surgical department, (to which they were transferred), having been operated on for complications occurring in the course of the disease. (See appended reports of fatal cases, Nos. IV, and V.)

On an average, patients were admitted on the eleventh day of the disease.

The following data are of interest:

Season—

The largest number of cases developed in September, while the smallest number occurred in May.

54 per cent. of the cases developed in July, August and September.

18 per cent. in October, November and December.

15 per cent. in January, February and March.

13 per cent. in April, May and June.

Duration of Cases—

Average days in hospital, 42.8.

" " of fever, 29.

Longest period of fever, 71 days.

Shortest " " 11 "

Severity—

Very severe	12
Severe	8
Moderate	30
Mild	22
Very mild	3

Symptoms—

ONSET AND COURSE:—In 85 per cent. of cases the onset was gradual, the most frequent symptoms being: Lassitude, frontal headache, weakness, anorexia, chilly sensations, and insomnia. In many cases pain in the back of the neck was present as an early and distressing symptom.

Of the above, no symptom was so common as frontal headache.

In 15 per cent. the onset was fairly acute.

In one case the onset was very acute, with a distinct rigor, vomiting and headache.

In another case, with a less acute onset, there were repeated rigors at the beginning.

In 9 per cent. a rigor, or rigors, occurred early in the disease, but not as an initial symptom.

In two cases free perspiration was present during the first few days.

In 13 per cent. occasional vomiting occurred early.

Diarrhœa was present in nearly 30 per cent. of cases, more commonly found in the early stage.

Constipation was present in 40 per cent. In a few cases diarrhœa and constipation alternated. In the remaining cases the bowels were regular at the onset.

Epistaxis at the onset or early in the disease, occurred in 12 per cent. In one case, on the seventh day, there was epistaxis to the extent of thirty ounces, and in order to control the hæmorrhage, the nares had to be plugged.

Delirium of varying degrees at some time during the course of the trouble was present in 16 per cent.

ERUPTION:—An eruption of "rose spots," occurred in 80 per cent. of cases, and diffuse erythema in one or two cases. In one case, numerous cutaneous and subcutaneous abscesses developed after the fortieth day. (Staphylococci found in cultures.) In the remaining cases there was no eruption of any kind.

The earliest appearance of "rose spots," was on the third day.

The latest appearance of "rose spots," was on the twenty-eighth day.

The shortest duration of eruption was seven days.

The longest duration of eruption was forty-one days.

In 16 per cent. of cases the eruption was present on the trunk and and extremities, while in a few of these cases it was also present on the face.

PALPATION OF THE SPLEEN:—The spleen was palpable in 75 per cent. of cases.

In one case it was palpated as early as the third day, while in another

it was not palpated until the forty-second day. In the great majority of cases the spleen became palpable on the sixth to the eight day of the disease. In two cases it remained palpable as late as the forty-second and forty-fifth day respectively.

RELAPSE:—A typical relapse occurred in 5 per cent.

The longest duration was twenty days.

The shortest duration was seven days.

These all ran a mild course, and in the majority of them there was no complaint of discomfort.

RECRUDESCENCE:—Occurred in five cases, and was of short duration.

COMPLICATIONS.

INTESTINAL:—*Perforation* of the bowel occurred in two cases, at the thirtieth and thirty-fifth day respectively. (See appended notes III, and IV.)

Hæmorrhage (intestinal) in two cases. One of these occurred on the forty-sixth day, and was slight. In the other case there were repeated hæmorrhages on and after the sixteenth day. Death occurred ten days later. (See case I.)

CIRCULATORY:—Marked cardiac dilatation was present in two cases.

Myocarditis was marked in one case.

Marked cyanosis appeared in five cases.

Left-femoral phlebitis presented in three cases.

RESPIRATORY:—Pleurisy occurred in five cases (or 6.6 per cent.) In four of these cases there was effusion. In all cases the pleurisy occurred late; in two during convalescence, and with no elevation of temperature.

Bronchitis was present in 10 per cent., either early as a symptom or later.

RENAL:—Nephritis occurred in eight cases (11 per cent.) In two cases it occurred early in the trouble. (Acute parenchymatous.)

In the remaining cases it occurred late in the disease, and was mild.

All cases made a good recovery.

OTHER SYSTEMS:—In one case abortion occurred during the third week of the disease and in the third month of pregnancy. The course of the disease was not manifestly modified by this. On the sixth week delirium developed, and for a few days the patient was in the "typhoid state." On the fifty-ninth day she developed suppurative otitis media, and a few days later mastoiditis, and later mastitis, crural neuritis and subacute nephritis. The convalescence was slow, but complete.

Severe vomiting occurred in one case, late in the disease. (No foreign cause assigned.)

Jaundice was present in two cases.

Crural neuritis appeared in two cases, during convalescence.

Multiple superficial abscesses occurred during convalescence in one case. (Staphylococcus pyogenes aureus found.)

Periostitis of the ulna was present in one case, one month after leaving the hospital, and two months later periostitis of the tibia. (Staphylococcus was found in pure culture.)

SOURCES OF INFECTION:—None definitely determined, though in some instances bacteriological examination of the suspected foods, *e. g.*, milk, etc., was made.

In one case the patient nursed her son during his illness with typhoid. In about ten days after his death this patient was affected.

In one case the patient was taken ill during his wife's convalescence. from typhoid.

In one case the patient's mother was ill with typhoid one or two weeks before.

Two cases were admitted from a convent, where several cases had developed a short time previously.

From another institution there were four cases which developed during the same week. In these cases the mode of onset was almost identical. "Pain in the back of the neck" was a distressing symptom in each case.

The Widal test was employed in all cases admitted after May 1st, 1897. Prior to this it was employed in many cases, but no accurate records were kept.

The earliest time at which it was obtained was on the third day. In a few cases it was not obtained until third week.

In the great majority of cases it was present at the time of patient's entrance, this being on an average the eleventh day of the disease.

In hospital cases observations cannot, as a rule, be made sufficiently early to enable us to say definitely how early the reaction may be obtained. It may be said, however, that it proves of much value as a factor in diagnosis. In but one case did the test fail.

SYNOPSIS OF FATAL CASES.

CASE I.—H. C., male, æt. 34, painter. Admitted March 31st, 1897, complaining of weakness, diarrhœa, and cough. For one month prior to entrance the patient was ill, but was able to go about. Eight days before entrance diarrhœa set in. and was very severe. A few days later cough and shortness of breath and profound weakness came on, and he was compelled to go to bed.

On admission, a well developed and well nourished man; mental

state dull; sleep broken; diarrhœa, cough, and muco-purulent expectoration present; no rose spots; spleen palpable; a trace of albumen, but no casts, in the urine.

Subsequent events:—Two days after admission rose spots appeared. The disease ran a course of moderate severity until the tenth day after admission, when he became delirious, and three days later the patient was in the "typhoid state." The urine now contained more albumen and casts, and suppurative otitis media developed. the heart sounds were weak, and the pulse small, rapid, and irregular; temperature subnormal; abdomen distended (liver dullness not obliterated); diarrhœa very severe; constant hiccough and occasional vomiting; repeated small hæmorrhages from the bowel. Death on the seventeenth day after admission.

Widal test daily tried, but not positive until twelfth day after admission.

Autopsy revealed the usual typhoid lesions (no perforation.)

CASE II.—A. B., male, æt. 19, farmer. Admitted to hospital November 16th, complaining of headache, anorexia and weakness. The trouble came on gradually twenty-one days before admission. He kept at work for seven days when he took to bed. During the second week he had repeated epistaxis. On the sixteenth day active delirium and stupor developed, and in a few days coma.

On admission, a well developed young man, in the "typhoid state," markedly cyanosed. Impaired note at the bases of the lungs, and here breath sounds were weak and a few moist rales were heard. Large bed sores over sacrum. Spleen not palpable, and no rash Temp. 104°; pulse, 120; resp. 36. Reflexes absent. The urine contained albumen and many hyaline and granular casts.

Death occurred on the fourth day after admission, *i. e.*, twenty-fifth day of the disease. Temp. 104°; pulse, 160; resp. 76, shortly before death.

CASE III.—N. P., male, æt. 21, bookkeeper. Admitted December 7th, 1897, on the twenty-seventh day of the disease, complaining of weakness, headache, diarrhœa and abdominal pain. Illness came on gradually with above symptoms, but he was able to attend to his duties until the eighteenth day, though feeling very wretched. He then went to bed. Diarrhœa not troublesome until the eighteenth day, when it became very severe, and persisted throughout. On the day prior to admission the patient had repeated epistaxis and twitching movements of the muscles of the hands and face.

On admission, a fairly well developed young man; face flushed; eyes staring; actively delirious and stupid. T. 102.2°, P. 120, R. 36.

Pulse irregular, dicrotic and weak. Tongue coated, brown and dry; breath foul. Rose spots profuse, and spleen palpable; abdomen tender. Urine normal.

Subsequent events.—The day after admission he was more delirious and more comatose, and marked cyanosis was present. Twitching movements more marked, and there was involuntary passage of fæces. Three days after admission, nephritis developed, and the abdomen was somewhat distended, but patient was conscious at times, and spoke rationally. For eight days after admission he improved a little, and could answer questions intelligently. Now he complained of pain in the right lower abdominal quadrant; the abdomen became markedly distended; umbilicus everted; general abdominal tenderness (more marked on the right side); general abdominal rigidity. Obliteration of liver dulness; knees drawn up; facies anxious; retention of urine. Delirium again became marked, and coma developed; he vomited once. Death thirty-six hours after onset of above exacerbation, *i. e.*, thirty-fifth day of disease.

Autopsy revealed intestinal perforation and peritonitis.

CASE IV.—B. K., male, æt. 22, cotton weaver. Admitted December 8th, 1897, *i. e*, twelfth day of disease, complaining of weakness, anorexia, headache, diarrhœa, fever and chilliness. Onset was gradual; he kept at work until the eight day, when he went to bed.

Personal and family history good.

On admission, a fairly well nourished young man; mental state dull; sleeps poorly; is hot and restless. There is no delirium. T. 103.3°, P. 96, R. 24. Profuse eruption of "rose spots" on abdomen, chest and arms. Spleen palpable; tenderness in lower abdominal zone. Tongue heavily coated; breath foul; appetite poor; sleep disturbed; diarrhœa present; urine negative; Widal test positive.

Subsequent events.—For eleven days after admission, *i. e.*, till the twenty-third day of the disease, the course was one of moderate severity. Now the patient complained of slight pain, situated on the right side, opposite the umbilicus, and lasting a few minutes. Two hours after the above complaint there was general abdominal distension and tenderness most noted in the right lower abdominal quadrant. Liver dullness obliterated. Facies drawn and anxious, but not markedly so. Pulse rapid and small. Mental state good. Very little complaint of spontaneous pain. Perforation diagnosed. Five hours after exacerbation he was taken to the surgical department. The abdomen was opened and found to contain fæcal matter, and there was general peritonitis.

A "pin point" perforation was found 2½ inches above the ileo-cæcal

valve. This was sutured and the peritoneal cavity flushed with saline solution.

Death thirteen hours later, on the thirtieth day of disease.

CASE V.—Miss C., æt. 35, typewriter. Admitted September, 21st, on the eighteenth day of disease, complaining of abdominal pain, diarrhœa, weakness and insomnia.

For about three weeks patient was feeling unwell, and for a few days did not attend to her duties. A few days after resuming work had again to give up, and took to bed. The attending doctor stated that the spleen was palpable and temperature 102°. Two days before entrance the stools were clayey and offensive. On the day before entrance vomiting occurred, and later severe abdominal pain in the region of the liver, and here there was great tenderness. A mass could be palpated in the region of the gall-bladder. Vomiting persisted during that day. Temp. 94.5°.

She never had such an attack previously, and was never jaundiced.

On admission, a rather tall and spare woman; facies anxious, not collapsed; no jaundice. T. 100°, P. 96, R. 24. Takes nourishment well; sleeps poorly; tongue coated; breath foul; appetite poor; continuous severe pain, and tenderness in the region of the gall-bladder. The liver can be palpated at costal margin. In right hypochondrium, and reaching three cm. below umbilicus, is felt a mass which is tender on pressure. Note over this area is not dull, but gives modified tympany.

The urine contains a trace of albumen,, but no casts nor bile. Widal test positive.

Subsequent events:—Severe pain (as above) continued. Two days after admission there was some œdema of the abdominal wall over the tumour, and the urine contained albumen, casts, and bile. The stools were clayey.

The patient was transferred to the surgical side for operation, as a diagnosis of cholelithiasis was made, which proved to be so The gall-bladder was much enlarged, and contained numerous stones, and bile containing pus. Wall of gall-bladder infiltrated and covered on its serous surface with lymph. Death occurred a few hours later.

The autopsy revealed typical typhoid lesions in the bowels. From the contents of the gall-bladder typhoid bacilli were obtained in pure culture. (See MONTREAL MEDICAL JOURNAL, vol. xxvi., No. 6, p. 572.)

