

Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for scanning. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of scanning are checked below.

L'Institut a numérisé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de numérisation sont indiqués ci-dessous.

- Coloured covers /
Couverture de couleur
- Covers damaged /
Couverture endommagée
- Covers restored and/or laminated /
Couverture restaurée et/ou pelliculée
- Cover title missing /
Le titre de couverture manque
- Coloured maps /
Cartes géographiques en couleur
- Coloured ink (i.e. other than blue or black) /
Encre de couleur (i.e. autre que bleue ou noire)
- Coloured plates and/or illustrations /
Planches et/ou illustrations en couleur
- Bound with other material /
Relié avec d'autres documents
- Only edition available /
Seule édition disponible
- Tight binding may cause shadows or distortion
along interior margin / La reliure serrée peut
causer de l'ombre ou de la distorsion le long de la
marge intérieure.
- Additional comments /
Commentaires supplémentaires:

Continuous pagination.

- Coloured pages / Pages de couleur
- Pages damaged / Pages endommagées
- Pages restored and/or laminated /
Pages restaurées et/ou pelliculées
- Pages discoloured, stained or foxed/
Pages décolorées, tachetées ou piquées
- Pages detached / Pages détachées
- Showthrough / Transparence
- Quality of print varies /
Qualité inégale de l'impression
- Includes supplementary materials /
Comprend du matériel supplémentaire
- Blank leaves added during restorations may
appear within the text. Whenever possible, these
have been omitted from scanning / Il se peut que
certaines pages blanches ajoutées lors d'une
restauration apparaissent dans le texte, mais,
lorsque cela était possible, ces pages n'ont pas
été numérisées.

THE
MONTREAL MEDICAL JOURNAL.

VOL. XXXVIII.

SEPTEMBER, 1909

No. 9.

ADDRESS IN SURGERY.

DELIVERED AT THE
FORTY-SECOND ANNUAL MEETING OF THE CANADIAN
MEDICAL ASSOCIATION.

BY

JAMES BELL, M.D.

Professor of Surgery and Clinical Surgery, McGill University, Surgeon to the
Royal Victoria Hospital, Montreal, etc., etc.

Cancer of the Prostate.

I desire to thank you, the President and the Committee of Arrangements of the Canadian Medical Association, for the great honour they have done me in extending me an invitation to deliver the address in Surgery before this meeting. When I received your very kind invitation, Mr. President, I accepted it with a deep sense of the responsibility which such acceptance entailed upon me,—a feeling which has not diminished as the time has approached for the fulfilment of my undertaking.

However, I shall not weary you with apologies or excuses, but will endeavour to direct your attention to a subject which has been brought very prominently before my attention and the attention of many other surgeons during the last few years—I refer to cancer of the prostate.

To one who has been engaged in surgical work for a quarter of a century or more, a retrospective glance at the achievements which have followed Lister's epoch-making discoveries is calculated to inspire the greatest optimism in the consideration of surgical questions, no matter how difficult they may seem to be. When one passes in review the difficult problems which have already been satisfactorily solved: the triumph over the infective micro-organisms by which all the cavities and organs of the body have been brought under the control of the surgeon, the growth of exact knowledge and scientific methods, the development of diagnostic skill and operative technique; one cannot but look hopefully and confidently for the solution of any surgical problem which presents

itself; and there are many and serious problems in surgery still unsolved. In this respect the attitude of surgeons has changed materially since the middle of the last century, when it was customary with prominent surgeons (like Alexander), to deplore the fact that there were no new fields to conquer, that the science and art of surgery had become a finished entity; but the sphere and scope of surgery have been so immensely enlarged in recent years that instead of this attitude, we, of the present day, feel that the surgical millennium is still far off.

The cancer problem is one of the greatest questions of our time. Much careful and painstaking work has been done and many earnest workers are engaged at the present time in endeavouring to discover the cause of cancer (or rather we should say, malignant disease, and include sarcoma), but although much good has been accomplished and much knowledge has been acquired which enables us to understand the disease better, the great secret of its origin remains hidden; and the net outcome of our knowledge has been the development of operative methods, the recognition of our limitations, and especially of the necessity for early diagnosis. Whether it be cancer of the tongue, the stomach, the breast, or any other organ, the universal rule has become recognized that early and wide and complete removal of the disease, while it is still local, is curative; that extension takes place early and insidiously by infiltration and lymphatic involvement, which must always be anticipated. Metastases through the blood-current are more of pathological interest than of practical importance to the surgeon. The really important fact which we must recognize is that we have not advanced in the treatment of cancer beyond the stage at which removal by operation is the sole remedy; and while we recognize the difficulties which must be encountered, and which necessarily vary with the organ or region involved, in effecting complete and thorough extirpation, we must also recognize the futility, or worse than futility, of any operation which falls short of complete removal.

I am aware that to this statement there may be exceptions as in cases of late recurrence, five, ten or fifteen years after operation, a condition which is not so rare as to be phenomenal; and indeed, in discussing the treatment of cancer of the prostate, I shall be obliged to consider partial operations but only as palliative and not as curative treatment. We may doubtless dare to hope that with fuller knowledge of the origin and growth of cancer, it may become possible to treat it successfully without operation or even to prevent it altogether, but that happy condition has not yet been attained. The history of tuberculosis affords ground for the belief, however, that this may be no idle dream.

In the operative treatment of cancer, we must practically disregard mutilation and loss of function in order to save or prolong life, and obviously some organs can be more easily spared than others. It is in the light of all these facts that I venture to direct your attention to cancer of the prostate gland.

I have chosen this subject for several reasons, among which are the following:

First:—Because there is a general, widespread and erroneous opinion in our profession, that cancer of the prostate is a very rare disease. This belief is based upon the statistics of cancer, derived from pathological records, in which the prostate is shown to be one of the organs least frequently the subject of cancer, and no doubt this error has survived because the prostate has not always been systematically examined at autopsies.

Second:—Because of the habit, which unfortunately prevails very generally, of making a diagnosis of hypertrophy of the prostate or "enlarged prostate" in the case of every man past middle life who seeks advice for disturbances of the urinary function. I believe I am safe in saying that medical practitioners generally consider that there is no difficulty in diagnosing senile prostatic hypertrophy and rarely look beyond the obvious facts of disturbed urination, with palpable enlargement of the prostate felt through the rectum, in elderly men; and I am quite positive that this is a fatal mistake. It should become the systematic habit of every practitioner to attempt a diagnosis between ordinary senile hypertrophy and other special causes of disturbed bladder function such as cancer, tuberculosis, stone, chronic inflammation, etc.

Third:—The great importance of the subject; on account of its frequent occurrence, the hopelessness of all treatment except surgical treatment in its very early history, and the distress and misery which it causes when radical treatment has become impossible. During the last fifteen or twenty years, much attention has been given by surgeons to the operative treatment of senile hypertrophy of the prostate, and a pretty general unanimity of opinion has been reached on this subject, but not so with cancer of the prostate. Indeed, operations upon the prostate for hypertrophy have only incidentally shown the incorrectness of statistics based upon post-mortem records, and have proved that, instead of being a very rare disease, it is a very common one; but beyond this no very great advance has been made in its treatment.

Frequency:—Young believes that cancer of the prostate occurs as often as once in seven cases of prostatic enlargement, in men past fifty. (Journal of the Medical Association, Vo. 46, 1906.) Thompson Walker,

in a study of 242 consecutive cases of prostatic enlargement, diagnosed cancer in 57, although he eliminated 17 in which there might have been a doubt of the diagnosis. (Lancet, Vol. 1; 1908.)

The records of the Royal Victoria Hospital in Montreal show that, since 1902, 142 cases of prostatic enlargement have been treated, of which 32 were diagnosed as cancer (one in four and a half). Of these, 88 were submitted to complete prostatectomy and the material removed was carefully examined with the result that 21 were demonstrated to be cancerous, 23.8 per cent. or a little more than one in four. It will be seen therefore that of all the patients who present themselves for the treatment of symptoms reasonably attributable to prostatic hypertrophy one in four or five is suffering from cancer: and indeed more careful and extended investigation will probably show that the proportion is even greater than this. I have no doubt the fact will surprise many physicians.

It is interesting to note that from the opening of the Hospital, in 1894, to the 1st June 1902, eighty-six cases of prostatic enlargement were treated, of which only one was diagnosed as cancer. This case was a large adeno-carcinoma of unmistakable character originating in the prostate. In the other eighty-five cases, six complete prostatectomies were performed, but no systematic examination of the ablated tissue was made. In the remaining eighty cases, many palliative operations were performed, but these were not of such a character as to admit of pathological diagnosis. This comparison shows how easy it is to overlook conditions which are unsuspected and how fallible statistics are except when obtained by most careful and accurate methods. The foregoing figures have been introduced in support of the statements made as to the frequency of the occurrence of cancer of the prostate, but no attempt has been made in this communication to present a full report of the statistics of the subject.

Varieties of Cancer:—Of the 21 cases examined in the Royal Victoria Hospital, four were from prostates which were small and very hard and showed in their minute structure a type of growth which resembled very closely scirrhus carcinoma of the breast, and five were from prostates which were markedly enlarged and showed a type of growth which resembled an adenocarcinoma. The remaining twelve were of intermediate character but more closely resembled the scirrhus type.

In many of the cases where the prostate was removed entire it could easily be seen that the new growth commenced well towards the centre of one of the lobes, but where only a small portion of the gland was removed, or where it came away piecemeal, this could not be determined.

Two types of malignant growth are therefore seen in these prostatic carcinomas; the one shows a cellular growth with cubical to columnar cells, usually arranged in such a manner as to suggest a poorly-formed gland acinus, while the other consists of small groups of small cubical cells scattered throughout a very firm and adult fibrous tissue stroma. The former type of growth is usually found where the gland is markedly increased in size, while the latter is often present where the prostate shows little if any increase in volume, or may even be apparently shrunken. Many of the carcinomata of the prostate show types of growth intermediate between these two. All these growths arise from the epithelial cells which line the ducts or acini of the prostate gland.

None of these prostatic carcinomata have shown an ulceration of the epithelium covering the gland, and thus the appearance of the gland as seen by the cystoscope does not indicate the nature of the enlargement.

Symptoms:—The symptoms produced by cancer of the prostate are in the main the same as those produced by hypertrophy, but they vary sufficiently on careful analysis to enable one to at least suspect in many cases that the disease is not one of ordinary hypertrophy. A full discussion of the symptoms would be out of place at this time, but the following are some of the main distinctive differences between the symptoms of simple hypertrophy and those of cancer:—difficulty in micturition, shown by delay in starting the stream and maintaining it until the bladder is evacuated, rather than retention:—often little or no residual urine, hence often no decomposition. Frequency:—perhaps not distinguishable from that of ordinary hypertrophy; pain greater than in hypertrophy and without apparent cause; sometimes felt at the point of the penis, the perineum, the sacral region, the urethra, and sometimes shooting down the thighs. Hæmaturia is observed only when the mucous membrane of the prostatic urethra or the bladder outlet has become involved. It is generally more or less constant and not excessive. It sometimes appears to be an early symptom on account of the insidious character of the growth in its early stages in which there are no symptoms whatever, but it is, in reality, always a late symptom. When the growth is large, residual urine is a more prominent sign and retention may occur from mechanical causes, but in the scirrhus type, at least, there is usually no projection of the prostate into the bladder. It may even cause serious difficulty in evacuation of the bowels, or actual obstruction without causing retention, as in a case recently under my observation.

In the small or shrunken prostate, which is by far the most common form, retention occurs less frequently. There can, of course, be no

uniform grouping of symptoms to distinguish cancer from hypertrophy and some of the most characteristic symptoms are often absent; and may be present in one case and not in another. Physical examination gives more definite information. Dense, stony hardness felt from the rectum is perhaps the most important sign. This may involve the whole or only a part of the prostate. It is sometimes smooth and sometimes nodular. The lobes are often unequal in size, and in some cases where there are marked symptoms, the examiner will be surprised to find that there is very little palpable enlargement of the prostate.

Sometimes a small hard mass leads one to think that he has to deal with a stone or a tubercular nodule. Both of these conditions must be eliminated although they occur much less frequently than cancer.

In far advanced cases, the outline of the prostate is obscured by an infiltration of the capsule which gives the idea of an invasion of the bladder wall upwards. The bladder, however, is rarely invaded until very late, but the seminal vesicles and surrounding tissues are, and it is this extension which gives rise to the sign above noted.

The rectal mucous membrane may also be less freely movable in these late cases and enlarged cancerous glands may be found in the inguinal regions. Cystoscopic examination shows that the prostate does not project into the bladder as in ordinary hypertrophy, and Young describes the appearance of the mucous membrane as hard, drawn, and contracted looking.

When operation is undertaken it is found difficult or impossible to enucleate the mass, to separate the gland substance from the capsule, and it can only be torn away in fragments. (Doubtless many of the so-called "fibrous prostates," which have been described, were cancerous.) In early cases this may be noted at only one point in the mass. In the history of a case, rapid development of symptoms in a comparatively young man is very suggestive. In a word a man of 50-60 suffering from frequent micturition, much pain, comparatively little residual urine and whose prostate is very hard but not greatly enlarged, is probably the subject of cancer, and it is a very important question to decide whether enucleation,—the ordinary prostatectomy,—should be undertaken or a much more serious and extensive operation be provided for.

The following case may be taken as a type and one which illustrates also the hæmaturia which is observed in the later stages of the disease.