CASE VI.—W. P., male, æt. 31. Admitted on the 20th of October, 1897, on the ninth day of his disease. He was very apathetic. The course of the disease was unusually severe. He had twenty-seven baths during first five days. On the 25th of October a slight amount of clotted blood was noticed in the stools which were frequent. On

the 27th of October he lost six ounces of blood. On the following day he had a hæmorrhage, amounting to twenty-six ounces, soon followed by another. It was computed that he lost within twenty-four hours eighty-three ounces of blood, but after the 28th there was no further bleeding. At no time was there much impression made on the pyrexia by the heavy blood loss.

On the 29th the abdomen was distended. The distension continued to slowly but gradually increase, day by day, up to November 4th, when he succumbed.

After death numerous ulcers were discovered in the lower ileum, cæcum and ascending colon; but in no instance had perforation occurred.

It was difficult to trace the source of the bleeding, though it apparently arose from an ulcer in the hepatic flexure of the colon.

No marked injection of the serosa opposite the ulcers was to be made out.

The case is, in our opinion, especially interesting in view of the possibility of a paretic state of the bowels being brought about by the opium which was used freely to control the hæmorrhage. It is often a difficult point to decide how far it is advisable to push opium in cases of intestinal hæmorrhage. The reaction following the action of large doses given for some days must be very considerable. In this case we endeavoured to counteract this by the administration of both atropine and strychnine, but with unsuccessful results. While opium is undoubtedly the most useful drug we possess in these cases, it is well to be cautious about its action, and it should, we think, be promptly discontinued when the hæmorrhage is apparently checked.

CASE VII.—W. S., male, æt. 25, laborer. Admitted July 8th, 1897, complaining of headache, weakness and constipation. Patient came to the out-door department for treatment about ten days before admission. He then stated that for about two months previously he was troubled with above symptoms, yet was able to go about and do a little work, though feeling very wretched.

Personal history good, save for excessive use of alcohol at times. Family history good.

On admission, a large well developed and well nourished young man; very apathetic. Temp. 103.6°, Pulse 104, Resp. 36. Skin warm and moist. Tongue dry and furred. The abdomen distended, and resistant and tender to palpation. The spleen palpable, and a few fading rose spots noted on abdomen. Bowels constipated. Widal test positive. Urine: normal.

Subsequent events:—For five days after admission he was stuporose;

then low muttering delirium set in and frequent vomiting occurred, with incontinence of urine and fæces. Temp. lower than during first week after admission. On July 20th, temperature began to rise, and just before death reached 106.6°; pulse, 160; resp. 62. Death on the thirteenth day after admission.

The autopsy revealed no typical typhoid lesions. There was some swelling of the mesenteric glands, and three Peyer's patches near the ileo-cæcal valve were slightly elevated above the general surface.

Bacteriological and microscopic examination revealed the presence of the Bacillus Typhi. These were found in the spleen and mesenteric glands in characteristic clumps. They gave the typical Widal reaction when tested with blood serum from patients suffering from typhoid fever.

(For full report of this case see paper by Drs. Nicholls and Keenan in the MONTREAL MEDICAL JOURNAL, vol. xxvii., No. 1, January, 1898.)

CAUSES OF DEATH.

The causes of death in the above cases were:—In case 1, hæmorrhage; case 2, toxæmia; cases 3 and 4, perforation; case 5, suppurative inflammation of the gall bladder; case 6, abdominal distension (?); case 7, toxæmia.

Case Reports.

ON A CASE OF SACCULATED ANEURYSM OF THE PARIETO-TEMPORAL BRANCH OF THE MIDDLE CEREBRAL ARTERY.

BY

J. G. ADAMI, M.A., M.D., F.R.S.E.

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The specimen presented this evening is one from a very well characterised case of general arterio-sclerosis, for the notes of which I am indebted to Dr. Robins, Senior House Physician at the Royal Victoria Hospital, the patient having been admitted there under Dr. Stewart and having afterwards passed over to the surgical side under Dr. James Bell.

It is from an old woman of 70 years of age, who gave a history of excellent health until about eighteen months before her death; then, she happened to scratch a corn upon the middle toe of her left foot and as a result a sore formed, and this sore never properly healed. This was a year and a half ago. Last August, seven months before her death, the little toe became black and shrivelled and dropped off; a month later the fourth toe underwent the same change and the process of dry gangrene continued until at Christmas time all the toes of the left foot exhibited dry gangrene. The process continued gradually until, on her admission in the middle of March, the skin over the heads of the metatarsals was also affected and there was a well-marked zone of demarcation stretching across the foot. Now also it was noticed that the palmar surface of the thumb and index finger of the left hand were bluish, the fingers were somewhat shrivelled and wrinkled and the tips were cold. The patient experienced very considerable pain in the affected left leg.

Inasmuch as the process seemed now to be passing from a condition of dry to suppurative gangrene, it was felt that no time must be lost and the patient was removed without delay to the surgical side for amputation. On March 16th, Dr. Bell was about to operate, but when everything was prepared a priest was still with the patient and so the operation was put off—a most fortunate occurrence, for, not ten minutes later, the patient suddenly became unconscious, the limbs all appeared to be paralysed and flaccid, the pupils were found equal

and moderately contracted but not reacting to light, while the cornea was anæsthetic. The breathing was shallow and somewhat stertorous; the left side of the mouth drawn up; the pulse was between 70 and 80. Movement gradually returned and in three quarters of an hour, the only limb not moved was the right leg. The patient, however, never fully regained consciousness and on the following day she died. The diagnosis was made of senile gangrene and cerebral apoplexy.

Not to enter too fully into the details of the autopsy which was performed on the day of her death, it may be said that there were all the classical signs of a generalised arterio-sclerosis, the sclerosis and atheroma more especially affecting the medium sized vessels, which were enlarged, slightly tortuous and presenting frequent calcareous plaques. In addition this arterio-sclerotic condition had led to the senile gangrene and to cataract. Accompanying it was cholelithiasis.

Turning now to the cranium: upon removing the skull cap, the right half of the brain was seen to bulge and upon opening the dura mater, a fair amount of loosely clotted blood escaped. This blood clot extended to the base of the brain round the circle of Willis and downwards through the foramen magnum. The convolutions of the right side were somewhat flattened. Upon removing the brain there was found extensive sclerosis of the arteries forming the circle of Willis with atheromatous plaques scattered here and there in their walls and upon the parieto-temporal branch of the right middle cerebral, just at the beginning of the fissure of Sylvius was a lateral mass somewhat oval and elongated, between three-eights and a half an inch long, surrounded by recent blood clot, from which, upon injecting fluid into the cut end of the internal carotid, the fluid easily oozed. This mass was formed of a distal firm fibrous portion and a proximal thin-walled space; it was a sacculated aneurysm of the very origin of the parieto-temporal branch and the aneurysm had ruptured. Upon opening the brain the left ventricle was relatively large and had colourless fluid contents, the right was smaller and also free from blood, but its floor, especially in the middle portion was bulging; the right corpus striatum was unaffected, but the optic thalmus was profoundly disorganised; its ventricular layer easily tore through, revealing a large firm blood clot extending for 5 cm., from before, backwards and outwards.

Thus then the rupture of the aneurysm had led to destruction in the brain substance as well as to external hæmorrhage. It is interesting to note that this branch of the middle cerebral is given off beyond the region of that artery from which arise the lenticulo-striate, the lenticular and lenticulo-optic branches, and thus the inter-

nal capsule and lenticular nucleus were unaffected save by pressure. Herein the case differed from the more common form of cerebral hæmorrhage.

It is well known that of the cerebral arteries the middle cerebral and its branches, are the most frequently the seat of aneurysms. Gowers points out that in the 154 cases which make up the statistics of Lebert, Durand and Bartholow, the middle cerebral was involved in 44, the basilar in 41, the internal carotid in 23, the anterior cerebral in 14, the posterior communicating in 8, the anterior communicating in 8, the vertebral in 7, the posterior cerebral in 6, the inferior cerebellar in 3; but I cannot at the present time recall to mind a case in which I have come across this one branch, the parieto-temporal, being the seat of aneurysm. Doubtless a fuller search through the literature on the subject would reveal some few cases of the condition.

SPECIMEN OF RUPTURED TUBAL GESTATION.[1]

BY

F. A. L. LOCKHART, M.D.

This specimen was removed from Mrs. C., aged 29 years, a patient of Dr. Alex. MacDonald, of Vanleek Hill, to whom I am indebted for the case, and who had diagnosed the condition before sending for me.

The patient's last normal period was on March 14th, she always having been quite regular in every way. She was again unwell for two hours about the middle of May, and for the last ten days has suffered from a discharge like dirty water.

On Wednesday (June 1st) she felt a sudden sharp pain in the hypogastric and left iliac regions. She became collapsed, and faint, and vomited. There were two other attacks of faintness within the next 24 hours and the pain gradually became less.

Dr. MacDonald first saw her on Friday, her pulse at that time being weak and thready and running at a rate of 120. Her temperature was 100° F., and she was markedly blanched although she usually had a very high colour. Her stomach had been very irritable all along. The urine was normal.

When I saw her in her home on Saturday evening, she was still very blanched, but otherwise in good condition, the pulse being 96 and of fair volume, and the temperature was 99½° F. The only treatment which she had received previously was absolute rest in bed and opium. The bowels were freely cleared out by enemata and a pint of saline administered per rectum.

Local examination revealed a laceration of the perineum with prolapse of both vaginal walls. Cervix was soft and the seat of a slight bi-lateral laceration, the uterus was lying to the front and slightly enlarged. Behind and to the left side of the uterus was a firm rounded mass, which was fixed in the pelvis. It was the size of a small orange, and was, without any doubt, a mass formed by the rupture of a tubal gestation of the left side. As there was no evidence of active hæmorrhage going on and the light was very poor, it was decided to postpone operation until the next day.

On Sunday, June 5th, Dr. A. A. Gibeault giving ether, and Drs. A. MacDonald and Mackinnon assisting, the abdomen was opened, a large quantity of very dark fluid blood gushing out. In order to prevent

[1] Read before the Montreal Medico-Chirurgical Society, June 6th, 1898.

any fresh hæmorrhage from occurring, the left broad ligament was clamped close to the uterus, after which the blood and clots were cleared out of the abdomen. The mass was then freed from its adhesions and lifted out of the abdomen and the pedicle ligatured and divided. The abdomen was then flushed out with saline and wiped dry, after which the wound was closed by two rows of sutures, one of continuous catgut, uniting the peritoneum, the other of interrupted silk-worm gut included the skin, sub cutaneous tissue and the fascia.

Description of Specimen.—This mass proves to be the left tube and ovary. The fimbriæ of the tube are reflected backwards over the tube, forming with the broad ligament, a species of canal through which the tube runs. A large rupture is seen on the posterior surface of the broad ligament, and, although the fœtus has not been found, the small membranous sac in which it lay can be readily seen. Primary rupture has occurred into the space between the layers of the broad ligament, which in turn has given way and allowed the contents to escape into the peritoneal cavity.

"OBITER SCRIPTA" V.

BY

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

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

DISEASES OF THE HEART AND GLYCOSURIA.

The association of glycosuria with organic cardiac disease seems to be little noted by writers of medical text-books, and certainly the condition is quite uncommon. By some it was considered possible that disturbed exchange of gases in the lungs would account for the condition, but cyanosis is too common a condition apart from glycosuria to render any such theory tenable.

Within recent time no less than four cases have occurred in our clinic while another case seen outside of hospital adds further to the number. In many cases of diabetes, minor and probably functional conditions of the heart muscle are doubtless quite common, and the lesion thus found will readily lead to the development of murmurs. In our own series of diabetic patients, such a state has been not infrequently observed, but the condition scarcely comes under the category of organic disease of the heart.

In other cases again of heart disease, there is a very transient glycosuria just as occurs in nervous diseases, malignant conditions and a variety of affections. Even this, however, in cardiac disease is rare, while the persistent presence of sugar in the urine is still more uncommon.

Some of these cases will be of sufficient interest to bear notice.

CASE I.

Myocarditis with hypertrophy of the heart and loss of compensation—Persistent glycosuria—Some obesity.

The patient thus afflicted was a fairly stout woman whose complaints were attributable to the lost compensation, viz.: Dyspnœa, amounting to orthopnœa, marked œdema of the legs, palpitation, etc. There was marked cyanosis. The pulse was 120, very irregular in volume and rhythm. The præcordial dulness was markedly increased in a transverse direction and no murmurs could be distinguished.

According to Dr. Stockwell's notes, the urine had a specific gravity

of 1030. There was a slight trace of albumen, and 4½ per cent. of sugar, as tested by the polariscope.

Although the patient has been under observation for more than two months, there has never been an absence of sugar from the urine, though the percentage has gradually diminished. Never during her illness has she suffered from the other usual symptoms of diabetes mellitus, neither thirst, emaciation, boulimia or polyuria. While naturally the cardiac condition could readily explain the absence of polyuria, yet there is no history of such a symptom having ever been present and none of the complications incident to a diabetic condition have at any time so far manifested themselves.

CASE II.

Mitral endocarditis with enlargement of the heart—Syncopal attacks—Glycosuria.

In this instance the patient was a sparely built married woman, aged 28 years, who was taken to the medical clinic on account of fainting fits from which she had suffered at rare irregular intervals previously. The personal history indicated moderation in all things and the family history was good.

On admission, after recovering from the syncopal attack the patient was found to be strong and feeling well. The heart, however, was distinctly enlarged in its transverse diameter, the sounds were irregular and accompanied by a soft systolic apical murmur transmitted well into the axilla. There were no signs of lost compensation. The urine showed the presence of abundant sugar, though the specific gravity was 1020, and the chemical examination revealed no other abnormality. Apart from slightly increased excretion of urine there were absolutely no other evidences of true diabetes. The patient was under observation for a few days only and the persistence of the glycosuria could not be ascertained.

CASE III.

Enlarged heart—Loss of compensation—Persistent slight glycosuria.

W. F., a farmer, æt. 35 years, entered the Royal Victoria Hospital complaining of numbness and swelling of the legs, dyspnœa, palpitation and dimness of vision. The illness was of three years duration, beginning with a sensation of tightness in the epigastrium, but no vomiting was ever present. Early among the symptoms moreover was a brick red deposit in the urine, later on came headache, numbness in the legs and blurred vision with palpitation. There was at one time increased thirst, but this symptom had of late disappeared,

while no other evidences of diabetes were present apart from examination of the urine. This had been examined daily for more than three weeks and showed on an average ½ per cent. of sugar. There was an occasional trace of albumen. The heart dulness extended beyond the nipple line for about half an inch and the beats were at times irregular. No murmurs were heard, however, at any time.

CASE IV.

General arterio-sclerosis—Aortic regurgitation—Slight glycosuria.

The victim of this malady was a male of nearly 50 years, whose complaints pointed strongly to a condition of true diabetes, viz.: loss of flesh, weakness and thirst. Six months previously his illness first manifested itself with progressive loss of flesh and weakness. Otherwise, however, he had no complaints, and the thirst does not seem to have ever been excessive. His personal history gave no clue to the condition of the vascular system. The pulse was collapsing and the capillary beats were easily demonstrated. The arterial walls were thickened. A to-and-fro murmur at the aortic cartilage readily explained the peripheral vascular signs, and no other orifices were involved. The area of præcordial dulness was but slightly increased. The urine was repeatedly examined during his short stay in the clinic (four days) and on two occasions the sugar was found absent, and at other times it ranged from a mere trace to ½ per cent. The quantity of urine passed in 24 hours never exceeded thirty ounces.

These cases are of interest as showing the concurrence of two conditions not usually associated. Some of them would indicate that even with much glycosuria and its persistent presence, the usual signs of diabetes may be absent. When, however, one considers in how numerous and varied a series of maladies, glycosuria is an attendant symptom, it need not be wondered at that here too in cardiac disease similar conditions may from time to time arise. The occurrence, however, seems scarcely to have been noted by most writers so far as the literature at my disposal indicates.

A CASE OF CYSTINURIA.

BY

E. M. VON EBERTS, M.D.,

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R. McL., female, aged 23, a chlorotic, was admitted to the medical wards of the Montreal General Hospital, 25th April, 1898. There was no history of urinary disorder apart from occasional "scalding" during micturition extending over a period of five months previous to admission. No family history of calculus. The bladder was carefully searched for stone with negative result.

Urinalysis.—S. G. 1035: distinctly acid; recent specimen clear straw color, but on standing twenty-four hours developed a peculiar faint, greenish-yellow tinge with distinct odor of sulphydric acid. An abundant colourless, crystalline deposit, closely resembling triple phosphates, appeared at the end of six hours. Microscopical examination showed numerous six sided tablets, arranged singly or in rosettes, with highly refractive borders, giving the typical chemical tests for cystin, with solutions of ammonium and acetic acid.

Cystin crystals may be readily differentiated from six sided crystals of uric acid by the addition of ammonia which simply dissolves the cystin (which crystalizes out on evaporation) but forms with uric acid crystals of ammonium urate.

From triple phosphates, crystals of cystin are distinguished by the addition of acetic acid, the former being readily soluble, the latter remaining unchanged, or if anything, their definition made more perfect.

The crystals may be obtained in fairly pure state for preservation by repeated washing on the filter with dilute solution of acetic acid and subsequent drying.

I am indebted to Dr. Lafleur for the opportunity of publishing the above notes.

RETROSPECT
OF
CURRENT LITERATURE.

Medicine.

UNDER THE CHARGE OF JAMES STEWART.

The Relation of Migraine to Epilepsy,

B. K. RACHFORD, M.D., of Ohio. "The relation of migraine to epilepsy."—*The Am. Journal of the Med. Sciences*, April, 1898.

After quoting at some length from numerous authorities the teaching concerning the kinship of migraine and epilepsy, which is one of fact and not of theory, Dr. Rachford goes on to show the manner of their relationship. He emphasizes the necessity of a clear conception of the etiologies of the symptom-groups which characterise these two so-called diseases. Their kinship is understood only by knowing the "family tree."

According to B. Sachs, Landon Carter Gray, and James G. Wilson, nothing is absolutely known of the essential underlying pathological process in migraine.

He summarizes the meagre knowledge of the pathology of migraine in the following propositions:

1. The sensory neurons of the cerebral cortex play some *rôle* in pathology of these attacks.

2. Reflex irritation starting from the eye, the pelvis, the intestinal canal, or elsewhere, may be the exciting, but not the essential cause, of a migrainous attack.

Dr. Rachford strongly supports the view recently proposed by him that paraxanthin is an all important factor in the production of true migraine. The chief of these propositions are:

1. Paraxanthin is with difficulty found in normal urine.

2. It is readily found in urine passed during attacks of migraine.

3. It is not found in excess in such patients between the attacks.

4. Paraxanthin is not found in excess in patients suffering from other forms of severe headache.

5. Paraxanthin is excreted from the blood by the kidneys.

6. Experimentally, poisoning by this product induces certain symptoms very like those of a patient suffering from migraine.

Concerning epilepsy, the writer, accepting the difficulties of classification, claims that there is one form under the class, toxic epilepsy, which is termed paraxanthin epilepsy. Clinically this form may not be distinguished, but it is claimed that there are certain features pointing toward this type of the disease. Epilepsy occurring in middle life in those who have had migraine in early life, will likely be found to belong to this type. From the examinations of the urine of such cases, and from the experiments made on guinea-pigs with the final fluid containing the paraxanthin, Dr. Rachford is convinced that there is such a form of toxic epilepsy, and thus the relation between migraine and epilepsy is established. Migraine, therefore, is closely related to toxic epilepsy and possibly only to paraxanthin epilepsy.

Why this product induces migraine in one individual and epilepsy in another, or why it should produce migraine in early life and epilepsy later, is not known.

Liver Cirrhosis and its Varieties.

ALEXANDER JAMES, M.D. "Liver cirrhosis and its varieties."—*The Scottish Medical and Surgical Journal*, July, 1898.

The review under this heading in the June number of this JOURNAL was through mistake unfinished, Dr. James' article having appeared only in part up to that date.

In all cases of cirrhosis of the liver, no matter what the cause may be, one main change is recognised, viz., overgrowth of the connective tissue and the relative disappearance of the parenchyma. He explains these changes by reference to the changes which occur in acute yellow atrophy of the liver. In the typically acute case there is disintegration and disappearance of the cells, while in the less rapid cases a relative increase of interstitial tissue is found. This is equal to saying that the toxic substance which causes the destruction of the parenchyma, at the same time induces an overgrowth of the interstitial tissue. The question arises; How is it that a toxine is capable at one and the same time of causing destruction of one kind of tissue and overgrowth of another? Dr. James answers this question on the basis of cell difference. The more elaborate and complex liver cell becomes degenerated, while the less complex connective tissue cell is stimulated.

At the end of his interesting paper the author makes a *résumé* of conclusions which he wishes to draw:—

1. "In the very rapid cases of acute yellow atrophy the toxin is so

tremendously powerful that it destroys the liver cells before reproduction and consequent increase of fibrous tissue occurs to any appreciable extent. In the less rapid cases, the toxin acts rather less intensely, so that before the disintegration of the liver cells is sufficient to kill the patient, the interstitial tissue has time to reproduce itself to some extent. In both cases new formed bile ducts are an associate."

2. "In cirrhosis of the liver, the toxin acts more mildly. Time is therefore, allowed for more marked retrograde changes to occur. The interstitial tissue has multiplied to an extreme degree, and the liver cells are functionally and structurally degenerated, new formed bile ducts are to be looked for, and bearing in mind the factors which lead respectively to the biliary and portal forms of cirrhosis, we can presume that they should be more marked in the former than in the latter."

3. "In cirrhotic cancer of the liver, the toxin acts yet more mildly. It gives time, therefore, for the retrograde changes, described above, to occur, viz., fibrosis, degeneration and disappearance of liver cell, and formation of new bile ducts. But the retrogression has gone further, for the epithelium lining those bile ducts has become still more embryonic in character. The cells, indeed, have practically become cancer cells and are nourishing and reproducing themselves as such."

Chronic Diarrhœa Associated with Achylia Gastrica.

ALLEN A. JONES, M.D. "Chronic diarrhœa associated with achylia gastrica."—*The Journal of the American Medical Association*, July 30, 1898.

Achylia gastrica is a term which was suggested in 1892 by Einhorn for these gastric conditions in which the stomach secretes no juice. Several writers have written upon this subject since, but doubtless the nomenclature has led to some confusion since "atrophy of the gastric mucosa," "disability of gastric secretion," "anadenia ventriculi," "gastric anacidity" have been applied to one and the same condition.

Dr. Jones emphasises in this paper the possible results of suspended gastric function in the production of diarrhœa, chronic in character, and conforming in most respects to that form known as lienteric diarrhœa.

This form of diarrhœa may be of daily occurrence, especially in the morning; again after each meal, or irregularly throughout the day.

Another class is that in which the diarrhœa is periodic, coming on suddenly, lasting a week or two and being succeeded by constipation or regularity of bowels only to be succeeded by similar attacks. Pain

is not the rule. The temperature may be normal or sub-normal, very rarely febrile. The stools are watery and frequent and contain undigested food. The treatment of these cases is best secured by the the use of hydrochloric acid, chloride of iron and pepsin. The acid should be administered in the dilute form in doses of from 20 to 30 drops and repeated in an hour. This agent, as Dr. Jones remarks, is a positive necessity for these cases.

A Further Plea for Intragastric Electrization.

MAX EINHORN, M.D. "A further plea for intragastric electrization." —*The Medical News*, June 18, 1898.

While among authorities upon the treatment of gastric disorders there seems to be an advance toward more perfect harmony of opinion concerning the benefit of electrization of the stomach, the physiological effect is yet a matter upon which difference of opinion exists. Einhorn is an enthusiastic advocate of intragastric electrization. Three tables are presented in this article. The first consists of 118 patients who were treated with direct faradization of the stomach. The second table contains cases which were first treated by direct faradization without satisfactory success and to whom galvanization was applied. The third table consists of 38 patients treated by intragastric galvanization alone. In addition to electrization, most of the patients were given the usual remedies. In all cases the deglutable electrode was used. No accident has occurred in the use of this therapeutic measure, although several thousand applications have been made. A great variety of cases has undergone this treatment, including dilatation of the stomach, atony of the stomach, hyperchlorrhydria, enteroptosis, gastritis of chronic type, gastric ulcer and gastralgia.

The results obtained in these and other cases have been satisfactory in a high degree.

W. F. Hamilton.

Surgery.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

Treatment of Fracture of the Patella.

STIMSON. "Treatment of fracture of the patella."—*Annals of Surgery*, August, 1898.

How to treat a fractured patella is a much debated question and one of particular interest at the present moment. Since Lister advocated open incision and wiring of the fragments the profession has been divided on the subject. If it could be done without risk of infection, most surgeons would probably treat many of their cases in that way. An experience sufficiently large, however, has accumulated to demonstrate that even with our present technique infection may and does occur in a certain number of cases. And further, when infection does occur the results are in some instances simply disastrous, resulting in a stiff joint, amputation, or even death.

Stimson asks the pertinent question: Is the result in successful cases of incision and wiring enough better than that obtained by the older methods to justify one in exposing a patient to the increased risk? A resort to a method which involves risk to life, or of such disability as is produced by ankylosis or amputation, can be justified only when that risk is very small, or when the existing conditions are such that the functional result by another method would probably be much inferior to that commonly obtained. It must be remembered that the injury in itself does not endanger life, and its treatment by methods that carry no risk to life furnishes a large measure of success when those methods are properly applied.