A strong rugged man, aet. 64, was in perfect health until December 1908, when he began to have some frequency of micturition by day and was obliged to get up once during the night. He had more or less burning at the neck of the bladder but no pain. Early in May 1909, he

began to pass bloody urine, which continued without change or interruption until his admission to hospital on the 23rd of June, 1909. The blood was intimately mixed with the urine but the amount was not large. He had a hard nodular prostate, and, on examination, five oz. of residual urine were withdrawn at one examination and at another no residual urine whatever was found. The cystoscope showed oozing of blood from all around the urethral opening, but no visible ulceration and no projection of the prostate into the bladder. Suprabubic operation on June 28th verified this observation and an attempt was made to enucleate the prostate. This I am now convinced was bad surgery, but it was difficult to know how to deal with the condition. It was exceedingly hard, and even with the aid of a perineal incision only a partial removal was effected. The patient made a good recovery, had no more bleeding, and was discharged July 27th with perfectly normal urinary function and no residual urine. It is, of course, unnecessary to add that this satisfactory condition cannot long continue, and one can only contemplate the future of such a case with a deeper feeling of sadness and despair than that which is evoked by incurable cancer in almost any other situation. In this case although the first symptom had been noticed less than six months before operation there can be no doubt but that the disease had been present for a long time before it gave rise to any signs.

The relation of cancer to senile hypertrophy of the prostate has not been sufficiently studied, but while there is no doubt but that cancer often attacks the already hypertrophied prostate, the comparatively early age at which it frequently occurs would seem to indicate that quite as frequently it occurs before there is any real hypertrophy. Whether hypertrophy predisposes to cancer or whether the occurrence of cancer in the already hypertrophied gland is not simply due to the more frequent incidence of cancer at the age at which hypertrophy occurs, are still unsettled questions.

The fact also that cancer of the prostate is usually, so far as we know, of slow growth in its early stages and has generally existed for some time before it produces symptoms, must also be taken into account. At any rate, cancer seldom occurs in the capsule after the removal of the hypertrophied gland. Careful examination of the prostate in cases in which cancer had not been suspected, has quite frequently discovered it in some part of the removed gland. Cachexia and failure of nutrition are rarely found until the disease is so far advanced that diagnosis is unmistakable. A peculiar feature which has been noted by nearly all observers is the tendency to metastases to the osseous system.

But the fact must not be overlooked that at the present time patholo-

gists are inclined to believe that metastasis to the bones is much more frequent in all forms of cancer than has heretofore been thought to be the case. My own experience is not in accord with that of other observers on this point, as in none of my cases was there any sign of bone involvement when the diagnosis was made; and in one case only am I aware of this form of metastasis recurring after operation, but it is true that no attempts have been made to follow up the later histories of my cases.

I will describe here, briefly, a case which came under my care nearly three years ago, as it not only illustrates the results of partial enucleation but is also the case in which bony metastases occurred two years after operation.

A man, 71 years of age, had suffered for two years with some frequency to which at the end of one year was added urgency and difficulty, and later on pain: and still later on retention. The pain increased. There was no hæmaturia; his health became poor and he lost about 15 lbs. in weight. On admission to hospital, he had a distended bladder; the urine was of a low specific gravity, turbid; and contained albumen but very little pus. The prostate was removed by suprapubic incision and enucleation. The tissue removed weighed 17 grammes and was definitely cancerous. The patient made an uninterrupted recovery, had perfect urinary function and normal urine and became so well that the diagnosis was questioned. At the end of about two years, however, he showed evidences of metastases in the sacrum, gradually failed and died two and a half years after operation.

Prognosis:—When the disease has advanced to such a degree as to admit of clinical diagnosis, the outlook is bad. This, of course, is precisely what is to be said of cancer in almost any organ. In one such case, (above mentioned) the patient, æt. 71, where a fairly satisfactory enucleation was possible, lived two and a half years with perfect urinary function to the end and with good health for about two years. In some cases in which cancer has been found in the prostate after operation, but where it had not been suspected clinically, the patient has enjoyed good health for several years: but when the disease has progressed to a degree at which satisfactory enucleation is impossible, the prognosis is bad in every way, and while incomplete operation will often restore the urinary function for a time, it will also probably in most cases hasten the growth and spread of the disease and shorten life.

Treatment:—As may be inferred from what has already been said, an ordinary prostatectomy (enucleation) will often give satisfactory results for a long time in the early cases. Some surgeons recommend

this method of treatment and report cases as cured by it, but it is impossible to make a sufficiently wide removal of a cancerous prostate by enucleation where the diagnosis can be made before operation. The subcapsular dissection recommended by Proust and Albarran would appear to be theoretically a little more promising, but in more advanced cases the history of operative treatment has been far from encouraging. Billroth is credited with having performed the first operation for the radical removal of a cancerous prostate in 1867. Many operators since that time have devised and carried out operations with this object in view, some by the suprapubic route and others by the perineal route. Large portions of the bladder have been removed by some operators, and even the whole bladder has been removed and the ureters transplanted, but the results have not been such as to encourage a continuance of any of these methods.

In 1905 (Johns Hopkins Bulletin), Young of Baltimore devised the operation which bears his name and which stands to-day as the only radical procedure which commends itself to surgeons.

Two lessons have been learned, however, namely, first: that it is impossible to follow up extensive involvement of cancerous glands where they exist, and second, that closure of the bladder wound is possible after very large portions have been removed by the perineal route. Young's operation, which consists in exposing the prostate in the perineum, cutting the membranous urethra across and removing the bladder neck, prostate, seminal vesicles and ampullæ of the vasa deferentia, and reuniting the stump of the urethra to the upper angle of the bladder incision which is closed up to this point, has been very successful in his hands, but has not been extensively employed by other surgeons up to the present time. In fact, the radical removal of the cancerous prostate has not received the attention from surgeons which its importance entitles it to. It must, however, be admitted that the operation is difficult and not without danger, although Young had only one operative death in his first six cases and the after results were very satisfactory. In a direct communication Dr. Young writes me that one of his cases reports himself entirely well at the end of about four years. Even this operation can of course only be expected to be curative in the early cases. There are also more advanced cases in which even complete extirpation of the bladder and either bringing the ureters out upon the loin, as recommended by Watson, or transplanting them into the bowel with all its risks and disadvantages, would seem to be preferable to a period more or less prolonged of hopeless suffering and a miserable lingering death.

I have in mind at this moment several cases of strong useful men in middle life doomed beyond all hope, and dying by inches in constant pain and distress from cancer of the prostate.

Surely any treatment or any operation which can hold out any hope would be gratefully accepted by patients in such an unfortunate position; and the endeavour to treat the more desperate cases by operation would only be in accord with the general practice of surgeons in the treatment of cancer of other organs as already pointed out. We do not hesitate to extirpate the tongue, the stomach, the breast, the limbs or any organ, even where we feel that there is great doubt as to the possibility of getting completely beyond the disease, especially its extensions into the lymphatic system; and subsequent history very often proves that we have not completely eradicated it.

Finally, in the most advanced cases where no operation is possible which holds out any hope of cure, palliative treatment is called for. It will be seen that in the early cases, especially in those operated upon before a clinical diagnosis has been possible, that the ordinary enucleation gives very satisfactory results for a time, but in the great majority of cases it can only be palliative.

It has not been my purpose in this communication to give a detailed history and description of cancer of the prostate or of its treatment in the past. I have not attempted to array facts or to marshal figures in favor of one line of treatment or another. I have had nothing new to offer as to its pathology, symptomatology or diagnosis. I have only attempted, and I hope not entirely without success, to direct your attention to a painful, distressing and fatal disease which, occurring so frequently as it does, does not seem to have received sufficient attention from the general practitioner who first comes into contact with it, nor from the surgeon who is finally called upon to treat it.

I would strongly urge that the same thorough, conscientious investigation be given to patients with disturbances of the urinary function as is given to disturbances of function of other organs, in order that early diagnosis may be made; and that surgeons should give to this disease the benefit of their most serious consideration, their skill and surgical resource, to the end that satisfactory operative treatment may be developed and made available for those unfortunate sufferers while the disease is still local and circumscribable, and that more satisfactory palliative treatment may be evolved for the inoperable cases.

CYST OF THE WALL OF THE CAROTID ARTERY.

BY

A. FREEDMAN, M.D.

(From the Pathological Laboratory, Royal Victoria Hospital, Montreal).

G.B., aged sixty, was admitted to the Royal Victoria Hospital on March 29th, 1909, suffering from a frank acute lobar pneumonia. The patient died two days after admission.

The autopsy, which was performed three and a half hours after death, revealed the following pathological conditions: acute left sided lobar pneumonia, generalized arteriosclerosis, arteriosclerosis of coronaries and peripheral vessels, fatty change of the intima of the pulmonary artery, fatty and calcareous degeneration of the aorta, fibrosis of myocardium, calcification of papillary muscles, chronic interstitial nephritis and chronic mitral endocarditis.

The generalized arteriosclerosis was of moderate grade, and affected not alone the aorta, but also the smaller vessels of the muscular type. In the aorta, this sclerosis varied from small and scattered points of superficial fatty change of the intima, to the more extensive fatty softening of the deep intima and inner media. Here and there, too, small plaques of calcification were present in the arch, and in the lower abdominal portion of the aorta.

At the origin of the common carotids the aorta was fairly healthy, and, save for a few longitudinal and superficial fatty streaks in the intima, the common carotids showed little macroscopic change. This condition, however, was altered close to the bifurcation of the common carotids, where the vessel wall showed severe atheromatous change, with endarteritic thickening, which extended into the internal and external carotids. In this situation, calcareous masses could be felt in the atheromatous plaques and in places the vessel lumen was distinctly narrowed by the overgrowth of intimal tissue over these plaques.

In the right common carotid at a distance of $2\frac{1}{2}$ cm. from its origin, and lying in a portion of the artery which showed few degenerative changes, was a small cyst with gelatinous contents occupying the middle zone of the arterial coat. The cyst was oval in shape, with its long axis running parallel to the direction of the vessel. The cyst lay on the anterior side of the artery, and from the inner surface of the vessel it was seen to project above the general level of the intima. Similarly when viewed from without, there was a definite bulging of the arterial coat in the adventitia.

The intima covering the cyst was quite smooth and free from atheromatous or endarteritic change. Likewise, there was no evidence

of disease or of a neighboring inflammatory process on the external surface of the artery. The adventitia covering the cyst was quite pale and similar to the tissues in the neighborhood.

On opening the cyst, it was found to contain a gelatinous semi-solid substance, looking not unlike the colloid material of the thyroid. This material was of such consistency that it remained in situ after the cyst was bisected.

The inner and outer walls of the cystic cavity were formed by the arterial coats and were of about equal thickness. There was no evidence of a thinning of the vessel coats, and the combined thickness of the inner and outer walls of the cyst was about equal to that of the wall of the carotid on either side of the cyst.

Microscopical:—Stained sections of the carotid showed the cyst to be in about the centre of the media, and to have its walls composed of the tissues of the artery. Sections through the middle of the cyst showed the main portion to be unilocular, with narrow slit-like cysts lying at either extremity of the main cyst in the arterial coat. In other places several small circular, oval and slit-like cysts lay at the extremity of the main vesicle, and some of these were apparently related to the main cyst.

The inner wall of the main cyst was composed of either an elastic lamina of the vessel, or a layer of circularly disposed muscle fibres, which lay between the elastic fibres normally. Here and there there were small tags of elastic and muscular tissue jutting into the cavity. There was no evidence of a fibrous capsule enveloping the cyst and all evidence of inflammation, either acute or chronic, was wanting. Nowhere was a cellular infiltration evident, and fibrous tissue was not to be seen, save in the slight quantity in which it is present normally in the arterial wall. There was about an equal amount of the arterial coat lying to the inner side of the cyst as there was to the outer.

The contents of the cyst were for the most part homogeneous, and took a pale blue stain with hæmatoxylin. In places, however, the contents, were finely granular, and appeared to be mixed with some debris of degenerating cells lying at the margin of the cyst.

In comparing a series of sections, it was plainly evident that the early beginning of the cyst was in the neighborhood of the elastic laminae. Slit-like openings were found to lie between the elastic strands and the neighboring muscle bundles. With the increase in the size of the cyst, the muscle fibres became infiltrated with the homogeneous secretion and various stages of degeneration of the muscle fibres could be seen. On the other hand but little change was evident in the elastic fibres. In some sections a number of these cystic dilatations could be seen lying

close to each other, with lamellæ of elastic fibres and some muscle cells separating them. Occasionally in the main cyst narrow partitions could be seen jutting into the cavity and dividing it into small cysts.

The intima of the carotid artery away from the cystic dilatation was a little thickened, but on the whole appeared quite loose. As the intima passed over the cyst cavity its substance became more compact, and the tissue showed the effects of pressure from the cyst so that the intima occupied a narrower margin. The media on both sides of the cyst also showed some effects of pressure in having the muscular lamellæ somewhat compressed, but in counting the number of elastic laminæ, it was found that there was but one, or at the most two, less in the cystic wall than were present in the arterial coat on either side of the lesion.

Further than the pressure atrophy or dissolution of the muscle fibres between two parallel elastic lamellæ close to a cyst, there was no evidence of tissue necrosis.

The adventitia appeared quite normal, and was not thickened or fibrosed. There was no evidence in the vasa vasorum of the presence of thrombi or occlusion of their lumina.

To sum up the principal features in the foregoing case, we find a small cyst lying in the media of the carotid artery, along with a number of smaller cystic dilatations lying in the same plane, at either extremity of the main cavity. Each of these cysts is filled with a homogeneous gelatinous material, and their presence in the vessel wall has exerted pressure on the surrounding tissues. The smallest cysts, which may be taken as the early beginnings of the condition, are seen to lie close to the elastic laminæ and arise without evidence of primary necrosis or of inflammation. As the cysts enlarge, there is a pressure necrosis of the muscle cells in the immediate vicinity, but the elastic fibres resist the strain and remain intact without showing evidence of degenerative changes.

The intima remains healthy, save for compression of its tissue over the cyst, and the sum-total of the arterial coats lying to the inner and outer sides of the cystic cavities is almost equal to the thickness of the normal vessel wall.

From the microscopic sections, it appears that the various cysts were associated with each other and probably communicated through the lymph spaces. The contents of the different cysts were similar in character, save that the more extensive ones contained some debris of degenerated muscle fibres about them.