The objects of an open incision are to turn up the fibro-periosteal fringe and to remove strips of torn fascia, blood and exudate, and the fragments if tilted can at the same time be rectified.

A fibro-periosteal fringe is almost constant, but it is narrow and covers only a small part of the raw bony surface. That its importance has been over-estimated is shown by the good results obtained in many cases treated by methods which do not remove it. On the other hand, the long strips of fascia which are sometimes torn from the lateral regions below the joint and drawn up into the gap, appear to be a serious bar to union, and their presence is wholly unrecognis-

able except through an incision, but they appear most frequent in those cases in which the primary separation is great.

Distension of the joint by blood and exudate is the principal factor in maintaining separation of the fragments; indeed, it is the only one in a recent case which can prevent approximation by the fingers when the joint is in full extension.

Stimson thinks the agency of the quadriceps in this separation has been much over-estimated. He has repeatedly observed that when the fracture has been exposed by incision that active contraction of the muscle did not separate the fragments more than a quarter of an inch if the foot was held a few inches above the bed. Later in the case, however, the gradual retraction of the muscle and of the ligamentum patella may create an interval which cannot be closed by any permissible amount of traction.

Inability to flex appears to be due to retraction of a portion of the capsule attached to the upper fragment and of the fascia lata on the outer side, and sometimes to enlargement of the patella itself, the result of hypertrophy of the fragments, or a short, stiff band between them which makes the bone too long to turn over the curve of the condyles. This retraction of the capsule is presumably the result of cicatrisation along its loose edge and would not be lessened by the open method of treatment.

Of non-operative treatment it may be said that the effusion may be removed by the pressure of an elastic bandage maintained for a few days, or even for a fortnight if it keeps the fragments close together.

Stimson will find many to agree with him when he argues that the results obtained by properly employed non-operative methods are in the great majority of cases satisfactory.

In a surgical operating room, an operating surgeon, with fully trained assistants and a well proven technique, may be justified in certain cases in treating fracture of the patella by incision, but the circumstances of the injury must indeed be exceptional to render it advisable for a general practitioner or an occasional surgeon to adopt a method so fraught with danger.

Curvature of the Neck of the Femur, Sometimes Called "Coxa Vara."

FRAZIER. "Curvature of the neck of the femur, sometimes called 'Coxa Vara.'"—*Annals of Surgery*, July, 1898.

An unusual condition, not described in English surgical text books. Exhaustive papers by Hofmeister and Kocher appeared in 1894. They had collected reports of forty cases and Frazier has collected about forty more. It may be congenital, but generally appears in

youth or in young adults. The neck of the femur is turned down, the trochanter rises above Nelaton's line, the base of Bryant's triangle is shortened and the limb, measured from the anterior superior spine of the ilium, is found to be shortened. The disease appears insidiously, frequently without any apparent cause, exceptionally following some slight traumatism. It generally occurs in those whose occupation requires them to stand a great deal and to carry heavy weights. The first symptom noticed is fatigue, and then vague pains in the limb. The pain becomes more severe, and soon limping results from the shortening. Finally the motion of the joint is restricted, and stooping becomes difficult. It is often a year or two before the patient consults a physician. The pain is confined to the hip or may radiate to the knee.

These patients are, as a rule, well nourished and well developed, although in some cases the skeleton has not developed commensurately with the muscular tissue. Atrophy of the muscles of the thigh on the affected side is always present to a greater or less degree. There is sometimes a bluish red discolouration and chilliness of hands and feet on standing for any length of time with the hands hanging.

The attitude which the limb maintains is conspicuous and quite characteristic; of sixty-eight cases in which the position of the limb was mentioned, in forty-three the position was that of outward rotation, six outward rotation and adduction, in five outward rotation and flexion, in two inward rotation and adduction, in one adduction and in one adduction and flexion. In eight the position was normal.

The cause cannot always be determined. The number of specimens obtained thus far for examination is only 16, and our accurate knowledge of the pathology is confined to examples of rickets, osteomalacia and arthritis deformans.

The condition, once developed, is permanent. There will always be a certain amount of shortening which will, at least, make the patient, walk lame.

In most cases it is a self-limited disease; after the patient reaches adult life there will be no increase in the deformity.

The treatment includes, extension and massage, with attention to hygiene and the internal administration of phosphorus, if there are evidences of rickets. Operative interference is reserved for these cases in which the disability is pronounced, and this is especially true of the bilateral cases. Before the disease was understood resection of the head was performed. More recently Kocher, Hofmeister, and others have advised a subtrochanteric osteotomy. Kraske recommends the extracapsular division of the neck of the femur.

Geo. E. Armstrong

Pharmacology and Therapeutics.

UNDER THE CHARGE OF A. D. BLACKADER.

Action of the Thyroid Gland.

HUTCHISON ROBERT. "Pharmacological Action of the Thyroid Gland." —*British Medical Journal*, July 16th. 1898.

CUNNINGHAM, R. H. "Experimental Thyroidism."—*Journal of Experimental Medicine*, March, 1898.

The recent promotion of the thyroid to an official position in the British Pharmacopœia, renders the present a suitable time to review its literature, and to enquire what is definitely known of its pharmacological action, and what is the bearing of that knowledge upon its use as a medicinal agent.

With regard to its action on *metabolism*, Dr. Hutchison says that it can be definitely stated that its administration increases oxidation in the body. Shortly after its properties began to be studied, it was noticed that the urine of patients taking it contained a large excess of urea. Later and more careful investigations showed that not only was the elimination of nitrogen much increased during the administration of thyroid, but that the amount eliminated very often considerably exceeded the amount ingested in the corresponding period of time; a certain indication that a tissue rich in nitrogen, presumably muscle, had undergone increased destruction. The loss in body-weight, however, was found to be greater than any mere destruction of proteid tissue would account for. Further investigations revealed a great increase in the amount of oxygen inhaled and of carbon dioxide given off, and the inference was drawn that thyroid leads to a greatly increased consumption of body fat. The products of the disintegration of the nitrogenous tissues appear in the urine almost entirely in the form of urea, while the products of fat destruction are eliminated as carbonic acid by the lungs, and water by the kidneys. The increase in the excretion of water during thyroid administration is very notable. Diuresis is often one of the first effects of the drug, and a considerable proportion of the loss in body weight at the outset of a course of thyroid treatment is to be attributed simply to loss of water. Thyroid feeding appears to make the tissues drier, but on stopping its administration this loss of water is quickly replaced.

Knowing as we do from physiology that in the ordinary metabolism of the body carbohydrates and fats have a proteid-saving action, it is interesting to enquire if the administration of thyroid simply increases without altering relatively the metabolism of these tissues, or if it increases one more than the other. This question has very direct practical bearings as the thyroid has been frequently employed in the treatment of obesity. The ideal "antifat" would be a substance which increased the power of the tissues to consume fat, without at the same time causing an increased destruction of proteid. Under the administration of thyroid it is evident that both proteid tissues and fats tend to be broken down, but it is still undecided whether under thyroid stimulated metabolism fats still retain their power of protecting to some extent the proteids. Some recent writers assert that the thyroid has a specific action on the proteid tissues, and under its administration the proteid-sparing power of fat is suspended; while others consider that careful clinical observations on persons suffering from obesity show that great loss of weight can occur under its exhibition, while there is yet less nitrogen being eliminated than is ingested. Dr. Hutchison thinks it very probable that the increased elimination of nitrogen observed at the commencement of thyroid feeding is due to the destruction of circulating proteid, and that the fixed proteid tissues are only attacked when the store of fat has been considerably diminished, and considers it a practical inference, that when treating cases of obesity by thyroid, nitrogenous matter should be abundantly represented in the dietary.

In its action on metabolism, Dr. Hutchison considers the thyroid unique amongst medicinal agents. He knows of no other drug capable of increasing the oxidation processes of the body in the same way, and thinks its action may best be compared to the effect of muscular exercise, or to the effect of some of the toxins which produce fever, and which also appear to have a specific action on proteid metabolism. It has not yet been determined whether this action of the drug is exerted on the tissues directly or through the influence of the nervous system, but in favour of the latter view, is the very minute quantity of the substance which is sufficient to produce powerful effects.

Whatever its mode of action, its essential nature would seem to consist in a hastening on of the life history of the cells. Cell division occurs more rapidly, and the cell reaches maturity, and passes into old age in a shorter time than normal. The reverse of this occurs typically in myxœdema, where many of the cells never seem to reach a mature stage. Thus the subcutaneous tissue becomes filled with

cells in an embryonic stage; and when old hairs fall out, the cell division which should lead to the formation of new ones ceases to occur, and the patient becomes bald. In these cases the thyroid does good by stimulating the development, or life history, of the cells. In this way also may be explained its beneficial action in children of backward growth, and the good effect sometimes exerted in such skin diseases as psoriasis and ichthyosis, where the final death and casting off of the epidermic cells seems to be much delayed.

Reflecting that the secretion of the thyroid is constantly passing into the circulation, and thus controlling the metabolism of the body, one is tempted to speculate whether the different states of nutrition in different individuals may not be due to a varying activity in the secretion of their thyroids. In cases of simple goitre, Dr. Hutchison considers that the hypertrophy may be the result of an increased demand for the secretion in the system. The beneficial results which follow the administration of thyroid, more frequently in recently developed cases and when the subject is young, are to be explained by the artificial supply lessening the demand for the natural product. This view is to some extent confirmed by Bruns, who examined carefully the gland of a dog suffering from goitre, and found that it presented the characters of a gland which was over-secreting. After feeding with thyroid the hypertrophy passed away, and a microscopical section made then from the gland showed that it had again become normal.

The thyroid theory of exophthalmic goitre receives confirmation from the observations of Matthes, who finds that an examination of the respiratory and urinary secretions of persons suffering from this disease, reveal an increased metabolism, very similar to that which takes place under the administration of thyroid.

Experiments would also indicate that the thyroid may sometimes affect carbohydrate metabolism in such a way as to diminish the power of the tissues to utilise sugar.

In reference to the action on the *circulation*, perhaps the most constant of the effects observed following its administration is an increased rapidity of the heart's action. Indeed, the action of the drug can scarcely be said to be manifested, unless the pulse rise by ten or more beats per minute. Along with this increased rapidity other disturbances, such as irregularity, palpitation, or even syncopal attacks, have occasionally occurred during its continued administration. Curiously enough the experimental study of these effects has given entirely negative results. Strong solutions of iodothyrin and intravenous injections of colloid matter in the hands of several inves-

tigators have had no effect at all upon the strength, rhythm, or rate of the isolated frog's heart, or on the heart of rabbits, or dogs, *in situ*. A possible explanation of these negative results is that the heart is acted on secondarily by some substance produced during the exaggerated metabolism following thyroid administration.

The clinical fact, however, certainly remains, and renders caution necessary in the administration of thyroid to persons suffering from cardiac weakness. In cases of obesity, where fatty changes may have impaired the integrity of the heart muscle, this is especially necessary. This action may, however, render its exhibition of value in the treatment of cases of functional bradycardia.

Notwithstanding the experimental evidence that the active principle of the thyroid has no influence on blood pressure, the sphygmometer shows a slight fall in blood pressure in patients during its administration. The fall seems to be due more to enfeeblement of the heart than to any peripheral dilatation of blood vessels.

On the blood itself, small doses appear to produce no appreciable effect in healthy persons, but large doses cause an increased destruction of blood corpuscles just as of other cells. In myxœdema, on the other hand, the stimulus which thyroid feeding gives to all cell growth and division is manifested in the blood by a rise in the number of the corpuscles.

The *excretion* of the active principle of the thyroid appears to take place entirely by the kidney, and to be a gradual one; its action often persists for several days after its administration has been stopped. This persistence is not to be attributed to an absorption of the substance by the thyroid of the patient, for it is as noticable in cases of myxœdema where the thyroid is presumably inactive as in normal cases.

In reference to the *dosage* of thyroid, Dr. Hutchison considers that we have as yet no satisfactory method of standardizing its several preparations. One cannot do so by making a given quantity of a preparation equivalent to a given weight of fresh gland, because the amount of the active constituent present in a given weight of gland tissue may vary greatly. Nor can we take the colloid matter as the standard, for there is reason to believe that it, too, may be of varying composition. It has been suggested that the activity of thyroid preparations should be gauged by the amount of iodine they contain, but this also may prove fallacious for there is as yet no certain proof that the presence of iodine is essential to the activity of the thyroid. Practically, however, the difficulty is surmounted if the preparation be made from a sufficiently large number of glands. One finds that

the composition of the colloid matter, as met with in the market at present, is almost constant, and the thyroid powder of the new Pharmacopœia will doubtless be found to be so also, if prepared in fairly large quantities at a time.

Dr. Hutchison considers the new liquor thyroidei to be as good a fluid preparation as could have been devised, but regards the dose given in the Pharmacopœia (5-15 minims) as too small. Whatever the preparation employed, Dr. Hutchison considers it better to give it in small doses and frequently, than in large quantities at longer intervals.

It is also very necessary to feel one's way, beginning with small doses, and gradually increasing them. Idiosyncrasy plays a large part in the reaction which patients show to the drug, and the extent of the reaction in any particular case can never be foretold. Among the more important symptoms attributed to over-action and grouped by writers under the term "thyroidism" are headache, pains in the limbs, nausea, diarrhœa and palpitation. Several recent writers have ascribed most of these symptoms, not to any specific action of the thyroid, but to the presence in the preparation of toxic substances produced by putrefaction. While there unquestionably is a great liability to the presence of putrefactive toxins in preparations of the thyroid, in Dr. Hutchison's opinion the headache, pains in the limbs, and cardiac weakness, are either due to the specific action of the thyroid, or are the effect of some product of the exaggerated metabolism which it excites, and no degree of purity in the preparation is a guarantee that such symptoms will not arise. The nausea and diarrhœa, which are sometimes noticed, may in his opinion, be due to the presence of toxic products, the result of putrefactive changes in the glands. He thinks it decidedly open to question whether the method employed in the Pharmacopœia for the preparation of the powder ensures its freedom from these tox-albumins.

A. D. Blackader.

Obstetrics and Diseases of Infants.

UNDER THE CHARGE OF J. C. CAMERON.

The Birth of the Secundines.

ERVIN A. TUCKER, M.D., New York. "Birth of the Secundines."—*Am. Gyn. and Obstet. Journal*, May and June, 1898.

Diversity of opinion in regard to the ways in which the secundines are born, has led to great confusion in the statements made in the text-books on this point, hence Dr. Tucker's careful and elaborate study of 2,700 cases is most opportune.

These observations were made with the object of observing the relative frequency of methods of birth of the secundines, and the relation of these methods of birth to hæmorrhage.

It was sought to determine (1) in what way placentæ are most often born, when expressed by Credé method: *i.e.*, the relative frequency of the methods of artificial birth of the placenta; (2) in what way placentæ are most often born when expressed spontaneously; *i.e.*, the relative frequency of the methods of natural birth of placentæ.

Placentæ are born in five different ways, whether by artificial or natural methods.

In 33.9 per cent. the placenta was born "*edge first with the fœtal surface out, i.e.*, the edge of the placenta presented at the vulva generally in its antero-posterior diameter, and at the same time the convex fœtal surface came into view, the maternal surface being folded in and hidden from sight." The membranes are inverted (amnion outside, chorion inside) and the cord is not in the bag of membranes.

In 26.9 per cent. the convex fœtal surface of the placenta presented at the vulva first, the maternal surface being folded behind, and the membranes inverted. In this form the center of the placenta, instead of the edge, appeared first, its long diameter being transverse at the vulva.

In 22.2 per cent. the edge was born first with the maternal surface out, the fœtal surface being folded in and hidden. Usually the membranes covered the fœtal side and formed a bag, but occasionally the ammion separated and remained behind, while the chorion became inverted and covered the maternal surface.

In 8.0 per cent. the convex maternal surface, at or near its centre,

presented at the vulva, the fœtal surface being folded behind and coveredby membranes forming a bag, the chorion being outside,—the membranes not being inverted. In this case the placenta must turn, either in the uterus, or upper vaginal passage.

In 5.0 per cent. the edge of the placenta appeared at the vulva first both the fœtal and maternal surfaces being equally exposed.

The relative frequency of the various methods of expulsion of the placenta in Credé's and in spontaneous expression is shewn in the following table :

Credé.	Spontaneously.	
38.2 per cent.	32.9 per cent.	Edge first, fœtal surface out.
27.9 "	17.4 "	Fœtal surface first and out.
21.4 "	31.6 "	Edge first, maternal surface out.
7.6 "	14.1 "	Maternal surface first and out.
5.1 "	4.0 "	Edge first.

Thus the author concludes that the Credé method of expression favours the birth of the placenta by the fœtal surface out ; while spontaneous expression favours birth with the maternal surface out.

A very able study of the relation the various methods of birth of the secundines bear to the quantity of blood lost, is made in the second part of the paper.

The conclusions reached by the author are all interesting, but only the most important can be referred to here.

Dr. Tucker found that the "average natural blood loss is 7.4 oz., when the placenta is expressed by the Credé method, within 20 minutes after the birth of the child, while it is 5.7 oz. when the placenta is expressed spontaneously within the same interval."

" Birth of the placenta with the maternal surface out increases the frequency and quantity of excessive blood loss in the third stage."

" Post-partum hæmorrhages are more frequent in spontaneous than in Credé cases."

The Action of the Vaginal Plug in Accidental Hæmorrhage.

L. HASTINGS TWEEDY, F.R.C.P.S. "The Action of the Vaginal Plug in Accidental Hæmorrhage."

The value of the vaginal plug in the treatment of hæmorrhage has many opponents, but there is much to be said in its favour and Dr. Tweedy has advanced arguments which cannot be easily controverted.

The treatment is "routine" in the Rotunda Hospital since Dr. Smyly's mastership, and the value of the method has been thoroughly proved.

But vaginal plugging, as Dr. Tweedy points out, must be done carefully and methodically, in order to be successful. The use of cotton wool pledgets soaked in an antiseptic fluid, squeezed dry, and inserted without a speculum, having the patient in the left dorsal position, is the Rotunda method. In order to place the first pledgets carefully around the cervix and well in the fornices, the employment of a Sims' speculum would be an advantage. After plugging, a diaper is necessary, and a tightly fitting abdominal binder is advisable.

Dr. Tweedy asserts that such a plug, by pressure, causes the uterine arteries to be acutely bent, and thus controls the uterine circulation. The accumulation of carbonic acid gas in the uterus thus brought about, is an important factor in exciting uterine contractions. Thus by controlling the hæmorrhage and exciting uterine action favouring rapid dilatation of the cervix, the vaginal tampon properly employed is of undoubted value.

D. J. Evans.

Pediatrics.

UNDER THE CHARGE OF A. D. BLACKADER.

The Management of Hernia in Infancy and Childhood.

WILLIAM B. COLEY, M.D. "The management of hernia in infancy and childhood."—*Archives of Pediatrics*, April, 1898.

While disclaiming any intention of giving a paper covering the whole of the subject of hernia in children, Coley points out the scant attention paid to it by most surgical writers and the need of establishing some rules for the management of cases. The diagnosis in the majority of cases ought to give no difficulty. Occasionally, however, cases of hydrocele of the cord are mistaken for strangulated hernia. With a history of a "small globular or slightly oblong swelling, smooth and symmetrical in outline, tense and cystic" which has lasted for some time, and has never been reducible, hydrocele is conclusively indicated.

Treatment should be commenced as soon as the rupture is discovered, the common belief, that letting it alone until the child is a year old will do no harm, is unwarranted and dangerous, from the possible danger of strangulation taking place.

Mechanical treatment is to be considered first, notwithstanding the recent brilliant advances in the operative methods. A well tempered steel spring made as light as is consistent with the required support is preferred by Coley to the skein of yarn. The metal portion is covered with rubber tubing and the pad made of wood covered with chamois leather. It should be applied loosely so that the pad rests above the pubic bone and over the internal ring. The length of time during which it should be worn is a difficult question to settle. The practice at the Hospital for Ruptured and Crippled in New York is to examine the child at least once a month for the first few months, and not to leave off the truss until two full years have elapsed since the hernia was last down. If this does not result in a permanent cure, mechanical treatment gives place to operative.

By an analysis of 26,385 cases of hernia treated in the above mentioned hospital, Coley concludes that from 25 to 30 per cent. are not cured by trusses.

The main indication for operative interference, as already stated, is failure of the truss to benefit after from one to two years trial. Besides

this, operation should be undertaken in femoral herniæ, those irreducible or with adherent omentum, and cases in dispensary practice where want of care on the part of parents makes mechanical treatment futile. Bassini's is the method selected as giving less relapses; the great danger is from the anæsthetic. The mortality is very low, less than one-fourth of one per cent. in upwards of 900 collected cases, including 300 by Coley himself, with one death from pneumonia. Seven cases of operation for strangulated hernia are reported. One only of these—the first—died. From a study of these cases he draws the following conclusions:

1. Strangulation in infants is more frequent than is generally appreciated.

2. It not unfrequently arises from the bad advise of the family physician to postpone wearing a truss until the child is a year old.

The American Pediatric Society's Collective Investigation on Infantile Scurvy in North America.

This is the report of a committee appointed at the 1897 meeting of the Society to undertake the work of bringing together and tabulating all the cases obtainable, in order that more light might be thrown upon the disease, especially its etiology.

In all 378 cases seen by 138 observers were collected, and some of the points concerning which information was adduced are as follows:

Sex.—Males and females were about equally divided.

Age.—Cases were reported from three weeks up to nine years, but over 75 per cent. were between seven and fourteen months, inclusive.

Social position.—The occurrence of 83 per cent. in private practice as against 17 per cent. in hospital practice, shows the much greater tendency to the disease among the well-to-do, a fact which has been pointed out before. The hygienic conditions, too, were described as good in the vast majority of cases.

Previous health.—Of preceding diseases none could be looked upon as an etiological factor, indigestion was frequently present, but was rightly considered, rather as a result of the causes producing the disease, than a cause in itself.

Family history.—This seemed to have no bearing on the disease.

Diet.—In 275 cases, diet in the opinion of the observers was considered directly responsible for the production of the disease. The kind of food used at or shortly before scurvy developed varied greatly. In 12 cases breast milk formed the whole or greater part of the dietary. Milk, raw or prepared, was the food in 162 cases and of these sterilized milk accounted for 115, and pasteurized for 21. Only 24

cases had been fed upon non-proprietary amylaceous food, but 214 cases or 60 per cent. had been taking proprietary foods. Of these Mellin's Food was used in 83 cases, Malted Milk in 48, Condensed Milk in 38, Reed & Carnrick's Soluble Food in 13, and Imperial Granum in 6. Besides these ten other proprietary foods had been used in one or two instances each.

Symptoms.—Of the most prominent symptoms, pain on motion and handling was most constant, being present in over 80 per cent. and in one third of these pain was also present when at rest. This symptom gives rise to another, paralysis or pseudo-paralysis or rigidity of the limbs from the pain caused by motion. The unnatural position of the limbs, weakness of the back, and depression of the sternum, emphazised by Barlow as characteristic when present, were noticed in a considerable proportion of cases. Swellings either in the long bones or about the joints formed a prominent feature and in 49 cases proptosis was noted.

With regards to the *condition of the gums* the evidence collected bears out the generally accepted opinion that sponginess or swelling is almost a constant symptom. Thus, in only 16 cases was it distinctly stated that the gums were not affected. Of 45 cases in which there were no teeth, in 21 or nearly one-half the gums were normal. The committee make the rather misleading statement "that affection of the gums may occur equally well when there are no teeth as when teeth have developed." For, if, as the figures show, the gums were affected in 86 per cent. of those with teeth and in only 53 per cent. of those without teeth, the presence of teeth must be taken as the factor determining the increased liability to this symptom in the former class.

Hæmorrhages, cutaneous and from mucous membranes, fractures, fever, bowel movements, urine, and anæmia, were all considered separately without anything new of importance being elicited.

The association of rickets with scurvy is shown to be no more than the common origin of both in a faulty diet.

Treatment.—The quick response to appropriate treatment is one of the striking features of the report. "There is certainly no disease for which a more specific treatment can be said to exist."

Marked improvement took place in 80 per cent. of the cases within one week from its institution, of the 326 cases of which records suitable for study were received, the method of treatment in three-fourths was by change of diet with or without drugs, no fruit juice being employed. An elaborate series of tables is given from which are drawn the following conclusions as to the etiology and treatment:

1. That the development of the disease follows in each case the prolonged employment of some diet unsuitable to the individual child and that often a change in diet which at first thought would seem to be unsuitable may be followed by prompt recovery.

2. That in spite of this fact regarding individual cases, the combined report of collected cases makes it probable that in these there are certain forms of diet which were particularly prone to be followed by the development of scurvy. First, in point of numbers here are to be mentioned the various proprietary foods.

3. In fine, that in general the cases reported seem to indicate that the farther a food is removed in character from the natural food of a child, the more likely its use is to be followed by the development of scurvy.

Twenty-nine of the 379 cases were fatal, and in six the results of autopsies were reported.

The report is signed by Dr. J. P. Crozer Griffith, Charles G. Jennings, and John Lovett Morse.

Dr. Augustus Caillé while agreeing with the conclusions, submitted a minority report based upon the cases he had collected in which he expresses the opinion that scurvy is a chronic ptomaine poisoning due to the absorption of toxins and following the prolonged use of improper food, abnormal intestinal fermentation being a pre-disposing factor. Sterilzing, pasteurizing, or cooking of milk food he does not consider *per se* responsible for the scurvy condition.