In the absence of a capsule or any evidence of fibrosis, and also in the nature of the cyst contents, it is evident that the condition was not the

result of any parasitic disease. It is also apparent from the absence of a primary necrosis in any of the tissues of the vessel wall that the cystic dilatations do not represent focal necroses of the arterial wall. This conclusion is also borne out by the absence of inflammation about the lesion, and the healthy state of the vasa vasorum of the part.

On the other hand, the tissues about the cyst presented the effects of pressure, originating within the cyst, demonstrating the presence of an active secretion into the cavity. Moreover the contents of the cyst had the appearance of a coagulated, albuminous fluid, such as might arise from a serous fluid. Evidence is also at hand that the secretion in the smaller cysts began before the tissue elements of the part showed any signs of destruction. These early cysts developed in the immediate neighborhood of the elastic fibrils leading to slit-like dilatations and separated the muscle bundles from the main elastic lamellæ. These situations are those of the normal lymphatic spaces of the arterial wall.

We are thus led to conclude that the most probable explanation for these dilatations is that there has been some obstruction and stasis in the local lymphatic channels, which have led to a retention of the fluid and dilatation of the normal lymphatic channels. It is more than probable that the multiple cysts which were present, were along the same route, or emptied into the same lymphatic channel which was obstructed. The condition is thus to be regarded as a lymphangiectasis in the media.

We have not been able to find any report of a similar condition in the literature.

AN ANALYSIS OF TWO HUNDRED AUTOPSIES UPON INFANTS.

BY

JOHN MCCRAE, B.A., M.B., M.R.C.P. (Lond.)

Lecturer in Pathology and in Medicine, McGill University; Assistant Physician, Royal Victoria Hospital, Montreal.

The series consists of 204 cases of which only 37 per cent are over two months of age. The age incidence by months is as follows: 1st, 57; 2nd, 71; 3rd, 31; 4th, 16; 5th, 3; 6th, 6; 7-12th, 11; over 1 year 4. It will thus be seen that 73 per cent of these cases are in the first 3 months of life. Four, only, are over 1 year, and the oldest is 2 years. The children were nearly all born at the Montreal Maternity or the Women's Hospital, Montreal, and innutrition is a prominent feature throughout. In the majority of cases the cause of death can be found. The commonest lesions are broncho-pneumonia and gastro-intestinal

disease. There are, nevertheless, 45 cases in which the only diagnosis made is marasmus or inanition. In these the diagnosis is practically to be made from the high degree of poor nutrition, while, internally, there is no change observable, unless it be the presence of prominent Peyer's patches in the intestines and mesenteric glands. Whether this is a natural enlargement or not is doubtful. It may be that these appear to be prominent only because of the relative absence of fat in the tissues.

Diseases of the Respiratory Tract:—The upper air passages in a child of one or two months can suffer a considerable degree of inflammation without corresponding post-mortem change commensurate with this disturbance. A noticeable tracheitis, for example, is visible in only 16 cases, and bronchitis has been observed in 31 cases, tracheitis generally co-existing with bronchitis. Aspiration of vomitus has been observed in only three cases.

With regard to the lungs, pneumonia is, of course, far the commonest lesion and it is generally bilateral, 69 cases being found in the series: the majority of these are lobular, the lesion being numerous broncho-pneumonic areas, generally in the posterior parts of the lungs; some of these are generally fused in the lowest parts. It is not easy to say how many of these depend upon hypostasis for their origin, as probably many of them do. It happens that only two of them are noted to have this anatomical distribution and only one is septic. Lobar pneumonia is shown in only 17 cases. From the fact of 14 being bilateral, there is every likelihood that many of these individuals have had scattered areas of consolidation, which have fused, so that not all of these 17 are true lobar pneumonia. In the majority of pneumonic cases the pleura is not seen to be involved. If so, it must be merely in a microscopic sense. However, it may be stated that in 6 cases actual dry pleurisy was present and in 6 pleurisy with effusion. The effusion is nearly always small in amount, and we do not recall having seen a case of serious pressure on the lung. There were three cases of hæmorrhagic pleurisy. Empyema was observed once, in a case in which the pneumonia was septic. We could not tell certainly whether the lung or the pleural infection was primary, but all evidence was in favor of the lung, there being two small abscesses therein.

Old pleural adhesions were found very definitely on the right side, posteriorly, in an infant of 260 days old. In the vicinity of these old adhesions there was recent consolidation of the lung, but the adhesions dated back to a much earlier period.

Collapse of a part of a lung is fairly frequent, but it rarely affects

more than a small fraction of the total bulk of the organ. It is noted in 6 cases, though slight degrees can be found in a fairly large percentage.

Emphysema was noted in 9 cases, and interstitial emphysema, which sometimes becomes very noticeable, was seen in 3. Abscesses of the lungs were found 4 times, always secondary to pneumonia. Pulmonary apoplexy was noted but twice, and tuberculosis of the lungs but once, in a case of generalized tuberculosis, evidently of thoracic origin, which was noted in a child of 102 days old. This case will be referred to again.

Gastro-Intestinal Diseases:—The œsophagus, as in an adult, is comparatively immune, there being but two cases of œsophagitis. A remarkable dilatation of the œsophagus was found in a case of 76 days, a male, in whom the lower two-thirds of the tube were decidedly dilated, there being no evidence of stenosis in any part. The greatest width was 3 cm. above the cardia, where the œsophagus measured 3 cm. in circumference, which is about twice its usual size. There was no other abnormality, save for three accessory spleens.

Inflammation of the stomach was found in 40 cases, it being in conjunction with disease lower down in 31 of these. In one case multiple small, dark brown ulcers were found, the largest of them being 3 mm. diameter. The dark color was evidently due to pigmentation, and microscopic examination indicated that these were true inflammatory ulcers: the case was one of acute entero-colitis. Dilatation of the stomach was found 4 times, though only once did it appear to be accompanied by actual gastritis. Entero-colitis is the commonest condition found in the intestinal tract, the combination happening in 35 cases, only one of which was ulcerated. The small intestine alone was inflamed in 22 cases, one of which was hæmorrhagic. The colon alone was found affected in 13 cases, only one of which was ulcerated.

Proctitis was not carefully noted, but it is practically always present in diarrhœic conditions of the colon. Agonal intussusception was noted twice, and a congenital left sided indirect hernia was found in one case, a male of 14 days old.

Infective Conditions:—The most important series of infections are probably those which have reference to the umbilicus. The umbilical cord was found in a suppurative condition once, and the hypogastric vessels were found to be the site of arteritis or phlebitis in 5; only two of these led to peritonitis, although peritonitis was found altogether four times.

Peritonitis:—The above mentioned case was 27 days old, a female in

which a sinus could be found underneath the umbilical scab. The hypogastric veins were the seat of a septic thrombo-phlebitis, and the peritoneum was the seat of a streptococcus infection. The second streptococcus infection of the peritoneum could not be traced at all. A third case was a boy of 49 days, in whom there was an umbilical scab, with considerable thickening of the peritoneum at this point, but no abscess. On following down the thickening, however, along the hypogastric vessels, the tissues around these were found necrotic, so that evidently the infection had come along these vessels. Bacterial examination showed mixed cocci and bacilli. A fourth case of peritonitis was a boy of 25 days, and here again the cause could not be determined. There was an acute gastritis and an intense adenitis of the mesenteric glands, but this latter was perhaps secondary.

Erysipelas was found in but one case, in which it affected the face.

Septicæmia occurred once in a boy of 15 months, who presented an acute bronchitis, but no other evidence of an origin for the disease. A second case was a boy of nine months who was ricketty and had otitis, pneumonia, cholecystitis and multiple abscesses of one kidney. The lung here contained pneumococci and the ear streptococci.

A case, which was diagnosed as sapræmia, occurred in a girl of 9 days, who had cellulitis, abscess of the scalp with operation but incomplete drainage of the infected parts. Abscess of the scalp occurred in 2 cases, —the above mentioned and another, a female of 19 days, in whom birth injury had evidently occurred. The parietal bone was depressed, and there was streptococcus cellulitis of the scalp. A third case of cellulitis of the scalp was found in a child of 168 days, in whom ulcers of the scalp existed with great thickening and chronic œdema of the tissues of the scalp, which gave staphylococcus.

A case of retro-pharyngeal abscess was found in a girl of twenty days, in which the abscess extended from behind the left naso-pharynx down to the bifurcation of the trachea. There was no hint of its origin in larynx, trachea or œsophagus, but it gave rise to a widespread cellulitis of the neck.

An acute hæmorrhagic pancreatitis was met with in one case, a boy of 68 days, in whom there was an acute duodenitis and jejunitis. The pancreas throughout its head was dark red, swollen, hæmorrhagic, and the lobules were indistinguishable. A case of suppurative mastitis was also found in a boy of 32 days. There was really an abscess of the breast, and the child had died from cerebral softening, secondary to otitis media.

Before leaving peritoneal affections, it is worth noting that in a female of 41 days, who died of pneumonia, there was found distinct adhesion of the great omentum to the abdominal wall in the region of the umbilicus, pointing, evidently, to an infection of the umbilicus, which had been overcome and localized. It is worthy of note in passing that distinct splenic adhesions were found twice, in children of five and ten months, respectively. In the elder of these children, the spleen capsule was quite perceptibly thickened at one part. In the matter of splenic adhesions, it is always a debatable point as to whether the inflammation began in the peritoneum or spleen. My own belief is generally in favor of the spleen, and it seems to me that the existence of adhesions in so young infants is rather in favor of that view.

Liver:—It is notoriously difficult to tell with the naked eye much about the changes in the liver. Five times we have seen what seems to be an excess of fat, and four times the organ has seemed to be the seat of cloudy swelling; but this is a very small number of cases, considering how much inflammatory disease is found in the series. The anomaly known as Liebermeister's groove was found four times, and abnormal lobation was seen once.

Gall-bladder:—Dilatation was observed in a boy of 23 days: the bile, instead of being amber colored, was clear and viscid, with a dark green sediment. The surface was inflamed. Considering that there was otitis, pleuritis, pneumonia and ileitis, the case ought perhaps to be considered one of septicæmia. Cholecystitis was found 3 times, including the above case. In one other case cholecystitis occurred as part of a general septicæmia, and in the third case no cause could be found for it. In a female infant of 17 days, cholelithiasis was found with a deposit taking the form of bile sand.

Spleen:—Enlargement of the spleen, depending, doubtless, upon the infective disease, was found in 16 cases, in 3 of which the spleen was pulpy, as happens in the adult. In addition to the adhesions mentioned above while speaking of the peritoneum, fibrinous adhesion from the spleen to the wall was found in children of ten months, two months, fifteen months and one month, in all of which cases it seemed to be the result of preceding disease in the spleen.

Adrenals:—Hæmorrhagic areas in the adrenals were noted in 3 cases, in one of which there was a very marked anæmia of all the organs. An abnormal degree of pigmentation, by which the medulla appeared quite black, was observed once.

Kidneys:—The commonest change seen in the kidneys is the existence of fine yellow particles, which are found to be urates, in the medulla

and the pelvis of the kidney: sometimes these were found in the ureters and bladder. They were observed in 52 cases, more than 25 per cent, and practically nothing is known of any significance they have with regard to the kidney. In one case, an infant of 2 months, the deposit was found of pinhead size, and in another, a female of 44 days, a calculus, roughly oval, with a diameter of 4mm., and of hard consistence, was found; the latter was whitish and did not show a uratic character. Dilatation of the pelvis of the kidney was noted in only one case, a male of 34 days, in which there was an apparent stenosis of the ureter just at its commencement. Abscess of the kidney was found in septiciæmia.

The question of nephritis in the infantile kidney is very difficult because it always appears as if the cortex were much swollen. I do not think that a naked eye diagnosis of cloudy swelling of the kidney is of any value, and I cannot give any better reason for this statement than the universality of the finding. An acute nephritis, in my own experience, is oftenest indicated by an inequality in size of the kidney, the larger one being bloody and soft, almost fluctuant, while the other, smaller and firmer, is of the usual color: 9 times has the diagnosis of acute nephritis been made, and in a certain number of these, as before mentioned, the disease was unilateral. A beautiful congenital cystic kidney was found in a girl of 53 days. The kidney measured $4\frac{1}{2} \times 3 \times 2$ cm., and consisted of a mass of cysts, of which the largest was 2 cm. diameter. The other kidney was normal.

Bladder:—Acute cystitis was observed thrice; the uratic deposit, spoken of above, twice; submucosal hæmorrhages of the bladder were observed once; hydrocele of the cord was found in a male of 14 days. Failure of descent of the testes was noted thrice, and phimosis 22 times. The frequency of this last is significant when it is added that this phimosis was not taken on the evidence of the eye, but manually determined.

Genitalia:—Of the female genitalia, the only abnormality noticed was a well-marked cystic dilatation of the ovary, full of clear fluid, measuring $1\frac{1}{2} \times 1 \times \frac{1}{2}$ cm., in a baby of 22 days.

Bones:—Rickets was found thrice. Osteitis of the skull was found once, and once the parietal bone was thinned from the pressure of a hæmatoma.

Anomalies:—In a series like this, the anomalies form a very interesting part, and we are able to make comparison between this series and the complete observations of a series of adult autopsies.

Transpositions:—Two cases of practically complete situs inversus were found: in one, a male of 49 days, who died of pneumonia, there was a transposition of all the viscera, save the gall-bladder, combined with

atresia of the pulmonary artery, hypoplasia of the pulmonic ventricle and a deficient auricular septum: this case was reported in the *Journal of Anatomy and Physiology*, XL, 1905. The second case was complete and was combined with patent foramen ovale and interventricular septum. In a third case there was a very interesting series of cardiac anomalies, which will be mentioned under their proper heading, and a complete transposition of the liver and gall-bladder. The case died from abscess of the lung and pleurisy, following pneumonia. A fourth case showed a dextro-position of the rectum.