G. Gordon Campbell.

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 Canadian Practitioner.

June, 1898.

1. Ontario Medical Association; The President's Address. WM. BRITTON.
2. Asylum *versus* Hospital. JAMES RUSSELL.
3. Clinical Report of Cases Illustrating Successful Operations Under Adverse Conditions. A. PRIMROSE.
4. Appendicitis with Perforation. C. M. SMITH.
5. The Various Operative Methods of Dealing with Eyes Lost Through Injury or Disease. G. HERBERT BURNHAM.

2. RUSSELL gives a rapid review, historically, of the evolution of the asylum and its sister charity, the hospital, and points out the uses and abuses of each at the present time. He shows that the word hospital, in its modern application, is a misnomer, when applied to an institution for the insane, and attempts to prove that too much attention is being paid to the physical and too little to the mental treatment of insanity. The hospital idea is the outcome of this tendency. Too much is attempted by medication and surgery, and too little by mental stimuli, forgetting that the reaction of the mental on the physical is quite as potent as its converse. To the great mass of the insane hospital treatment is useless, except in individual cases or as emergency may require. The hospital, however, is an important adjunct to every asylum. The necessity for mental athletics is equal to the necessity for physical athletics, if an all round development is to be maintained. How to harmonize them both in proper proportions is the fundamental basis of all treatment of the insane.

3. PRIMROSE relates several cases which illustrate that successful results may occasionally be obtained though the patient may be suffering from some grave constitutional trouble which would make operation unjustifiable were it simply one of expedience. The first case was one in which the patient was suffering from extreme cellulitis of the leg and chronic Bright's disease, and yet an amputation through the knee-joint was successful, so that the patient eventually left the

hospital with the wound soundly healed. The second case was one in which the operation of amputation above the ankle was successfully performed for tuberculous disease of the tarsus in a patient with pulmonary tuberculosis, both lungs being affected. The third case was the record of the operation of lithotomy in a frail old man, eighty-two years of age.

4. SMITH describes the case of a young man who suffered from acute appendicitis followed by abscess. This was opened, the appendix removed and drainage introduced, and a good recovery followed The case illustrated the difficulties that beset the general practitioner and surgeon in country places.

5. BURNHAM describes the various methods of dealing with eyes lost through injury or disease. The principal reasons why an eye so lost has to be dealt with in an operative way are the danger of sympathetic ophthalmia of the other eye, sometimes on account of the severe pain in the lost eye, or for cosmetic purposes. The operative methods described are, enucleation, evisceration, Mules' operation, and optico-cilio neurotomy.

The Canadian Journal of Medicine and Surgery.

June, 1898.

1. Pulmonary and Other Internal Hæmorrhage. ALEXANDER MCPHEDRAN.
2. Hip Disease—A Clinical Lecture. B. E. MCKENZIE.
3. Instructive Statistics. J. J. CASSIDY.
4. The Obstetric Binder. W. J. WILSON.
5. The Bearing of Pathological Processes on the Therapy of Morbid Processes along the Genito-Urinary Tract in the Male. THOMAS H. MANLEY.

1. MCPHEDRAN draws attention to the fallacies of much that is popular in the treatment of this alarming condition. The natural history of the hæmorrhage appears to be usually overlooked; hence its arrest following the use of the means adopted is attributed to those means. Of all the remedies, ergot is the most widely used, probably on account of its well known action in arresting uterine hæmorrhage. Ergot stimulates the vaso-motor centre in the medulla, thus increasing general blood pressure, hence it is clearly injudicious to give it in cerebral or pulmonary hæmorrhage. In intestinal hæmorrhage it is injurious on account of its action on unstriped muscle fibre, which causes increased peristalsis. The influence of a remedy in controlling internal hæmorrhage must depend (1) on its power to lower blood pressure, which is equivalent to increasing the resistance

to the escape of blood; (2) on its power of increasing the coagulability of the blood. For the accomplishment of the first object we have opium, which quiets the heart and circulation, and the nitrites, which lower the blood pressure by relaxing the peripheral vessels. Of the remedies of the second class calcium chloride and iodide of potash are the best examples. In arthritic hæmoptysis, drugs that lower arterial tension are especially indicated.

3. CASSIDY makes some instructive comparisons between the vital statistics for 1897 of Toronto and Montreal in Canada, and Philadelphia and Chicago in the United States:

	Births per 1000.	Deaths per 1,000.	Marriage per 1,000.
Montreal	32.43	26.47	6.9
Toronto	22.25	15.68	8.19
Philadelphia	24.37	18.72	12.67
Chicago	17.39	13.46	8.43

A survey of the diseases which produce the large mortality of Montreal does not reveal many causes demanding special sanitary investigation. Typhoid fever caused deaths in ratio of 30.52 per 100,000, which should demand sanitary investigation and improvement of the water supply. The deaths of children under five years of age are 47.16 per cent. of the annual mortality, which appears to be excessive.

4. WILSON is very much in favour of a tight, well applied binder, on account of the needed support to the abdominal organs and for the comfort that it affords the patient. When there is eclampsia, and it becomes necessary to lower arterial tension, the binder had better be left off. During the six or eight weeks following parturition, if the binder can be used so as to support the intestines from below, and thus remove some weight from the uterus, the woman is given a material aid towards her final recovery.

The Canadian Medical Review.

June. 1898.

1. A Comparison of Lumbar and Inguinal Methods of Colostomy. HERBERT A. BRUCE.

1. BRUCE describes the operation of cælio-colostomy or inguinal colostomy, which is coming steadily into favor and is replacing to a very large extent the lumbar operation. Its advantages are that it is easier, the site and extent of the disease can be ascertained, it is easier to draw out the intestine and make a satisfactory angle and spur, and the position of the anus is more convenient for the needful attention. The best and simplest method of performing the operation is Greig

Smith's modification of the Maydl-Rèclus operation, in which no sutures are used.

The Canada Lancet.

May, 1898.

1. Remarks on Modern Therapeutics. J. T. FOTHERINGHAM.
2. Notes of a Rare Case of Interstitial Nephritis. ALFRED J. HORSEY.
3. On the Care and Modification of Milk for Infants' Use. L. M. YALE.

1. [An interesting address on the advances of therapeutics.]

2. HORSEY gives the details of the case of a young man aged 22, whose urine showed the enormous quantity of 80 per cent. of albumen and whose sight was much impaired by retinitis of a disintegrating character, with numerous hæmorrhages. He had been led to seek advice to know why his sight was "blurred," which he had noticed for only a week, yet it had declined to $\frac{1}{10}$ and $\frac{1}{20}$ from normal in the right and left eye respectively. He had had but few symptoms of ill health, excepting a delicate stomach, occasional vomiting and shortness of breath on exertion. He died eighteen days after coming under observation, the most distressing symptom being dyspnœa. The urine retained its normal acidity, specific gravity and quantity, but was highly albuminous throughout. No casts of any kind were found. The case demonstrates the usefulness of routine ophthalmoscopic examination in obscure cases.

3. YALE describes the methods followed in the preparation of modified milk in the milk laboratories, and gives some of Holt's tables and formulæ for rendering easy the calculation of each ingredient, so that home modification may be carried out.

The Dominion Medical Monthly and Ontario Medical Journal.

June, 1898.

1. The President's Address. WILLIAM BRITTON.
2. The Canadian North-West and Rocky Mountain Districts in the Treatment of Tuberculosis. PETER H. BRYCE.
3. Hyper-Resonance of the Lungs a Premonitory Symptom of Tuberculosis of the Lungs. W. C. HEGGIE.

2. BRYCE describes the nature of the country and the climate of the Canadian North-West. He says that to anyone familiar with the climatic qualities of the Great West of Canada, it will seem plain that in the prairie region rising from the lands of Manitoba westward until Banff is reached at a height of 5,500 feet, every degree of height may be had which may be found most suitable to any particular case

of tuberculosis; while in the 500 miles—extending through the sea of mountains made up of the three ranges, with the intervening plateaus between, from Banff to Vancouver—there is infinite variety of heights and local conditions to tempt the most fastidious searcher after health. As yet the country is hardly known even to Canadians as a health resort, owing to its distance from the Eastern Provinces, and still more to its newness and its few facilities for the accommodation of travellers and invalids. What, then, is first required is the knowledge spread amongst the medical profession of the remarkable climate of that region, and along therewith the establishment of sanatoria under precise medical regulation. Possessed of so fortunate a gift of Nature, Canadians will do well to make provision whereby these health-giving qualities be not injured in their good repute, as has occurred notably in California by the absence of means for regulating the tuberculized who go there, and which have caused many instances of house-infection amongst the resident population.

3. HEGGIE is of the opinion that when a patient suffers from a cough associated with a hyper-resonant condition of the lungs, and is exposed to tuberculous infection, that person will develop tuberculosis. The question then is, are these symptoms those of already existing tubercle, or are they due to a weakened condition of the system with atrophy and resulting dilatation of the air cells? He is inclined to believe that in these cases there is first a debilitated system causing atrophy of the walls of the air cells, then as a result a dilatation of these cells and hence hyper-resonance of the lungs. Several cases are cited to illustrate these views.

The Maritime Medical News.

June, 1898.

1. Artificial Feeding of Infants. WM. NORRIE.

1. NORRIE discusses at length the problems in infant feeding. The various milk mixtures and patent foods are described, but the question of "modified milk" is not touched upon.

Canada Medical Record.

May, 1898.

1. Pregnancy following Ventrofixation with Improvements in Technique. A. LAPTHORN SMITH.
2. Clinical Lecture on Bilateral Abductor Laryngeal Paralysis. GEO. T. ROSS.

June, 1898.

3. Gynæcological Notes from Paris. A. LAPTHORN SMITH.

1. LAPTHORN SMITH is of the opinion that pregnancy and labour

are much less influenced by Alexander's operation than by ventrofixation or suspensio uteri. Alexander's operation should therefore be preferred whenever the uterus and appendages are free from adhesions.

2. Ross, in the course of a clinical lecture on bilateral abductor laryngeal paralysis, says that the most important facts are: first, the motor nerves of the larynx have so long and tortuous a course that from their medullary origin to their endings in the laryngeal muscles they are exposed to an enormous number of various pathological influences; second, the laryngeal abductor paralysis caused by any of these influences may, and in a good many cases does, remain for a long time the only positive sign of these various pathological processes; third, this paralysis, if unilateral, may in no way proclaim its existence, but must be sought for, if one does not wish to miss the opportunity of making an early diagnosis in many of these cases.

Kenneth Cameron.

Reviews and Notices of Books.

An American Text-Book of Genito-Urinary Diseases, Syphilis, and Diseases of the Skin. Edited by L. Bolton Bangs, M.D., Consulting Surgeon to St. Luke's Hospital and the City Hospital, New York, and to the Methodist Episcopal Hospital, Brooklyn; Visiting Genito-Urinary Surgeon to St. Mark's Hospital, New York; Late Professor of Genito-Urinary Diseases and Venereal Diseases, New York Post-Graduate Medical School and Hospital; and W. A. Hardaway, A.M., M.D., Professor of Diseases of the Skin and Syphilis in the Missouri Medical College, St. Louis; Physician for Diseases of the Skin to the Martha Parsons Hospital for Children, and to St. John's Hospital, St. Louis. Illustrated with 300 engravings and 20 full page coloured plates. Philadelphia: W. B. Saunders. 1898.

This volume is the latest addition to the series of American Text-Books issued by W. B. Saunders during recent years. There are 47 contributors in all, selected with care as recognised American authorities on their several subjects. As the title indicates, there are in reality two separate works, one on genito-urinary diseases and syphilis, and one on diseases of the skin. The first part is introduced by an article on urine analysis, a term which is more correct, and we think in every way preferable to the ordinarily used one of "urinalysis." It gives a simple method for examination of the urine and a description of the changes found in the various diseases of the urinary tract which are dealt with in the first part of the work. The diseases of the genito-urinary system are then discussed in anatomical order, beginning with the penis and concluding with the surgical diseases of the kidney and functional diseases. The chapter upon diseases of the ureter by Dr. Christian Fenger and Dr. S. C. Stanton is an excellent presentation of the subject, the surgery of which is now attracting considerable attention. The chapter on surgical diseases of the kidney, by Dr. C. R. Bolton, should also be referred to as forming one of the best in the book.