Anomalies of the Circulatory System:—The most common anomaly was patency of the foramen ovale: this was found in 83 cases—that is, 40 per cent. In the majority of cases the patency is oblique and the opening is only a valvular one: this valvular opening becomes completely closed in many cases, because in our adult cases the anomaly was found in 14.8 per cent. An actual deficiency of the septum was found but twice, while deficiency of the interventricular septum was also observed twice. Patency of the ductus arteriosus was observed 19 times, but I feel sure that this is an overstatement, because in children of this age the duct is always patent to a fine probe; the fibrinous-like material found in the duct leads one to suppose that it would not admit the passage of blood. I remember to have seen but one case of definitely patent ductus in this series, and in that case the ductus was much dilated to a degree which might almost be called aneurysmal. In the case mentioned above of multiple anomalies, a ductus arteriosus was absent. The case of hypoplasia of the pulmonic ventricle above alluded to was so extreme that for practical purposes the heart had no pulmonic ventricle and was a three-chambered one. An accessory renal artery was observed once and an abnormal course of the iliac vein once. The case of multiple cardiac anomalies, above referred to, was a male of 74 days. Besides deficiency of the two septa and absence of the ductus arteriosus, the inferior vena cava entered the left auricle, the pulmonary artery was stenosed and came from the left ventricle.

Anomalies of the Lungs:—Anomalous lobulation of the lung was noted in 16 cases—that is, 7 per cent. Our adult series of 1,000 shows the anomaly in 8 per cent.

Anomalies of Abdominal Organs:—The cesophagus was congenitally dilated in one case. Liebermeister's grooves of the liver were found 4 times, 2 per cent, which contrasts with 7.3 per cent of our adult series: abnormal lobulation of the liver was noted once. Accessory spleens were found in 15 cases, 7 per cent, which is rather less than the 9.5 per cent of our adult series. Absence of the spleen

was noted in the case of multiple anomalies of the heart. Meckel's diverticulum was observed in the bowel but once, whereas our adult series shows this in 2 per cent.

With regard to anomalies of the mesentery, these have been observed but twice. In one case, a male, the cæcum was held in the upper right quadrant of the abdomen and could not be made to descend below the navel. The second case was the case of multiple anomalies mentioned above. It had a meso-colon of about 12 cm. in length on an average. It had no gastro-colic omentum, but had a gastro-pancreatic one. Congenital cystic kidney occurred once. An apparent congenital narrowing of the ureter, with slight nephrosis, was found in a boy of 34 days. An infantile hernia, combined with hydrocele of the cord, was found once.

Undescended testes were found thrice. In one case an abnormal, square cartilage came off from the 4th left costal cartilage, and one case of spina bifida in the lumbar region was found in a girl of 17 days, who had hydrocephalus.

Specific Infections:—Thrush was observed only once, and was situated in the mouth. Syphilis was found in but one instance, and even there there is some doubt as to the diagnosis. It was a male of 41 days, with ulceration of the roof of the mouth, extending to the palate bone underneath and softening it. This, added to the appearance of the face, was all the evidence upon which to go, and the case was, therefore, very doubtful.

Tuberculosis:—The only case of tuberculosis found in this series was a male of 102 days old, in whom the tuberculosis was decidedly generalized. There was tuberculosis of the thoracic and abdominal glands, as well as the cervical. There was miliary tuberculosis of lungs, thymus, spleen, liver and kidneys. It is hard to say whether the thoracic or the abdominal glands had been first affected, because they were all very large and caseous. The thoracic lesions were perhaps the most extensive, and, as far as we could learn, the case seemed to be one of infection by the air passages. The intestines were free from evident disease.

Circulatory System:—Probably the commonest departure from the normal that is noted in the heart is the occurrence of hæmatomata on the valves. These were observed on the mitral valve twelve times and on the tricuspid five times. In one case these seemed to have become calcified, in a girl of 43 days. Among the cardiac anomalies, there was a distinct stenosis of the pulmonary artery, observed in one case: the stenosis gave to the pulmonary artery a maximum circumference of 4 mm. Dilatation of the heart is a matter of considerable difficulty of determination, but the auricles were observed to be dilated twice, both

being cases of entero-colitis; the right auricle showed the most marked dilatation. Twice in cases of broncho-pneumonia the ventricles, especially the right, showed dilatation. In one case, a male of one month, an area of dark bluish color on the outside of the right ventricle indicated a hæmorrhage into the ventricular wall, 1 cm. in diameter. The case was one of entero-colitis and the cause was not determined. For some reason one does not ordinarily find clot in the heart chambers, but in one case of marasmus the right ventricle was found to contain a firm, grey clot, 2 cm. long and 1 cm. in diameter, of a sausage shape: it almost filled the ventricle and ran into the pulmonary artery. The effect of this clot was perhaps nullified by the existence of a wide-open foramen ovale and patent ductus arteriosus. Thromboses are, also, not numerous, but in one case of nephritis, in a child of 13 days, the aorta had a decidedly firm clot, of a grey color, adherent to its walls, and in one other case of entero-colitis the renal veins and arteries were found thrombosed, but no change was present in the kidneys, save a marked congestion.

Head and Brain:—It is notoriously difficult to obtain much evidence of cerebral changes in infants. The brain is so soft that a satisfactory removal is a matter of much difficulty, but one can, in a general way, make out the condition of the meninges and the brain tissue. Among vascular changes in the cerebral circulation, œdema of the pia was noted three times. Decided congestion of the meningeal vessels three other times. The lateral sinuses were found thrombosed once, the thrombus being adherent to the sinus in a case in which no otitis media was present. Intra-cranial hæmorrhage was observed thrice. In one case, a female of 25 days, a clot adherent to the upper surface of the tentorium cerebelli was found. In another case, a male of 24 days, a somewhat old clot was found over the anterior surface of the left frontal lobe. The clot lay under the pia, and the blood had stained yellow the brain tissue. A similar blood clot was found in the left lateral ventricle. In the third case, a male of 56 days, there was a vertical sub-pial hæmorrhage of the right side, with evidences of blood in the right lateral ventricle, the tissue bordering upon it being the seat of encephalitis. I am inclined to think that these were all birth injuries. The slow absorption of blood may perhaps be due to the poor degree of nutrition found in these children. Of changes in the cerebral vessels, thrombosis from suppurative otitis media was found once in a male of 32 days: on the same side was found a basal vessel thrombosed and a distinct cerebral softening in the region of the left lenticular nucleus. A muco-purulent meningitis was found in a girl of 47 days, in whom the meninges gave a pure culture of pneumococcus: there was no middle ear or mastoid disease, nor any lung disease. There

had been a muco-purulent discharge from the nostrils, but no other septic site was found in the body. Pachymeningitis chronica was observed in a case of 15 months, in which there was extreme thickening of the dura up to six or seven mm. as a maximum thickness. Inside the dura, and adherent to it, was a thick membrane of fibrin, which could be stripped off, leaving the pia unchanged: with this there was extreme hydrocephalus. The immediate cause of death was broncho-pneumonia. Hydrocephalus was found in two other cases: one of them, a girl of 17 days, showed the transverse diameter of the head nearly 20 cm.; 100 cc. of fluid were found in the skull. There was also in this case a spina bifida. In a third case, a girl of 6 months, dying of pneumonia, a moderate internal hydrocephalus was found.

Eye and Ear:—Ophthalmia of a purulent nature was found twice, in one of which it was determined to be gonorrhoeal. In one case there was a keratitis, of which the cause was not discovered. Suppurative otitis media was found in 21 cases, about 10 per cent, and this is probably an understatement of the truth. Mastoiditis was found but once.

Organs of the Neck:—The thymus gland shows constant variations in size, and the only point worthy of note was that it was once the seat of military tuberculosis. Goitre was observed twice, both times in males: in one of these the thyroid was moderate, in the other of large size. Pharyngitis and laryngitis were observed but four times, and in three cases there was marked œdema of the glottis. The strangest condition found in the organs of the neck was that, in a boy of 35 days, the right sternomastoid muscle showed a transition in its lower third into a distinct white mass of fibrosis. The firmness and consistence of this fibrous tissue leads one to suppose that it must have been repair of an intra-uterine lesion.

TREATMENT OF PROSTATIC OBSTRUCTION.

BY

GEO. S. GORDON, M.D., C.M., Vancouver, B.C.

For some time past a well trained band of scientific clinicians in France, Austria, Germany, England and America have been giving special attention to the genito-urinary tract, with a single eye to the remedy of pathological conditions. They have added to our knowledge of anatomy, physiology and pathology, delved into the ætiology, closely observed and differentiated symptoms, watched the course and tabulated the results of medical and surgical treatment,—trying all things, believing no tradition. Such are the men who have revolutionized

modern practice in this specialty—Guyon, Albarran, Motz, von Frisch, Zuckerkandl, Englisch, Nitze, Israel, Wossidlo, Kollmann, Thompson, Fenwick, Young and a host of others, doing equally good work. So large is this subject, however, and so little explored as yet, that the whole field of medicine offers no better opportunity for scientific research. Today we place before you, however inadequately, the treatment of prostatic obstruction.

Anatomy:—This flattened, roundish gland envelops the urethra for a distance of $1\frac{1}{4}$ inches from the bladder above to the triangular ligament below, in such a manner that almost all its parenchyma is behind. Through it the urethra runs almost perpendicularly; the lower end, however, bends slightly forward from the region of the sinus pocularis. In front of the urethra is non-striated muscle, elastic and fibrous tissue, with a little striated muscle and a few gland tubules. Increasing on the sides to predominance behind the urethra, is tubular parenchyma, which discharges its external secretion through the mouths of some twenty or thirty ducts, opening for the most part on the back and side walls of the urethra. Acini and ducts are enclosed in compartments whose partitions are of non-striated muscle, with some fibrous and elastic tissue intermixed. These stroma elements radiate from similar tissue about the urethra to similar tissue at the periphery.

The prostate is bounded above by the bladder and vesico-prostatic space; below by the triangular ligament and fascia of Denonvilliers, which separates it from the recto-urethralis muscle; behind by this same fascia, which separates it from the rectum; in front by the space of Retzius; and on the sides by the levatores ani. Its attachments are to the bladder above, for a radius of about one centimeter around its outlet; below to the triangular ligament, for a slightly less radius; and in front to the pubes by the pubo-prostatic ligaments. There are no lines of cleavage between the prostate and these attachments, but Wallace says that everywhere else the gland can be easily separated from its surrounding fascia.

There are two roots to this gland (if one may speak of them as such), which carry the main blood and lymph vessels, the nerves and, higher up, the ureters also,—all enveloped in loose, connective tissue. They spring from each side of the pelvis behind, to merge on the upper part of the prostate and base of the bladder. The blood vessels are from the inferior vesical and middle hæmorrhoidal; the nerves from the hypo-gastric and pelvic plexuses; while the lymph channels run to the iliac, hypo-gastric and sacral groups of glands. There are smaller roots carrying the dorsal vein of the penis and the obturator veins to the plexus of Santorini.

The space of Retzius is the aureolar, tissue-filled cavity between the bladder above, the prostate and prostatic ligaments behind and the pubes in front and on the sides.

The plexus of Santorini is composed of many large valvulated veins filling this space and the vesico-prostatic space.

The vesico-prostatic space surrounds the vesico-prostatic sphincter and is deepest behind, where it lodges in part the veins of Santorini, the vesiculæ seminales and the ampullæ of the vasa differentia, which traverse it from above down. It is bounded behind by the fascia of Denonvilliers.

The fascia of Denonvilliers is a perpendicular, many-ply-thick, sheet of fascia, between the rectum and recto-urethralis muscle behind and the prostate and vesico-prostatic space in front. It is attached below to the triangular ligament; at its sides to the fascia of the levatores ani, which it joins perpendicularly and at right angles, and above by the pouch of Douglas. On the sides it becomes looser aureolar tissue, enclosing some of the veins of the plexus of Santorini in front, while above it fills the vesico-prostatic space; here also becoming quite loose, connective tissue it enmeshes the vesiculæ seminales, the ampullæ of the vasa deferentia and the plexus of Santorini. Above the pouch of Douglas it is continuous in front with the sub-peritoneal coat of the bladder; and behind with that of the rectum.

The vasa deferentia and the ducts of the vesiculæ seminales enter the highest part of the prostate behind and join to become the ejaculatory ducts. These run not more than a quarter of an inch apart from the base of the gland to their exits on the lips of the sinus pularis, lie not deeper than a quarter of an inch below the back surface of the prostate, and maintain these relations, even under pathological conditions. They are surrounded by their own tough, muscular sheath and are thus often uninjured in Freyer's operation of supra-pubic enucleation.

The internal sphincter of the urethra, identical with the vesico-prostatic attachment, is made up of unstriped muscle, elastic and fibrous tissue from both bladder wall and prostate. In its normal condition and undilated, one could cut it transversely for a depth of at least five millimeters from the lumen, without danger of opening the vesico-prostatic space.

The external sphincter is, in part, the above described triangular ligament attachment of the prostate. In addition to the same constituent tissues as the internal sphincter, it contains a large amount of voluntary muscle, especially in front.

A capsule to the normal gland does not exist. The periphery of the gland proper is made up of stroma, intimately interwoven with the

stroma running between the acini and with that surrounding the urethra. A line of cleavage, superficial to this, and between it and the fascia of Denonvilliers behind, and the loose, connective tissue which carries the plexus of Santorini, does exist, but here the likeness to a capsule ceases, as this line of cleavage cannot be followed across the attachments of the prostate to the bladder, pubes or triangular ligament.

The verumontanum is an elevation on the back wall of the urethra, three-quarters of the way down from the bladder orifice to the apex of the gland. It envelops the sinus pularis, the homologue of the uterus and vagina of the female.

The nerves form numerous ganglia about the prostate.

For clinical purposes only, the parenchyma is arbitrarily divided into lateral lobes which lie on each side of the urethra; the sub-montanal, behind and below the verumontanum; the pre-spermatid, between the spermatid duct and the urethra in the mid-line, the sub-cervical (or, if one may suggest it as more appropriate, "the sub-trigonal"), at the rear edge of the sphincter, and the pre-urethral.

Physiology:—So far as known, the function of the prostate is entirely sexual. Its development depends upon development of the testes. It is normally rudimentary before puberty and in crypt-orchids and eunuchs, throughout life. In adults the normal gland atrophies after castration. John Hunter observed that it was very small in moles while hibernating, but attained large dimensions in the rutting season. Serrallach and Pares of Barcelona, last year, after a great deal of work, concluded that removal of the prostate gland caused atrophy of the testes, but their experiments and deductions are far from convincing. Whether it has an internal secretion and even the properties of its external secretion, are as yet unestablished. It is generally accepted, however, that the latter dilutes the thick secretion of the testes and aids in vitalizing the spermatozoa. Normally it is an alkaline fluid of milky appearance, containing microscopically lecithin bodies and small and large granular cells. Some animals,—for example guinea pigs,—lack the prostate gland. It does not seem to be an essential sexual organ.

Bell of Dublin has proved that the internal sphincter alone is sufficient for the control of urine in the dog. Geraghty and myself have confirmed this.

The external sphincter is normally fully competent to control urination in human beings, when both internal and prostatic sphincters have been rendered useless.

The prostatic urethra, surrounded as it is for the most part by involuntary muscles, in addition to its function as an auxiliary sphincter,

probably empties the prostatic urethra of the last drops at urination, by peristaltic action.

Pathology:—The causes of prostatic obstruction fall under the following heads:

1. Hypertrophy.
2. Stricture of the vesico-prostatic or internal sphincter.
3. Tuberculous and cancerous strictures of the prostatic urethra.
4. Sphincter spasm.

1. *Prostatic Hypertrophy* is by far the most common cause of urinary obstruction after middle life. Of its ætiology nothing is known, nor probably will be known until the origin of tumours generally is made clear. Inflammation does not cause it. In fact, although inflammation is present in most prostates, in hypertrophy tissue itself it is lacking. Cultures cannot be obtained from it nor polymorphonuclears be found in it. Hypertrophy, moreover, is a misnomer,—the condition is frankly adenomatous.

In fully 90 per cent of cases these adenomata are made up almost entirely of parenchyma-like elements, encapsulated by the prostate itself and easily enucleated. In one to two per cent of cases pseudo-stroma elements predominate, and in these, because of the intimate interweaving of the new growth with the prostatic stroma, no shelling out of the neoplasm is possible. Between these two extremes are adenomata with admixtures in all proportions of false glandular and inter-glandular tissues. The more the parenchyma-like elements predominate, the more easily is it enucleated. Although all tissues of these neoplasms resemble normal prostatic tissues, the abnormal can be made out by the expert microscopist in over 90 per cent of cases. Microscopically these are soft and elastic; on section rise above the level of the surrounding compressed prostatic tissue, from which they are clearly defined, and are succulent and spongy, containing some dilated alveoli, which are visible to the naked eye.

An adenoma is seldom solitary, but multiple adenomata, not often confined to one lobe, usually coalesce to form a single growth, which more or less completely surrounds the urethra. As it increases in size the neoplasm stretches upward into the bladder, usually through the internal sphincter and on the back and sides of the urethra, carrying the bladder exit forward or sideways, to the extent of perhaps an inch or more; and thus the first portion of the urethra, instead of being perpendicular, lies nearly horizontal, with the adenoma on top, like a valve to prevent evacuation. The tumour may protude into the base of the bladder from

the subtrigonal lobe, on the posterior edge of the internal sphincter, and, if pedunculated, overhang the bladder exit. Yet again it may form a cone about the urethra, and, protruding into the bladder, carry the outlet with it, on or near its apex.

Adenoma often causes pressure atrophy of the musculature of the posterior urethra.

The bladder muscles, some bundles of which normally radiate from the urethral opening, while others run concentrically about it, in hypertrophy have a place of departure outside the intruding neoplasm. To overcome obstruction the bladder first hypertrophies, then, to accommodate the intruding neoplasm and residual urine, it dilates and may even reach the level of the umbilicus. Its muscles, at first closer set and stouter, to meet their increased work, later become separated, and alveoli form between the criss-crossing of their fasciculæ. The mucous membrane on the floor of these depressions may at last become applied even to the peritoneal coat itself. This is the "trabeculated bladder," so-called. If too great force is used to evacuate the bladder, in its weakened condition, it gives way first at the weakest spots,—the obliterated urachus or about the ureteric openings, forming the so-called "diverticulated bladder." On vesical over-distention follows refusal of the bladder to receive more urine through the ureters, and then supervenes dilation of the ureters themselves (above their bladder insertions) and of the renal pelvis to accommodate this intermittently unaccepted supply. Finally there is pressure atrophy of the renal parenchyma.

The blood of the plexus of Santorini, in quadrupeds, runs horizontally to the heart; in man the heart has to lift this column of blood vertically and without the aid of any additional valves; thus these veins are often over-distended, their valves become incompetent, varicosities and phleboliths form and unless cardiac reserve force is drawn on, venous congestion of the prostate supervenes. Small wonder is it that the additional weight of urine in an over-distended bladder, bearing on the veins in the vesico-prostatic space often causes enough extra back pressure in venous capillaries to rupture them in the prostate itself, the prostatic urethra, or neck of the bladder and cause hæmaturia.

So far we have described the "quiet bladders,"—giving perhaps the single symptom of increased urination.

Cystitis is easily engrafted on this pathological condition by the introduction of even slightly virulent bacteria. During cystitis these invade the ureteric orifices, ulcerate, erode and open them up. Infection ascends to the renal pelvis and kidney. Pyonephrosis succeeds hydro-nephrosis.

If the invader is a urealytic micro-organism, there follows ammoniacal, putrid urine, in which are triple phosphates. Secondary calculi may form in any part of the urinary tract where stagnation occurs.

If infection was coincident with the start of a prostatic hypertrophy, the bladder contracts and hypertrophies, but never dilates.

Prostatitis, prostatic abscess, vesiculitis or epididymitis may complicate the condition.

2. *Stricture of the Vesico-Prostatic Sphincter.*—The frequency of inflammation on three sides of this muscle from prostatitis, posterior urethritis and "coli-cystitis," the readiness with which stricture forms in other parts of the urethra, on far less provocation and the number of cases one sees with symptoms of prostatic obstruction, before the age when hypertrophy occurs, impel one to believe that true stricture of the bladder outlet, before middle life, is far from rare. It may, moreover, overlap prostatic hypertrophy. Albarran called attention to this condition in its more advanced stages in 1904, when he suggested that it might explain why the removal by operation of some apparently unencapsulated hypertrophies would not always relieve obstructive symptoms. Prostatitis, originating as it does most frequently in the posterior urethra, practically always involves the prespermatic lobe. There is always periacinar infiltration, with pus cells and leucocytes, and fibrosis of the musculature of the stroma is a frequent sequel.

This supplanting of muscular by fibrous tissue, when it takes place at the vesico-prostatic orifice, results in ordinary stricture, except that it may contain glandular tissue in its meshes. It occurs mostly on the back side of the urethra and takes the form of the so-called fibrous median bar. This is usually accompanied by cystitis and posterior urethritis, which has persisted from the beginning or recurred from auto-infection from the prostate; but it is impossible for an obstructive prostatitis to be present without cystitis, posterior urethritis, or even much involvement of the prostate beyond the median lobe. When cystitis is present, it is usually caused by streptococcus, or colon bacillus, but other micro-organisms may get a foothold, arriving either by blood stream, lymph stream, or per catheter.

Ascending infection to the kidneys is not common, but seminal vesiculitis and epididymitis are frequent complications.

Stone may form in the bladder if there is an accompanying alkaline cystitis.

3. *Tuberculous and Cancerous Stricture of the Prostatic Urethra.*—Tuberculosis of this region is practically always secondary to tuberculosis of the kidney or epididymis, and if fibrous tissue tends to form

about the focus, it is apt to involve and stricture the prostatic urethra.

Cancer of the prostate apparently begins as the adenoid form, but with time tends to become on the one hand medullary, or, on the other, scirrhus. Usually the adenoid type persists in the greatest part of this malignant growth, for the whole course of the disease. It is characteristic of, and peculiar to cancer in this gland, that it is present as more or less discrete tubules in which the epithelium tends to confine itself without invading the supporting stroma. If one relies on general pathological appearances of malignant growths elsewhere, and is not cognizant of this peculiarity, the tumour is apt to be labelled benign. In 10 per cent. of specimens of hypertrophy at the Hôpital Neckar, Albarran and Motz found cancer, and Young and Geraghty got about the same percentage from the Johns Hopkins specimens. In such cases the obstructive conditions will be identical with those of hypertrophy.

While cancer usually begins in the periphery of the gland, and its extension is by the lymphatics into the vesico-prostatic space, to involve the ampullæ and the vesiculæ seminales, it may also involve the prostatic urethra, causing very dense stricture. Nerve involvement, by the cancer growth or pericancerous inflammation, causes the characteristic pain of cancer.

There is sometimes engrafted on a chronic posterior urethritis, an acute œdema, from instrumentation, excessive coitus, etc., which swells the prostatic urethra to closure. This transitory condition may call once or twice for catheterization, and will not be further referred to. Omitted also is the paralytic condition of the bladder, resultant on spinal cord lesion, in which there is retention, trabeculation and dilatation of the viscus, of the internal sphincter and of the prostatic urethra.

4. *Spasm*.—"Prostatismus" is a term used by Casper to cover a functional nervous condition whose symptoms are violent and uncontrollable strangury, with little or no residual urine, a normal bladder capacity, and, presumably, clear urine and no evidences of prostatitis. Almost always, however, repeated prostatic massage will produce an opening of the occluded prostatic ducts and allow the escape into the urethra of characteristic inflammatory products of prostatitis, while the endoscope may reveal an inflamed and enlarged verumontanum. This condition of prostatitis without signs, is indeed rare, and still rarer must be the class of cases in which no lesion can be found and can safely be labelled as "functional neurotic."

Symptoms.—Though this gland is sexual in function, the essential symptoms of its derangement are urinary, not sexual. They are caused by mechanical obstruction to micturition. These symptoms are:

1. Increased frequency of micturition. (Pollakiuria).
2. Difficulty in starting and in maintaining the stream.
3. Small calibre and weak force of projection of the stream.
4. Dribbling after apparent completion of urination.

Complications give the following symptoms:

1. Retention.
2. Hematuria.
3. Pyuria (with, perhaps, "triple-phosphaturia").
4. Pain.
5. Sexual impotence.
6. Uremia.
7. Fever, anorexia, diarrhoea, emesis, indicating sepsis.

1. Increased frequency of urination is, perhaps, the earliest symptom, and, as in Bright's Disease, it is at first nocturnal. Later it is troublesome by day as well, and finally passes on to incontinence or overflow. It may be that adenoma or stricture material, within the stretched lumen of the internal sphincter, acts as a foreign body, stimulating the bladder to frequent attempts at expulsion and consequent pollakiuria. Later on, with residual urine, keeping the bladder always partially filled, it has to empty itself more frequently, to make room for fresh urine arriving from the kidneys. Later yet comes the limit of bladder dilatation, and then the urine dribbles away by overflow as fast as it arrives. In cystitis usually the bladder is intolerant of the stretching caused by accumulating urine, and this may be a cause of frequency of urination.

When there is painful pollakiuria, without cystitis or prostatitis in the prespermatic area, it is rather difficult to give a satisfactory explanation, unless one can attribute the symptoms to sub-mucous inflammation of the trigone of the bladder, which has originated in the prostate,—a para-prostatitis or para-cystitis, as it were.

For functional nervous pollakiuria, the name itself implies that we cannot explain it satisfactorily. In the vast majority of cases more careful diagnosis will identify it as prespermatic prostatitis.

2. Difficulty in starting and maintaining the stream is a later symptom, due probably to various causes. When there is valve action of an adenoma in the pre-spermatic or sub-cervical lobe, too much pressure by the bladder on the urine will bring this valve action into play and close the outlet. The handicapped internal sphincter and the external sphincter must open co-ordinately with gentle pressure from above or none at all, to allow of urine to escape. If the hypertrophied middle lobe rises into the bladder as a cone and stretches the internal sphincter, it cannot co-ordinate with the other urination forces, or only with diffi-

culty. Small wonder that in these cases there is "stuttering micturition."

3. Small stream comes early in prostatism, due to narrowing of the bladder outlet. The urine is poorly projected because it has first to pass through this small opening and be voided through a larger-calibred tube. Later on the bladder musculature weakens.

4. Dribbling after buttoning up becomes annoying when the peristaltic action of the musculature of the posterior urethra is interfered with.

Symptoms of complications:—

1. Acute inflammation, local congestion from "cold," constipation, excessive coitus, etc., may swell to occlusion the narrowed calibre of the urethra in prostatic obstruction. Consequent retention may be temporary or permanent. It is probably never caused by uncomplicated stricture or hypertrophy—complete obstruction, if not relieved, results in suppression of urinary secretion.

2. Hematuria, from ruptured mucosal or submucosal capillaries about the neck of the bladder or prostatic urethra may be so severe and persistent as to cause marked anæmia and dominate the picture sufficiently to call for operative relief. Hematuria may also come from erosions into blood vessels in ulcerative cystitis, from calculi, or from tubercular foci, and are then seldom, if ever, very profuse.

3. Pyuria results from invasion of the urinary tract by micro-organisms—the streptococcus, colon bacillus, or mixtures with tubercle bacilli, etc. If the micro-organism tends to break up urea, triple phosphate alkaluria intervenes, with the passage of its characteristic crystals and secondary stone material. Secondary calculi often form in such urine.

4. Pain. This is not an essential symptom of prostatic obstruction. When it does occur it is probably always due to inflammatory processes, involving nerve endings in the neck of the bladder or pressing on nerve ganglia, or, in case of cancer, to invasion of nerves themselves. It varies in intensity and location.