Syphilis is treated in seven chapters, comprising 142 pages, and including not only the cutaneous lesions, but also syphilis of the body generally. A chapter by Dr. Hammond on syphilis of the nervous system is well written, but one cannot help feeling that it would be better not to attempt to condense such a vast subject within the limits allowed in a work of this character. The same may be said concerning the chapter on syphilis of the eye. Dr. R. H. Greene, writing upon treatment, considers that the disease cannot be aborted by early treatment, or by the excision of

the primary sore, and strongly urges the necessity of deferring all specific treatment until both patient and physician are thoroughly convinced that syphilis is present. He prefers to use the proto-iodide of mercury pill, and is opposed to the combination of mercury and opium advocated by many English writers, notably Jonathan Hutchison. With the internal medication he would combine external applications either by inunctions or baths and fumigations. In the later stages iodide of potash is recommended, but here, as in many other instances, the exact dosage which one may safely employ in refractory cases is left to the judgment of the reader. Large doses are recommended, but no indication is given of what amount may be resorted to before one ought to conclude that the disease will not yield to its influence.

The part relating to skin diseases comprises 400 pages, the classification adopted being Crocker's modification of Hebra's method. The descriptions are necessarily short and very much condensed, but will be found of value to the practitioner who wishes for just such an arrangement rather than to the specialist.

The illustrations are uniformly good and the general get-up of the book is excellent. Of the coloured plates, however, such cannot be said. They contrast very unfavourably with the half-tone reproductions of photographs which are gradually replacing them in works of this class and here, as is generally the case, the advantage that would be gained by having the colours of lesions depicted is lost through the seeming impossibility of correctly reproducing them. G. G. C.

Cutaneous Medicine; A Systematic Treatise on the Diseases of the Skin. By Louis A. Duhring, M.D., Professor of Diseases of the Skin in the University of Pennsylvania; Author of "A Practical Treatise on Diseases of the Skin," and "Atlas of Skin Diseases." Parts I. and II. Illustrated. Philadelphia; J. B. Lippincott Company. 1895 and 1898. Charles Roberts, Canadian Agent, 593A Cadieux Street, Montreal.

The first volume of this work, issued in 1895 deals with the general anatomy, physiology, symptomatology, etc., as well as general ideas regarding prognosis and treatment. It received on every side the most favourable criticism, and the publication of the second part on "special diseases" has been looked forward to as likely to add to the already large list of American treatises on dermatology one of more than ordinary merit. Such is indeed the case, and one hopes that the intervals between succeeding volumes will not be as long. Volume II. treats of the classification, and of the anæmias, hyperæmias and inflammations in part.

The method of classification adopted is the authors own modification of Hebra's, a pathologico-clinical one, which he supports by strong arguments in an article on the subject in the March number of the *Journal of Genito-Urinary and Cutaneous Diseases*. He does away altogether with

the class of "parasitic diseases," and introduces them under inflammations as two subclasses, those due to the phyto-parasites and those due zoo-parasites. The large class, also, of diseases of the appendages is left out, each disease being classified according to its pathological affinity, alopecia, for example, being included in the atropies, and acne and sycosis under inflammations. Though this, in a measure, simplifies the classification and shows the proper place for almost all of the diseases included by Hebra in the two classes mentioned, it leads to some difficulties. Thus it is not apparent why pediculosis corporis should be included under inflammations, and pruritus, which necessarily produces the same lesions, under the neurosis, although the etiology of the two is of course different.

Beginning with a few pages on anæmias and hyperæmias, and the various forms of non-inflammatory erythema, the exudative erythema, erythema multiforme, nodosum and urticaria are described. Then follow 110 pages on eczema illustrated by 43 full page drawings. A general description of the cardinal features is first given and the fixed types or "lesional varieties" described as erytematosum, vesiculosum, pustulosum and papulosum. As subvarieties of these we have madidans, rubrum, squamosum and seborrhoicum, the last named being dismissed with a short description on a single page. Another group of still other varieties includes fissum and verrucosum, and acute, subacute and chronic eczemas. After an exhaustive review of the complications, pathology, diagnosis, and treatment, one has a still further elaboration of the subject by 25 pages on the "regional forms" of this protean disease.

Impetigo is divided into simplex and contagiosa and distinguished from eczema pustulosum. Ecthyma is treated as a clinical entity, as is Hebra's impetigo herpetiformis, the impetigo of pregnancy. Dermatitis herpetiformis, pemphigus, and herpes simplex and zoster, complete this volume. Gilchrist's microscopic drawings and descriptions of the pathological changes in many of the inflammations form a feature of the book which deserves special praise.

Most of the illustrations are half-tone reproductions from photographs. They are much more satisfactory than those taken from water colour drawings. G. G. C.

International Clinics.—A Quarterly of Clinical Lectures on Medicine, Neurology, Surgery, Gynæcology, Obstetrics, Ophthalmology, Laryngology, Pharyngology, Rhinology, Otology and Dermatology, and specially prepared articles on Treatment and Drugs. Edited by JUDSON DALAND, M.D., Philadelphia; J. MITCHELL BRUCE, M.D., London, England, and DAVID W. FINLAY, M.D., Aberdeen, Scotland. Volume I and II. Eighth Series, 1898. J. B. Lippincott Company, Philadelphia: Canadian Agent, Charles Roberts, Montreal.

Among the contributors in these volumes may be mentioned the names of T. McCall Anderson, A. H. Freeland Barbour, J. W. Ballantyne, C. A.

Ewald, Byrom Bramwell, Norman Bridge, Henry C. Coe, N. Senn, R. von Jaksch, W. Hale White, Professor Hayem, Alexander James, Paul F. Mundé, Graham Steel, Chas. G. Stockton, Professor E. Von Leyden, and many others both in America and England.

Such names as these bespeak the high class matter which these volumes contain. It may be noted that the International Clinics in these numbers quite exceed former productions from the standpoint of practicality.

Each volume under the head of Drugs and Remedial Agents, has an article on digitalis. In the first, the subject is treated from the standpoint of a diuretic by Nestor Tirard. In the second, J. N. Hall gives suggestions as to the use of this agent.

Under Treatment such subjects as treatment of tuberculosis, whooping-cough, chlorosis, puerperal sepsis, scabies, acute heart failure in chronic heart disease, and acute inflammatory middle ear disease, as well as other subjects are dealt with.

Under the division for Medicine, clinical lectures on gastralgia, myocarditis, sprue, atonic or nervous dispepsia and its treatment by intragastric electrization, tubercular pleurisy, aortic disease of the heart, weak heart, malarial fever in infants and children, ulceration of the pylorus and its consequences, dilatation of the stomach with remarks as to the treatment may be found with others of almost equal interest.

Neurology occupies rather a small space, but four articles being found in this division. They are lectures on spinal irritation, general paralysis as met with in hospital practice, toxic polyneuritis and arsenical neuritis.

The Surgical subjects include among others, umbilical hernia, external and internal urethrotomy for retention of urine, syphilitic stricture of the rectum, acute osteomyelitis in young children, the etiology and classification of cystitis, trephining for traumatic epilepsy, the X rays in surgery, and cirrhosis of the liver.

That portion of the clinics devoted to Gynæcology and Obstetrics contains articles on the treatment of ovarian cysts complicating pregnancy and labour, a study of four cases of pyosalpinx, sterility, placenta prævia, epithelioma of the vulva, uterine hæmorrhages.

The divisions of Ophthalmology, Laryngology, Rhinology, and Dermatology each contains interesting articles or clinical lectures upon topics of much practical value.

Two important features of the International Clinics which have always made them popular and much to be desired by physicians, are possessed by these volumes, now under review, even more prominently than heretofore. The Clinics bring all readers of them into the presence of the patient and the clinician in such a way as to impress the student practitioner with the chief features of the disease discussed and show at the same time the clinician's method of investigation of the case and his manner of dealing with the points of diagnosis and treatment.

W. F. H.

Correspondence.

DISTRICT REPRESENTATION IN THE PROVINCIAL MEDICAL BOARD.

To the Editors of The Montreal Medical Journal.

Sirs:

The recent election of the governing board of the College of Physicians and Surgeons indicates almost a unanimous wish on the part of the members of the college for a change in the system which has heretofore been in practice in the election of the governors at the triennial meetings.

The proxy system has been pronounced upon by the profession of the province, and has been declared to be a failure as a means of representing the popular will in the selection of governors.

Nothing less than local or district elections will satisfy the members of the college. With district elections every governor will be responsible to, and in direct contact with the electors. Mutual consultations and advice as to the requirements of the profession, an increased interest in the meetings of the Board, in short, a governing body representing the ideas of the majority of the profession in the province will result from district elections.

The legislation which will be asked for, requires careful preparation. As our judicial districts vary considerably in their professional population it will be necessary to have a proper census of each district. There are twenty judicial districts in the province with a very sparse medical population in some of them, while other large centres are very much conjested, and it will require certain combinations of some districts and subdivisions of others in order to elect the thirty-four governors and procure an equalization of representation.

As to the mode of conducting district elections there are two systems which can be followed. The one is a direct election at a central place or the *chef lieu* of the district. This is the plan followed by the bar, and I believe by the notaries, who meet at regular stated intervals and elect their officers directly—in the case of the bar the district batonnier becomes a member of the Provincial Council or Central Governing Board. I understand that this works satisfactorily with the bar but the medical profession is differently situated and I

doubt if this plan would work smoothly, as it would be quite impossible for all the members of the college in a district to assemble at a central place on a certain day. The result, I believe, would be that only a portion of the vote would be polled, and a certain number of electors would be disfranchised.

The other plan would be an election by ballot. The sheriff or clerk of the court of the district could be appointed a returning officer. Each qualified member of the college would receive a ballot from the secretary a week or ten days prior to the day fixed for the election, which he can prepare properly and forward to the returning officer either in person or by registered post, at any time between the receipt of the ballot and the day fixed for the election. This plan would secure every member of the college in his right to vote.

Such a system would probably lead to the voluntary formation of primary meetings in each district, for the purpose of nominating candidates. I would not suggest an official nomination, but simply a voluntary meeting at any suitable time previous to the election. Where there are district medical associations already in existence these would form an admirable means of nominating candidates, and the adoption of this plan I have no doubt would lead to the formation of medical associations in each electoral district. This is all secondary, the main feature of the plan is, that every member of the college in the province should have the privilege of voting directly for the candidate whom he thinks would represent the best interests of the profession as a member of the Governing Board.

C. L. Cotton, M.D.

Cowansville, August, 1898.

THE

Montreal Medical Journal.

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

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DOMINION REGISTRATION.

If we are not mistaken, the movement in favour of Interprovincial Reciprocity or Dominion Registration of members of our profession has at last, with the Quebec meeting of the Canadian Medical Association, reached a point at which all parties are ready to join heartily in bringing to an end the wholly unsatisfactory condition under which the profession has found itself ever since Confederation. Last year saw, it is true, a most important advance, when at the Montreal meeting of the Association the delegates appointed by the Medical Councils of all the Provinces of the Dominion agreed upon a scheme of Interprovincial Registration.

But, as we all know, there are difficulties in the practical working of the scheme, difficulties which a year's consideration and discussion have not greatly lightened.

Another and broader plan was recommended in the report presented to the Association at Quebec by the provincial delegates, a plan which has the great advantage of lifting the subject out of the narrow and narrowing confines of provincialism into the higher atmosphere of what concerns the whole Dominion. That report we publish on another page. Briefly, it is recommended that, as at present, each province be allowed without restraint to control medical education and medical matters through the agency of its Medical Councils. Each province shall still determine for itself what may be spoken of as the minimum qualification permitting practice within its borders. and it is implied that every practitioner in any province, however qualified, shall pay the regulation dues of the College of Physicians and Surgeons or Medical Council of that Province. But if a student desires to qualify himself to practice at any point, and in any province of the Dominion, then, upon the completion of the stipulated course he shall present

himself before a body of Dominion examiners. Thus a student may elect from the start to qualify for practice in one province or for practice in the Dominion at large. And not only this, but if the scheme be carried through, then, at last, the Canadian graduate passing the Dominion Board will be qualified to practice throughout the length and breadth of the Empire. In simple justice to those already qualified it is inevitable that they also must be permitted, upon application, to obtain the Dominion license.

The scheme is bold and masterly, and we fail to see why any objection should be made to it on the part of our profession. The powers and the resources of the provincial colleges are retained—the colleges themselves are given a voice in the appointment of the Dominion Board of Examiners, and the profession throughout Canada becomes a united body. By the act of Confederation, the various provinces are given supreme control of all educational matters. In medicine the control of educational matters in each province is entrusted to the profession, acting through the Provincial Councils. It is wholly within the rights and powers of the Council, to agree upon one common course of education leading up to a Dominion examination, while further, it is at least a moot point whether the provincial control of educational matters of necessity, and implicitly, includes the power of conferment of licenses to practice in the various professions. The provinces, by the powers given to them, are entitled to demand that no one shall practice who has not undergone a certain minimum and specified training, but it seems to us that they will accept Dominion registration just as they now accept all who are duly registered in Great Britain, unless their medical act contains a clause definitely annulling rights given to practitioners registered in the mother country by the Imperial Parliament.