When there is cystitis, paracystitis, trigonitis or periprostatitis, on the bladder side, or when triple phosphate crystals or stone is present, pain is usually felt at its seat about the neck of the bladder, but also referred to the glans penis and the hypogastrium.

Pain may precede, coincide with, or follow urination. Pain occurring before the bladder contains a normal quantity of urine is usually due to stretching inflamed tissues. Pain following urination may be due to mucous membranes rubbing on each other, on triple phosphate crystals or on stone. Pain during urination is usually caused by inflamed

muscular fasciculæ in the bladder walls changing their tension. Scalding urination is usually due to irritating urine in ammoniacal cystitis.

There is a class of cases in which no cystitis or posterior urethritis is present; the urine is clear, there is no residual, and no contraction of the bladder, and yet vesical tenesmus may be so great as to render life unbearable. These are usually cases of prostatitis involving the internal sphincter.

In prostatitis, whether simple, tubercular, peri-cancerous or peri-adenomatous, there are referred pains simulating lumbago, or sciatica, or located in the sacrum, in Scarpa's triangle, in the hypogastrium, or in the perineum. Head suggested that visceral pain is most frequently referred to surface areas, because the sensorium more frequently receives impressions from these areas and is educated to interpret them, while visceral pain, being infrequent, is interpreted as originating in areas whose nerves enter the same spinal segment and are already translatable, as it were. Prostatic abnormal sensations are consequently referred to surface areas whose nerves enter the same spinal segment with the prostatic nerves. That these areas are far afield on the body surface is the accident of development. In the embryo, the surface areas and their spinal segments correspond more closely. So mimetic of renal disease is the lumbago of prostatitis that nephrotomy has been done for its relief. One should also bear in mind the possibility of prostatitis and of cancer of the prostate in sciatica; in fact, the referred pains of cancer may differentiate it from adenoma.

The pain in vesiculitis and epididymitis need not detain us.

5. Sexual impotence in all degrees, for causes unknown, is a very common sequel of prostatitis, more especially when the verumontanum is affected. On looking over the symptoms of a large number of prostatic hypertrophy cases, it would seem that sexual impotence is no more common amongst these patients than in other people of their age.

6. Uremia comes on late, from interference with kidney function by back pressure of urine, intermittently applied; and consequent anæmia and atrophy of the renal parenchyma; or, it may result from sudden removal of this back pressure, on complete catheterization. Sudden relief of urinary tension to which the blood supply of the kidneys has accommodated itself, causes dilatation, and, perhaps, rupture of the unsupported blood vessels. This uremia has not the grave prognosis of that of Bright's disease. Remove the cause and it disappears permanently.

The symptoms of hydro- and pyo-nephrosis do not obtrude; they are overshadowed by the main condition.

7. Sepsis. Fulminating septic symptoms may manifest themselves in uncomplicated prostatitis, or in aseptic prostatic hypertrophy. Catheterization is probably the most frequent provoking cause. Old cystitis cases, with pyo-nephrosis, become septic more quietly, if at all, having apparently acquired more or less immunity from auto-inoculation.

Diagnosis.—Consideration of the symptoms and a clinical examination usually permit of exact differentiation in cases of prostatic involvement. For tuberculosis of the prostatic urethra, the surgeon is usually consulted before the patient has reached middle life; stricture declares itself from the 30th year on through to old age, but is most common in the fifth decade; hypertrophy and cancer obtrude themselves most strongly on the patient's attention from the 50th year on.

Hypertrophy.—If the patient has passed middle life, Watson and Cunningham say that it is sufficient to find residual urine and an enlarged prostate per rectum, with the single symptom of frequency of urination, to diagnose hypertrophy. The lateral lobes are almost always involved and extend, in their hypertrophy, in the lines of least resistance, up the back of the bladder, where they can be easily felt per rectum. Their soft, elastic consistency is very characteristic. Some forms of hypertrophy, however, are mostly confined to the middle or sub-trigonal lobe and cannot be palpated well per rectum. On attempting catheterization, difficulty proportional to the degree of hypertrophy is encountered, in the posterior urethra; its distortion and increased length can be made out with a Coudé, when other catheters may not be insertable at all. There is no fibrous stricture. The cystoscope reveals the lobes obtruding about the orifice of the bladder, and by turning the beak about, their shape and extent can be more or less fully made out. They may even cover the trigone and render it impossible to find the concealed ureteric orifices. The cystoscope beak is palpable per rectum. The symptoms of complications cannot obscure this picture, if it is kept well in mind.

Stricture.—The patient seeks advice for nocturnal, frequent and stuttering micturition, a small stream and because he "wets his pants after buttoning up." One usually obtains a history of gonorrhoea and perhaps of the symptoms of cystitis and prostatitis. Per rectum a persisting prostatitis may be made out. There is a small amount of residual urine, slightly decreased bladder capacity, and, on cystoscopy, perhaps some trabeculation of the bladder walls, with a mild trigonitis and cystitis. The cystoscope finds the internal sphincter tight about it. The endoscope probably reveals an enlarged verumontanum. Koll-

man's dilator meets more than normal resistance on expanding it. Such is typical stricture, with its usual accompaniments. On it may be engrafted conditions which cause strangury, hematuria, phosphaturia, pyuria, sexual impotence, or symptoms of septicæmia in all grades.

Tuberculosis of the Prostate.—Is probably always accompanied with pain and the manifest signs and symptoms of tuberculosis in the other parts of the genito-urinary tract, to which it is a secondary involvement. Localizing symptoms of obstruction in the prostatic urethra, with palpation of an inflamed, hard gland per rectum, possibly fluctuant from peripheral abscess, probably adherent to the sides of the pelvis, should be sufficient to settle the diagnosis without urethral instrumentation.

Cancer of the Prostate.—This may give the same symptoms as, and be indistinguishable from, prostatic hypertrophy, in the early stages. Pain simulating lumbago, coxalgia, or sciatica renders one suspicious of cancerous involvement of hypertrophy, but prostatitis, also superadded, will give the same symptoms. When there are areas of stony hardness in the prostate, extending up to the vesiculæ seminales and inter-vesicular space, and obliterating the groove between the lateral lobes, one's diagnosis of cancer hardly needs confirmation by other findings. On instrumentation the sound passes through dense, creaking stricture in the posterior urethra, and the beak of the cystoscope, owing to thickness of the invaded base of the bladder, is non-palpable by rectum. Then diagnosis of cancer far advanced is absolutely clear. In the earlier stages it is important to bear in mind that there may be invasion of ordinary hypertrophy by cancer and in perineal operations a section may be removed for examination. Macroscopically this section may creak when cut and show pin-point yellowish granulations from the squeezing up of pseudo-epithelial cells above the stroma, which may be so much replaced by the cancer stroma as to lose its characteristic striation. Less advanced malignant conditions show up under the microscope on frozen section.

Spasm.—If there is frequent and painful passage of clear urine, with bladder capacity about normal, no residual urine, no discoverable sign of disease of the bladder, verumontanum or prostate, after careful employment of all modern methods, one may be warranted in making a diagnosis of "functional neurosis." Almost always in these rare cases, however, evidences of prostatitis can be found.

Treatment:—(a) *Prostatic Hypertrophy:*—The treatment of prostatic hypertrophy resolves itself into catheterization and operative measures. Drugs can be of no assistance here, except for the relief of complications.

It has been customary to give the patient a catheter to use at first on going to bed, to obviate his rising at night, and later as the obstructive symptoms get worse, for use by day as well. If the patient is well-to-do he may be able to take such precautions as will stave off infection for some time, but the impossibility of freeing the anterior urethra of pyogenic micro-organisms and the reduced resistance of the bladder, render aseptic catheterization practically impossible and infection always supervenes on catheter life. Watson compiled 207 cases of his own, Rovsing's and Caspar's, and finds a mortality in the first two months of catheter life of almost 10 per cent. This is higher than that of prostatectomy or of Bottini's operation. When one considers that the whole course of the life of a prostatic is dictated by the accessibility of a catheter, a sterilization apparatus, and a closet; and that such tyranny is to become more and more intolerable up to the end of physical existence—the promise of alkaline cystitis with its added pain and an odour which will render the sufferer repulsive to himself and friends—the well-nigh immutable march of events towards a low form of septicæmia or the uræmia of obstruction; and withal the best time for operation frittering away; would it not seem that systematic catheterization has had its day, and that the time has come for operative measures to supersede catheter life?

In some cases, however, operation should be deferred for a preliminary course of treatment of a foul cystitis or of an obstructive uræmia.

In the former, drainage should be instituted suprapubically or by catheter till a maximum progress towards cure is secured. The patient should drink much water to render the urine less concentrated, less irritable and better able to wash away the products of inflammation; while urotropin internally and vesical irrigations with cyanide of mercury will render it somewhat antiseptic. The prostatic plexus may be depleted with magnesium sulphate.

Partial suppression and uræmic symptoms so often follow complete evacuation of the bladder with a catheter or on prostatectomy, that as a prophylactic measure it is best, where the residual urine is large in amount not to operate on sight, and thus lose control of back pressure; but to reduce the quantity of urine gradually, partially replacing it as withdrawn, if there is a cystitis, with an antiseptic fluid. A stoppered catheter *à demeure* permits of leaving any desired amount of urine in the bladder and in this way the danger of acute renal congestion, suppression and uræmia can be best combatted. At last, when the kidneys function well without an abnormal *vis a fronte*, the prostatic obstruction can be removed.

Of operative measures to be considered are Electrolysis, X-ray, Goldschmidt's incision through, and Young's removal of, part of a median bar intraurethrally, removal of pedunculated middle lobes intravesically, the Bottini operation, and suprapubic and perineal prostatectomies.

Attempts have been made to reduce the volume of an enlarged prostate with the electric current and results are still being reported on this method of treatment. Considering that we have to do with adenomas, it is difficult to believe that one accomplishes with electrolysis more than a lessening of periadenomatous congestion where the results are immediate. Permanent results can be more surely and easily attained by other means.

The X-ray can perhaps be relied on to reduce the volume of prostatic growths temporarily, but experience has shown that cancers at least so treated often grow more rapidly than ever, after their first decrease in volume. Whether this is always the case in malignant growths, one cannot say, and this dictum may not be pertinent to benign adenomas and here there may be a field for the use of this "double-edged tool."

Goldschmidt, in a recent number of the *Annals of Genito-Urinary Diseases*, reports good results from incising a medium bar intraurethrally in fourteen cases. He uses his own water-dilating operating urethroscope; and cuts, under control of the eye, from the bladder outwards, towards the veru montanum.

Young's gouge allows of a medium bar to drop a slot cut across a six-inch long endoscope and fill its lumen in such a way that a sliding inner tube, with a cutting edge, may be shoved right through it, leaving a posterior groove into the bladder, and taking a bite out of the internal sphincter, which may not allow thereafter of closing of this orifice of the bladder. As already stated, the external sphincter is said to be sufficient to control urination.

In either of these operations the verumontanum is in no danger, nor would it seem likely that ejaculation would be interfered with.

Both Goldschmidt's and Young's instruments are too recent to give many statistics, but the latter has been used with pretty manifest success a number of times and the former has fourteen so-called successes to its credit. The great advantage of either of these operations is that they produce the least mutilation and are accompanied by the least danger in the relief of obstruction. Their disadvantage is that they may not be sufficiently radical, and may have to be supplemented by more complete measures later.

Bottini's operation also may be used for median bar obstruction, but one looks askance at a 6.3 per cent. mortality in 1,154 cases, reported on

by Watson. These cases were probably much more favorable for operation than the usual prostatectomy ones and this operation seems to be losing ground except in the haunds of Freudenberg, of Berlin, who has considerably modified the original Italian model of instrument. Besides danger to life from secondary hæmorrhage or sepsis, the chance of puncturing the rectum and thus forming a recto-vesical fistula is to be borne in mind.

In cases where a pedunculated hypertrophied median lobe protrudes into the bladder, in one case at least, Young has been able to reach and remove it with an intra-vesicular rongeur of his own devising. This instrument is so made that its cutting jaws are always in the cystoscopic field and operate under complete visual control.

One may meet such an amount of adenoma that its complete removal is the only rational course to pursue, and then one has to consider.

Choice of route (Supra-pubic or Perineal.) — Freyer's method of supra-pubic prostatectomy offers the following advantages: It is done more quickly and easily on the enucleable adenomas, there is complete removal of the obstruction and, if stones are present in diverticulæ, they can be reached, while incontinence following the operation is almost unknown. On the other hand should the tumour predominate in stroma elements it cannot be shelled out and the finger is a weak instrument with which to remove it, and if instruments must be resorted to, they have to be used without guidance of the eye. Hemorrhage is perhaps freer,—certainly it is at the time of operation,—and this objection is to be well weighed in the old. That the whole prostatic urethra, down to the verumontanum is removed, and with it even sometimes the ejaculatory ducts, renders thereafter ejaculation from the urethra impossible. This is of serious import to many prostatitics. Yet again, when the patient is old, the necessarily prolonged stay in bed, required by the difficulties of supra-pubic drainage, may contribute to the slightly higher mortality of this operation. Supra-pubic fistula sometimes persists, if an alkaline cystitis is present, and is most annoying.

Young's perineal removal offers the opportunity of a dissection under the guidance of the eye, causes less bleeding, at least at the time of operating, gives dependant drainage, usually preserves the ejaculatory ducts and prostatic urethra intact, and, should a fistula persist, it is a perineal pin-point one, which is dry except at urination. He claims for it that sexual powers are not interfered with. Its crowning advantage is that a frozen section of a prostate suspected of cancer can be examined microscopically at operation, then and there, and should it show malignancy, the prostatic urethra and neck of the bladder may be removed. Its dis-

advantages are that it is essentially an operation of skill, requires more time, and does not allow for removal of diverticulated stone, and if not well done, the most annoying of all fistulæ (the recto-urethral), may follow, or the obstruction may not be completely removed, or even incontinence may be a sequel to too much trauma to the membranous urethra and internal sphincter.

Wallace says it is impossible to distinguish in advance in what condition an adenoma of the prostate may be and as cancer may be present in any hypertrophied prostate, the perineal route would seem to be always indicated. Nevertheless, one is inclined to consider the large, soft, elastic prostatic adenoma to be so infrequently the seat of cancer and so easily enucleated from above that this route to reach them is best, while the perineum offers the best method of approach in all other conditions calling for prostatectomy.

Blind enucleation by the finger, through a perineal slit, is admitted by Watson to be difficult, until the sense of touch is educated to it. One who has not done this operation many times must ask himself how such an education is to be got. Certainly very few surgeons can acquire skill by removing hypertrophied prostates post-mortem, and other prostates must be well nigh unenucleable, if one may judge from attempting it supra-pubically. This method may be indicated when speed in operating is called for and the abdominal wall is weak or when speed in operating is called for and there is alkaline cystitis.

Albarran's perineal operation sections the ejaculatory ducts and ties the vasa deferentia near the testes, after vasotomy. These measures guard against epididymitis, but the price seems too high. He also sutures the urethra to obviate fistula. Deaver's packing of the prostatic cavity to control hemorrhage would seem unnecessary, in view of Freyer's experiences, and may encourage infection, while Leguella's method of stitching the mucous membrane of the bladder over the empty prostatic cavity, is open to the same objection.

Stricture:—When one has diagnosed stricture of the internal sphincter, Kollman dilatation is first indicated. The bladder should be thoroughly irrigated and 200 c. c. of water left in to facilitate operation. The instrument to be chosen should be the posterior Benequè dilator, the expansile part being short enough not to be grasped by the external sphincter. The blades can be opened easily to 50 French, normally, and with only spasm resistance, and this should be approximately attained and maintained, before one can feel confident of cure. Combined with this one should also give prostatic massage, as such a stricture will hardly ever be unaccompanied by a prostatitis of sufficient extent to call for

treatment thus per rectum. Hydraulic dilatation of the bladder may be called for simultaneously. Should dilatation be exceedingly painful, the stricture dense and resistant, or contract quickly after stretching, and the above measures promise no result, or only with excessive loss of time, Goldschidt's intra-urethral incision of the neck of the bladder behind, is to be considered. One may cut from the bladder out towards the verumontanum, under water distension of the posterior urethra and if one follows it with Kollman dilatation, there is no obvious reason why good, permanent results should not be attained here, as in urethrotomy. It is probable that such an internal sphincter would still act as well as before operation, even as the external sphincter can be incised longitudinally and recover function completely.

When the complication of a contracted bladder is present, whether acute cystitis persists or not, injecting it forcibly with water stretches its walls much as a urethral stricture is stretched by Kollmann's dilator. A paracystitis so treated is cured by the increased influx of blood to its muscular tissue, and because some restful paralysis follows the stretching process, much as over-dilatation of the external sphincter of the rectum allows a fissure of the anus to heal. The one contraindication to this treatment is, of course, tuberculosis of the bladder.

Cancer of the prostate should be removed *en masse* if it has not spread beyond its original seat or even if it has involved the base of the bladder provided it has not reached the level of the ureters. Young's operation for removal perineally of the cancerous prostate, posterior urethra and neck of the bladder after partial closure of the incision into it, is always followed by incontinence and usually by recurrence; but earlier diagnosis and treatment may give better results. One of these patients was well three months ago though over four years had elapsed since operation. When cancer is apparently confined to the prostate, enucleation of the enveloping adenoma may be sufficient. As yet one cannot dogmatize here too strongly. If the disease is far advanced supra-pubic drainage only may be indicated to supplement a morphine treatment. Ureteral transplantation into the groin or drainage of the kidney pelvis across its parenchyma may be considered as likely to give more rest to the involved tissues; but at the stage at which they would be of use the patient is usually too weak to submit to them.

Tuberculosis:—For tuberculosis of the prostate, Albarran reports one prostatectomy without sinus resulting, but the later march of events, so far as I know, he fails to report. These operations generally end disastrously and when nature is here walling in a tubercular focus, with fibrous tissue, it is decidedly best to use nothing but accessory treat-

ment. It may be advisable to remove a primary focus in a kidney or epididymus. For the last nine years an outdoor patient has been reporting at the Johns Hopkins Hospital with tuberculosis of the prostate. He seems to hold his own without treatment.

Spasm:—For functional spasm one will do well to bear in mind that treatment directed to chronic prostatitis, such as massage, urethral dilatation, etc., is most likely to reach the over-looked cause of this condition, but when every other treatment is proven ineffectual, vasectomy, as recommended by Casper may be permissible.

BIBLIOGRAPHY.

- (a) Le faux prostatisme d'origine alcoolique. *Rochet Jour. des prac.*, 3-8-07.
- (b) Prostatic Enlargement. Cuthbert S. Wallace, London, 1907.
- (c) Exposé des travaux scientifiques de J. Albarran, Paris, 1907.
- (d) *Traité d'anatomie humaine*. Poirier et Charpy, Paris, 1907.
- (e) Anatomy—Spaltchotz.
- (f) Anatomy—Piersall.
- (g) Chronic Prostatitis. Young, Geraghty & Stevens, 1906.
- (n) Early Diagnosis and Radical Cure of Carcinoma of the Prostate. Young, 1906.
- (i) Studies in Hypertrophy and Cancer of the Prostate. Young, 1906.
- (k) Casper's Genito-Urinary Diseases. Bonney, Phila.
- (l) Watson & Cunningham. Genito-Urinary Diseases.
- (m) Sphincter Control of the Male Bladder and its Relation to Prostatectomy. C. A. Bell, Practitioner, London, 1907, p. 319.
- (n) Leçons par M. le Prof. Albarran. *Ann. des Mal. des Org. Urin.*, Paris, 1909. April and June.
- (o) Traitement de l'hypertrophie de la prostate. Goldschmidt, *Ann. des Mal. des Org. Gen. Urin.*, Vol. I, No. 11, June 1, 1909.

Eugene St. Jacques of Montreal, Canada, gives a careful account of the advantages for study, medical and post-graduate, in Germany and France. He describes the way in which instructors and professors are selected. In both countries the professors are selected by the faculty from their number or from outside. In Germany the endowment and laboratory equipment are splendid. Each clinic has its own laboratories. Little importance is given to theoretical teaching, all being clinical and practical. In post-graduate work there are two courses each year, fall and spring. In France, Paris is the centre. There are thirty hospitals, all under city control. Here, also, clinical teaching is the rule. Facilities for dissection are very great; hospital work is fine. For the student and graduate all hospitals are open freely, to follow the physicians and examine patients. Tuition is free; access to patients is free; the hospital physician is a brilliant speaker and clinician. Paris excels in skin, nervous, and genito-urinary diseases, in surgery, and bacteriology. In Germany laboratories are more numerous and better equipped, and research work is extensively carried on. Clinical facilities are greater in France. Post-graduate work is more practically organized in Germany.—*Medical Record*, August 14, 1909.

THE

Montreal Medical Journal.

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

EDITED BY

J. GEORGE ADAMI,
GEO. E. ARMSTRONG,
A. D. BLACKADER,
G. GORDON CAMPBELL,
F. G. FINLEY,

WILLIAM GARDNER,
H. A. LAFLEUR,
JOHN McCRAE,
F. J. SHEPHERD,
J. W. STIRLING

ANDREW MACPHAIL, MANAGING EDITOR.

Remittances, advertisements or business communications are to be addressed to the Montreal Medical Journal Co., Box 273; all others to the Managing Editor, 216 Peel Street Montreal. All communications intended for insertion in this Journal are received with the understanding that they are contributed exclusively to this Journal. A limited number of reprints of articles will be furnished to authors at cost price, if a request to that effect accompany the manuscript.

VOL. XXXVIII.

SEPTEMBER, 1909.

No. 9.

MONTREAL'S CIVIC QUESTIONS.

We make no apology for putting forward our views upon the questions about civic government that are to come before the electors of Montreal on the 20th of September. We believe that much abuse has existed in the administration of the city, and we believe that the reduction in the number of aldermen and the institution of a board of control elected by the popular vote are likely to be followed by betterment. Many measures, often referred to in these columns, are concerned: a more perfect water-supply, the establishment of a filtration-plant, the medical inspection of school-children, the inspection of meat, of other food stuffs, especially milk, the proper cleaning of the streets and the lanes are all questions that particularly interest the medical profession and therefore this journal. As long as one dollar of the civic revenue is misapplied, as long as aldermanic or other influence improperly applied tends to the appointment of inferior administrators, it is not only our privilege but our duty to protest. We know our water-supply is not perfect, we are not sure that our medical inspection of schools is sufficiently complete, we suspect that not all the meat is seen by the small staff of inspectors, and our infant mortality shouts aloud its evidence upon the question of pure milk, our eyes bear testimony to the dirt of our streets, and our noses tell us about the lanes. The departments concerned with these may be administered quite properly: the evidence given before the Royal Commission shows us that there are grave abuses in other departments. If money is being improperly spent or is being embezzled in

these other departments, every department must suffer. We are all concerned in these affairs, and we are glad to think that the French-speaking citizens of Montreal are just as sick of all this maladministration as are the English-speaking: we hope that both together will make an effort on the 20th of September to bring about a better state of affairs.

THE HOSPITAL AND ITS STAFF.

A decision of interest to hospitals in general was recently given in the Court of Appeal in England by Lord Justice Farwell in the case of *Hillyer vs. The Governors of St. Bartholomew's Hospital*. The facts of the case seem to have been that Dr. Hillyer brought action against the hospital because while under an anæsthetic, being examined by Mr. Lockwood, his arms were allowed to hang over the table and to come in contact with a hot-water tin: there was also pressure upon the arm which, he claimed, caused traumatic neuritis and paralysis. In throwing out the appeal, the judge stated that no negligence had been proved. But the most interesting part of the judgment concerns the relation of hospital and staff. A hospital, like any other public body, is liable to responsibility for the acts of its servants, notwithstanding the charitable nature of the work it may do; but the surgeon, the assistant-surgeon, the house-surgeon and the administrator of anæsthetics are not servants of the Governors of the hospital. Lord Justice Farwell said: "they are all professional men employed by the defendants to exercise their profession to the best of their abilities according to their own discretion; but in exercising it they are in no way under the orders or bound to obey the directions of the defendants. The true relations of the parties is, in my opinion, well stated by the Chief Justice in '*Glavin vs. Rhode Island Hospital*' where the Chief Justice said:—'Here the physicians or surgeons are selected by the corporation or the trustees. But does it follow from this that they are the servants of the corporation? We think not. If A out of charity employs a physician to attend B, his sick neighbour, the physician does not become A's servant, and A, if he has been duly careful in selecting him, will not be answerable to B for his malpractice. The reason is that A does not undertake to treat B through the agency of the physician, but only to procure for B the services of the physician. The relation of master and servant is not established between A and the physician. And so there is no such relation between the corporation and the physicians and surgeons who give their services at the hospital. It is true the corporation has power to dismiss them, but it has this power not because they are its servants

but because of its control of the hospital where their services are rendered. They would not recognize the right of the corporation, while retaining them, to direct them in their treatment of patients.'"

The further statement is made that even nurses and orderlies, even if admitted to be servants of the governors of a hospital, cease to be so as soon as the doors of the operating room have closed upon them, and come under the sole orders of the operating surgeon: "the surgeon is for the time being supreme and the governing body cannot interfere with or gainsay his orders. This is well understood, and is indeed essential to the success of operations; no surgeon would undertake the responsibility of operations if his orders and directions were subject to the control of or interference by the governing body. The nurses and orderlies, therefore, assisting at an operation cease for the time being to be the servants of the defendants, inasmuch as they take their orders during that period from the operating surgeon alone and not from the hospital authorities."

Such decisions, apart from the legal points involved, tend to show that the law is in sympathy with the good faith of properly-run charitable institutions; and the fact that hospitals are being protected more and more from the attacks of those who have grievances, will not lessen their care of their patients in the slightest, because the quality of their work is upheld by motives so much higher than those of mere self-protection.

The editor wishes to state that a physician who is willing to replace an English-speaking doctor, or to act as locum tenens to such, can be communicated with by addressing this journal, P. O. Box 273, Montreal.

DR. S. S. OPPENHEIMER has removed from Greenwood, B.C. to Spokane.

Reviews and Notices of Books.

THE AFTER TREATMENT OF OPERATIONS. By P. LOCKHART MUMMERY, F.R.C.S., Eng., Bailliere, Tindall and Cox, London.

This volume deals with the after-treatment of operations and all the numerous complications which may arise. The treatment and dressing of the wound itself, the various conditions which may arise in it, and the treatments for sepsis are fully discussed. Two chapters are devoted to the causes and treatment of hæmorrhage following operation and the modern treatment of shock and collapse. Complications following the anæsthetic, post-operative rashes and drug rashes are discussed and treated, as also the causes, symptomatology and treatment of post-operative thrombosis. The after-treatment of the various operations on different parts of the body is thoroughly taken up together with the complications that may arise. The work on the whole is excellent; that on the after-treatment of operations on the abdomen and general peritonitis deserves special mention and is practically sound and up-to-date. Two chapters are devoted to the treatment of genito-urinary and rectal operations, followed by a valuable appendix on rectal alimentation.

THE PRACTICAL MEDICINE SERIES, 1909, in ten volumes, GUSTAVUS P. HEAD, M.D., General editor in charge. The Year Book Publishers, Chicago.

VOL. 1. GENERAL MEDICINE, edited by FRANK BILLINGS, M.S., M.D., and J. H. SALISBURY, A.M., M.D.

Diseases of the respiratory organs are first taken up, as also the recent advances in general diagnosis and therapeutic measures. The latest work on tuberculosis with its special methods of diagnosis and treatment, the different forms of pneumonia and the various infecting organisms, with the conditions arising therefrom, are concisely treated. Under diseases of the circulatory system the work on the diagnosis of diseases of the heart, both functional and organic, the pulse and its variations, and the blood pressure deserve special mention. Under diseases of the blood the various anæmias and purpuras are taken up with their cytodagnosis and the significance of the same. Infectious diseases and diseases of the ductless glands and constitutional diseases form an important chapter, and a final section is devoted to diseases of the kidneys and uræmia.