Altogether the Quebec meeting should mark an epoch in the medical history of the Dominion, and we who, upon principle, of late sturdily opposed Dr. Beausoleil in another connection, are rejoiced to congratulate him now upon the fact that under his presidency so notable and statesmanlike a scheme should have been evolved.

It is interesting in this connection to refer back to Dr. Roddick's presidential address at the opening of the meeting of the British Medical Association in this city a year ago. His remarks are so pertinent that we do not hesitate to quote them in their entirety. Speaking of medical legislation in Canada he declared :—" When the " British American provinces became confederated in 1867, under the " British North America Act, the governance of educational matters " was taken away from the Federal authorities and handed over to

" the provinces each to look after them in its own way. In conse-
" quence we have since had a curious complexity of Medical Legisla-
" tion, there being practically no uniformity amongst the provinces in
" regard to standard of study or qualification for practice. Each
" province has its own medical board or medical council, as the case
" may be, which has the power to grant license to practice either after
" examination or on simply presenting the diploma of certain recog-
" nized universities. In the provinces of Ontario and British Colum-
" bia an examination is exacted; in the others the license is given
" under certain restrictions on presentation of the degree, although in
" the Maritime Provinces an examining board is now about to be
" established. In this way, as can readily be seen, a Chinese wall is
" built round each province, and the frontier is carefully guarded so
" that it is unsafe for a medical man to pass from one to the other
" unarmed with a license, because of the risk of fine or even impris-
" onment. Such a condition of affairs is hardly credible and probably
" exists nowhere else to the same extent. What is the remedy?
" Two remedies have been suggested—either the establishment of a
" central examining Board in each province with a uniform standard
" of matriculation and a uniformly high standard of curriculum which
" shall in time lead up to a general scheme of reciprocity; or, secondly,
" a Dominion Examining Board. The first scheme is at present under
" serious consideration; although there are many difficulties in the
" way of its accomplishment, no one of them is insuperable, however,
" providing a spirit of conciliation prevails. The second alternative
„ (a Dominion Examining Board) would in many respects be more
" desirable, because not only could the licentiate practise in any part
" of the Dominion, but he could register in Great Britain, and thus
" receive recognition all over the Empire. As you are doubtless
" aware, we, as a profession, suffer in this country from being inhab-
" itants of provinces which are confederated. Under the Medical Act,
" now of some twelve years standing, it has been decided in effect
" that the Medical Council of the United Kingdom can recognize the
" degrees of universities situated in autonomous Provinces only. As
" a consequence, Australians obtain privileges which are denied to us,
" being permitted to register in Great Britain without examination.
" We are being punished for belonging to a colony whose form of
" Government is recognized to be in advance of theirs and likely to be
" imitated by them. . . . . Let common school education go to
" the various provinces if you will, but for the profession of medicine
" (and doubtless law also) there should be a uniform standard of
" matriculation, a uniform curriculum of medical studies, and one

" Central Examining and Registering Board composed of the best " men from all the universities. We hope in Canada to reach that " ideal at no distant date; in fact I have the very best authority for " stating that it is not impossible of accomplishment. Some scheme " of reciprocity first arranged would doubtless make the task less " difficult, but failing that, our duty is to arrange for some legislation " which shall give our better and more ambitious students an oppor- " tunity of passing a Dominion Licensing Board (or whatever " it may be called) which shall give the privilege of practising their " profession not only in any part of their native country, but in any " part of the world over which the British flag flies. Such a scheme " need not interfere in any way with the autonomy of the provinces. " Each may still retain its Provincial Board for the purpose of exam- " ining and issuing licenses to those candidates who are satisfied to " practise their profession in the limited sphere of their own provinces. " I think the legislators of this country will some day (and not far " distant either) be induced to see that the system which at present " obtains is unworthy of a great and growing country." J. G. A.

REPORT OF THE COMMITTEE ON INTERPROVINCIAL REGISTRATION.

The following members of the Interprovincial Registration Committee met, in accordance with instructions, during the recent meeting of the Canadian Medical Association in Quebec:—Dr. Roddick (Chairman) Drs. J. A. Williams, W. W. Dickson, James Thorburn, J. A. Mullin, H. P. Wright, J. M. Beausoleil, (Hon) D. Marcil, H. Cholette, A. R. L. Marsolais, J. S. Gauthier, R. MacNeill and W. S. Muir. Thus four provinces of the Dominion were directly represented. It might be fairly mentioned that Dr. Walker, of New Brunswick and Dr. Thornton, of Manitoba, signed the report of 1896, on behalf of their respective provinces, and would, we have every reason to believe, have likewise supported this one. British Columbia and the Northwest Territories have hitherto failed to send representatives.

At the conclusion of the second conference, Dr. Williams, of Ingersoll, a member of the Ontario Medical Council, and Dr. R. MacNeill, of Stanley Bridge, Prince Edward Island, Member of the Island Medical Board, and President of the Maritime Medical Association, were appointed a sub-committee, with instructions to draft a report embodying the views of the committee. The report was, at a subsequent meeting, unanimously agreed upon and signed by all the members whose names are given above.

On Friday, August 19th, during the last business meeting of the Association, the chairman of the committee called upon Dr. McNeill to read the report which was subsequently adopted by a unanimous vote of the Association.

It will be observed that the main object of the report is to establish a uniform preliminary and professional curriculum which the various Provincial Medical Councils must exact of all teaching and licensing bodies in the Dominion, before said Councils are authorised to proceed further to the organization of the Dominion Board of Registration.

MATRICULATION.

1. From any recognised university, or in lieu thereof, first-class or grade A, provincial certificate in any of the provinces for teachers' licenses, or an examination of the following branches, which shall be compulsory and conducted by the various councils of the educational departments of each province, viz. :

1. English grammar, composition, literature and rhetoric.

2. Arithmetic, including vulgar and decimal fractions, and extractions of the square and cube root and mensuration.

3. Algebra to the end of quadratic equations.

4. Geometry, first three books of Euclid.

5. Latin. First two books of Virgil's Æneid or three books of Cæsar's Commentaries, translation and grammar.

6. Elementary mechanics of solids and fluids, composing the elements of statics and dynamics, hydrostatics and elementary chemistry.

7. Canadian and British history, with questions in modern geography.

8. Translation and grammer of any two of the following subjects : Greek, French and German.

9. In lieu of the above we also recommend that any student presenting a certificate after examination from the professors of any standard or approved university in Her Majesty's dominions, of having completed a course of said university, be accepted in any of the provinces of Canada for matriculation registration.

Fifty per cent. of the marks in every subject shall be required for a pass, and 75 per cent. for honors.

PROFESSIONAL EDUCATION.

(A) The curriculum of professional studies shall begin after the passing of the matriculation examinations and registration, and shall comprise a graded course in the regulation branches of four years sessions of not less than eight months in eachyear.

(B) The subjects to be anatomy, physiology, chemistry, materia

medica, therapeutics, practical anatomy, histology, practical chemistry, pharmacy, surgery and clinical surgery, medicine and clinical medicine, including diseases of the eye, ear, throat and nose, mental diseases, obstetrics, diseases of women and children. medical jurisprudence, toxicology, hygiene, pathology, including bacteriology.

(C) That at least twenty-four months out of the graded four years of eight months each, be required for attendance on hospital practice.

(D) That proof of attendance on not less than six cases of obstetrics and post-mortem examinations be required.

EXAMINATIONS.

A) All candidates for registration in the various provinces in addition to having filled the foregoing requirements shall be required to undergo examination before the examiners to be appointed in each of the provinces by their respective councils. Fifty per cent. shall be required for a pass and 75 per cent. for honors.

4th. Your committee recommend that as soon as the foregoing basis of agreement is ratified by the councils of the various provinces, each council shall endeavor to secure legislation to authorize the carrying out of the foregoing preliminary and professional curriculum and to embody the following to secure a board of examiners for a Dominion qualification, viz:

"That so soon as the various councils of the Dominion shall establish an examining board for the Dominion conducted by examiners appointed by the medical councils of the several provinces, their candidates passing a successful examination before said board and obtaining a certificate to that effect, shall be entitled to registration in the several provinces of the Dominion on payment of the registration fee, providing he is not guilty of infamous or disgraceful conduct in a professional respect.

"Your committee desire to recommend that further efforts be made to ascertain the practicability of federal legislation leading to the establishment of a central qualification which will also place the profession in Canada upon an equal footing with that of Great Britain, and that Dr. Roddick be authorized to take the necessary steps in said matter.

"We further recommend that this association shall appoint a committee who shall consider and recommend the details as to the number of examiners to be appointed, the method of conducting examinations, the fees to be charged, and other necessary details to bring the aforesaid scheme into active operation, which details the officers of this association shall with the foregoing send to each of the respective councils for approval."

The following were named a committee to strengthen Dr. Roddick's hands before the Government:—Dr. McNeil, Prince Edward Island; Dr. Muir, Nova Scotia; Dr. Walker, New Brunswick; Hon. Dr. Marcil, Quebec; Dr. Williams, Ontario; Dr. Thornton, Manitoba; Dr. Bain, Northwest Territories, and Dr. McKechnie, British Columbia.

GESTA MEDICORUM.

"QUICQUID AGUNT MEDICI NOSTRI FARRAGO LIBELLI."

Dr. Jas. Bell, of this city, has been elected President of the American Association of Genito-Urinary Surgeons.

In 1900, the Decennial Convention for the revision of the United States Pharmacopœia, will be held in Washington.

Prof. Wolfler has been appointed Dean of the Medical Faculty of the German University of Prague, in the room of Prof. Hans Chiari.

Dr. Wm. Pepper, Professor of Medicine in the University of Pennsylvania, Editor of the well-known "American Text-book of Medicine," is dead, aged 85 years.

Dr. T. G. Roddick, of McGill, together with Dr. William Osler, among other distinguished visitors to the British Medical Association Meeting have received the honorary degree of LL.D., from Edinburgh University.

At a meeting of the Council of the Royal Surgeons of England, held on July 14th, Sir Wm. MacCormac was re-elected to the President's chair. Mr. T. Pickering Pick and Mr. Howard Marsh were chosen vice-presidents.

The Croonian Lectures at the Royal College of Physicians of London, have been delivered this year by Dr. Sidney Martin, F.R.S. His subject was "The Chemical Products of Pathogenic Bacteria, Considered with Special Reference to Enteric Fever."

Professor Rudolph Virchow, of Berlin, Professor M. V. Cornil, of the Faculté de Médecine de Paris, and Professor William H. Welch, of Johns Hopkins University, Baltimore, were recently elected corresponding members of the Pathological Society of Philadelphia.—*Phil. Med. Jour.*

At the Montreal Meeting of the British Medical Association last year, the Earl of Aberdeen and the Rt. Hon. Lord Strathcona and Mount Royal, were proposed as honorary members of the association. At a late meeting of the Council in London, their election was formally recommended and adopted.

The opening lecture in the Faculty of Medicine of McGill Univer-

sity will be given in October, by Dr. T. Clifford Allbutt, Regius Professor of Physic in Cambridge University. The Faculty is fortunate in being able to take advantage of Dr. Allbutt's visit to this side of the water, and his address will be anticipated with great interest. Dr. Allbutt during July has been delivering the Lane Medical Lectures on Diseases of the Heart in the Cooper Medical College of San Francisco.

We notice the commendable enterprise with which the *British Medical Journal* and the *Philadelphia Medical Journal* have been exchanging notes. The former Journal has given fairly full abstracts of the most interesting papers which were read at the meeting of the American Medical Association, and the later has published *in extenso* the Presidential addresses delivered at the British Medical Association Meetings in Edinburgh, being the earliest appearance of these addresses in America.

A meeting was recently held in Toronto of the Ontario Medical Library Association. This association has been in existence a short time and now possesses over 4,000 volumes, and 27 journals are regularly on file. It is intended to lend out books to medical men desiring them, but it has not hitherto received much support from the profession at large. Recently, however, substantial donations have been received from Doctors Wm. Osler and J. E. Graham, and prospects for the future are brightening.

The Council of the British Medical Association resolved at its last meeting to found as a memorial of the late Mr. Ernest Hart a scholarship to be called "The Ernest Hart Memorial Scholarship for Preventive Medicine." It was felt that no more fitting means could be found to commemorate at once Mr. Hart's great services to the British Medical Association and to the advancement of the study of preventive medicine. The scholarship, which will be of the annual value of £200, will be tenable for two years.—*Brit. Med. Jour.*

It is satisfactory to observe that after a prolonged agitation the Medical Department of the British Army has become the Royal Army Medical Corps, the medical officers being henceforth known by titles only. Previously they were overwhelmed with a cumbrous system of double titles, and being regarded as "civilians" by the powers that be, they were naturally though undeservedly looked down upon by other purely military officers. The result was that for years the medical service has been undermanned. Now, however, the protests of the medical men have borne fruit, and by decree of Lord Lansdowne the reforms were promulgated on July 1st. This at once ends a much vexed and much debated question, and has righted what was a serious injustice to the Army Medical men.