VOL. 2. GENERAL SURGERY, edited by JOHN B. MURPHY, A.M., M.D., LL.D., Chicago.

It is impossible in the space of a brief review to give any comprehen-

sive idea of the contents of this volume. It contains all of the very latest work done in surgery within the past year so arranged that it may be referred to in an instant, and is invaluable. The advances made in anæsthesia, both local and general, in X-Ray radio-therapy, in modern operative technique and instruments, observations made on wound healing and pathologic interventions, take up the first part of the volume. Then follow the ophthalmic-reaction, tetanus and anthrax, diagnosis and treatment of tumours with statistical results therefrom; the advances made in the general surgery of the various parts of the body, and special mention should here be made of the surgery of the blood vessels, skull and brain technique, the neck and thyroid, the thorax, pulmonary embolism, abdominal surgery, the peritoneum Fowler-Murphy treatment; stomach surgery by W. J. Mayo; intestinal anastomosis, F. B. Walker; the intestines, the appendix, the sigmoid and rectum, hernia, the gall-bladder, pancreas and kidney, all of which are excellent.

VOL. III. THE EYE, EAR, NOSE AND THROAT, edited by CASEY A. WOOD, M.D., C.M., D.C.L., Albert H. Andrews, M.D. and GUSTAVUS P. HEAD, M.D.

The examination and refraction of the eye is first taken up, especially the functional diseases due to eye strain in school children. This is followed by the advances made in the bacteriology of the diseases of the eye, especially the cultivation of the meningococcus from epidemic cerebro-spinal meningitis by McKee and the spirochæta pallida in ocular lues. The lids, trachoma, the cornea and advances made in cataract extraction are well discussed, together with the optic nerve and retina, the orbit, glaucoma, ocular injuries and symptoms, etc. These are followed by advances in technique, instruments, etc. and ocular therapeutics. In the section on the ear the diseases of the middle ear are first taken up and their relation to those of the throat; these are followed by those of the mastoid, brain and sinuses and their treatment and the operation on the frontal sinus and nasal tuberculosis deserve special mention. In the section on the nose, the different forms of rhinitis and the turbinate bodies with their treatment are first taken up after the physiology of the nose has been thoroughly discussed. The physiology and diseases of the accessory cavities are then taken up and the operative treatment described. Empyema of the antrum and Jansen's operation on the frontal sinus and nasal tuberculosis deserve special mention. Naso-pharyngitis and disease of the tonsils and their relation to deafness and tuberculosis is well set forth. Diseases of the larynx, laryngotomy, defects of the voice, bronchoscopy, followed by the latest

observations on hay fever and general therapeutics of the nose and throat conclude this volume.

A HANDBOOK OF THE DISEASES OF THE NOSE AND THROAT. By EUGENE S. YONGE, M.D. (Edin.). Wm. Green & Sons, 1909.

Under the above title there appears a very good volume of the text-book type.

The reader is given a good general idea of the subject, though, as the author says in his preface, in a book of this kind many important subjects are necessarily condensed and abbreviated.

The work is arranged into sections devoted to: (1) The nose, sinuses and naso-pharynx; (2) The pharynx; (3) The larynx, with a brief review of the anatomy and physiology of each region, at the beginning of the section. A fourth section deals with the local manifestations of infective and other constitutional conditions.

On general lines the views set forth are sound and conservative and are clearly expressed. The illustrations are numerous and instructive, adding not a little to the attractiveness and usefulness of the volume.

E. H. W.

THE FAITH AND WORKS OF CHRISTIAN SCIENCE. By the writer of "Confessio Medici." Macmillan & Co., Limited, St. Martin's Street, London, 1909. The Macmillan Company of Canada, Ltd., Toronto, publishers. Price, \$1.25.

Our only fear is that the writer of "Confessio Medici" has done Eddyism too much honor in writing this book: in the perusal of the first chapter one is apt to think that the author has taken off his coat, stepped down into the ring and purposes to come to handgrips; in short, he appears to be taking the meaningless vaporings of Mrs. Eddy seriously, but step by step the reader becomes comforted. "If Christian Science is to grow after Mrs. Eddy's death, her demonology. . . . must die with her. Otherwise, it will drag the entire system up before that bar which no obsession ever yet has faced and lived, the bar of the universal sense of humor." Surely Eddyism has been at that bar long ago, and is there now, not dragged up but having danced up gaily like some over-night intoxicated charwoman who still has fumes in her brain; the spectators may have laughed at first, but they are tired, and wish she would betake herself once more to her scrubbing. The author of "Confessio Medici," let it be said, grants Christian Science her cures, and the basis of his arguments is not to assail these, but to point out that she can cure functional and cannot cure organic disease. Since the brazen serpent was lifted up in the wilderness, the mind has been exerting its influence over

the body under a hundred different names: Mrs. Eddy has put her vulgar "theology" forward as if she were the inventor of that divine physiology and some half million of mankind in their wisdom have left all and followed her. The title page quotation is "Then the Devil taketh him up into the holy city, and setteth him on a pinnacle of the temple, and saith unto him, If thou be the Son of God, cast thyself down."

Here, also, are two hundred cases of cures from the Christian Science Sentinel between April and August, 1908, with their uncertainties and their lay diagnoses, mostly in fact "auto-diagnoses": set against them are cases communicated to the writer where Eddyism has been not a blessing but a curse, where little children have been burnt in the Moloch-arms of their silly progenitors, commonly called parents. While one speaks of children, a foot-note on page 214 has this apt comment. "An eminent London physician found that the mother was an 'ardent' Christian Scientist: 'but,' said she, 'I do not apply it to my children.' A strange sort of God if you cannot bring young children to Him."

The book is a good one, too good for the shams and ghosts it combats: the author (by this time, everyone can name the writer of "Confessio Medici") is an honest man, indignant at the folly and the delusion of silly poor people, poor only in the sense of the Laodicean church who said, "I am rich, and increased with goods, and have need of nothing": and knew not that she was "wretched and miserable and poor and blind and naked."

J. McC.

TEXTBOOK OF GYNÆCOLOGICAL DIAGNOSIS. By DR. GEORG WINTER, Professor and Director of the Kgl. Universitäts-Frauenklinik in Königsberg, Prussia, with the collaboration of Dr. Karl Ruge, of Berlin. Edited by Dr. John G. Clark, Professor of Gynæcology in the University of Pennsylvania. The English work is from the revised third edition of the German work. Four full page plates and three hundred and fifty text illustrations in black and in colors. J. B. Lippincott Company, Philadelphia, 1909.

This German textbook is recognized in the medical centres of Europe as the most thorough and modern work of its kind, and the new third edition has greatly increased its well deserved recognition. Prof. Clark's translation of this work is admirable and stamps this volume as by far the most complete work on Gynæcological Diagnosis that has appeared in the English language. It is a volume which few general practitioners and specialists can afford to be without, and it will undoubtedly find a prominent and ready to hand place in the library of the scientific practitioner.

It will appeal to the practitioner and specialist equally but for different reasons: to the former on account of the completeness of the work upon the subjects of histology, methods of examination, gynæcological differential diagnosis and owing to the last chapter which is devoted to the interpretation of symptoms and signs: to the specialist, also, on account of the foregoing, but chiefly owing to the thorough manner in which Dr. Ruge has handled the difficult subject of gynæcological pathology. There is probably no branch of gynæcology which is so difficult to arrange systematically, no branch undergoing such radical changes owing to recent researches, and no branch that has been so neglected. Dr. Ruge, drawing from his wide experience, has given us here in this volume a most valuable, complete and thoroughly modern exposition of this difficult subject, such as, I think, is not to be found in any textbook on gynæcology.

The volume is divided into three sections. The first section is devoted to general diagnosis, the second to special diagnosis, and the third to analytical diagnosis. The first part, comprising 125 pages, deals with external examination, internal examination, combined examination, rectal examination, cystoscopic examination of the appendages, methods of using specula, the uterine sound, microscopic diagnosis, cystoscopy, bacteriological diagnosis and radiography. The second part comprises over 500 pages and is by far the most valuable part of the volume. It deals in a most thorough manner with the whole subject of gynæcological diagnosis, and especially valuable are the divisions treating of malignant growths and inflammations. The chapter upon parametric processes, their character of infection, their mode of spreading, their most frequent sites for localization, diagnosis of deposits, etc., constitutes one of the most complete expositions of the subject.

The third part, about fifty-five pages, takes up the analytical diagnosis, i.e. the interpretation of symptoms and signs,—the causes of hæmorrhage, dysménorrhœa, leucorrhœa, sterility and the analytical diagnosis of abdominal growths. A separate chapter deals rather cursorily with diseases of the bladder and the use of the cystoscope.

The work in the original is the best of its class, and the English translation not only has not as most translations detracted from its merits, but rather has proved what an excellent translation can be produced when treated by a competent writer.

THE LAST DAYS OF CHARLES II. By RAYMOND CRAWFURD, M.A., M.D.,
Oxon., F.R.C.P., Oxford. At the Clarendon Press, 1909.

Dr. Crawford has set forth in a very interesting way the last illness and

death of Charles II., the book being the result of "an interlude of illness in the midst of an active professional life." The bibliography is wonderfully extensive, comprising forty or more sources, and the narrative is well built upon these. The conclusion of the author is the reasonable one that the king died, not from poison, as was hinted, nor from apoplexy, as was averred, but from uræmia with convulsions, supervening upon chronic nephritis of the granular type. The conclusion is not an important part of the book: the whole story is merely a readable version of a historic event, with excellent and interesting illustrations, published in the good style of the Clarendon Press. J. McC.

HYDROTHERAPY. A brief summary of the practical value of water in disease, for students and practitioners of medicine. By WILLIAM H. DIEFFENBACH, M.D. Published by the Rebman Company, 1123 Broadway, New York. Cloth, \$3.00.

This volume, which is the out-growth of Prof. Dieffenbach's lectures during the last seven years, is a volume well worth reading for any one interested in this subject.

After taking up the action of water of various temperatures on the different organs of the body, the author describes the various manners in which it is usually applied, illustrating this generously with very good photographs; in the several chapters following this he takes up the treatment of the various diseases from a hydrotherapeutic standpoint. In these chapters the general practitioner, and even the specialist will find many hints and suggestions helpful in the care and treatment of patients. The book is well indexed and contains 267 pages. It is well bound in the usual Rebman style.

C. K. R.

MYOMATA OF THE UTERUS. By HOWARD A. KELLY, M.D., Professor of Gynæcologic Surgery at Johns Hopkins University; and THOMAS S. CULLEN, M.B., Associate in Gynæcology at Johns Hopkins University. Large octavo of 700 pages, with 388 superb original illustrations by August Horn and Hermann Becker. Philadelphia and London. W. B. Saunders Company, 1909. Cloth, \$7.50 net; Half Morocco, \$9.00 net. W. B. Saunders Company, Philadelphia and London; J. A. Carveth & Co., Ltd., Toronto, Canadian agents.

At a time when the authors of most American medical works are, at best, but editors of recent home and foreign literature, it is a pleasure to find a new book written from the experience of one man, and yet giving the reader a definite basis for appreciation of the wideness of

that man's experience and the soundness of his judgment. The authors have collected statistics from some 1674 clinical and pathological reports at the Johns Hopkins and several other hospitals, and has analyzed them thoroughly. With such a large amount of material at hand he, and a number of co-workers to whom he gives full credit in his introduction, has admirably selected not only the most interesting cases, but those likely to be instructive to the reader, and, with the aid of the really 'superb' illustrations of August Horn, has produced a singular book.

The extensive case reports will perhaps weary the majority of readers, but the illustrations, even better than those in the well known "Carcinoma of the Uterus," will appeal to the operator clinician, or pathologist, and any of these will at the same time find in the text well-substantiated opinions on every possible feature of the subject.

Medical News.

PROFESSOR PFANNENSTIEL.

Many readers of the Montreal MEDICAL JOURNAL will hear with regret of the death of Professor Pfannenstiel of Kiel, who was a visitor to Montreal early in 1908. The following is an appreciation of Pfannenstiel by Professor Fritsch of Bonn, in *Zentralblatt für Gynäkologie* of July 31st, 1909.

"Johannes Pfannenstiel, for more than twenty years a zealous contributor to the *Zentralblatt*, died on the third of July.

Pfannenstiel was born in Berlin on the 28th, June 1862, received his education in that city, and in 1885 graduated as a physician. After two years as assistant in the Civic Hospital at Posen, he entered the Breslau Frauenklinik to take a similar position. In 1890 he was made Privatdozent, and in 1893 moved from the Frauenklinik. In 1896 he was made professor.

From the year 1896 till he was called to Giessen, he directed a large gynecological service as chief physician in the Hospital of the Elizabethinnerins in Breslau.

His call as Professor Ordinarius and Director of the Frauenklinik and School for Midwives in Giessen came in 1902. In 1907, after refusing a call to Freiberg, he accepted a call to a similar position in Kiel.

As a teacher of Pfannenstiel I have wondered from the beginning at the untiring energy, the true devotion to his duty, and above all the conscientiousness of his work.

Among the Gynæcologists of the present day he took high rank; if one takes as an ideal professor of medicine, a good teacher, an industrious scientific investigator, and an experienced and humane physician, everyone will admit that Johannes Pfannenstiel possessed these three characteristics in a remarkable way. His talented and captivating address and his ability as a teacher assured him the love and respect of colleagues and pupils. His numerous contributions, more or less extensive, notably his epoch-making work on the diseases of the ovary, brought him fame not only in Germany but in the entire medical world; his new methods of operation, notably the transverse abdominal incision, are everywhere known and practised. The best evidence of Pfannenstiel's ability to ensure the confidence and love of all, has been the wide, heart-felt and deep sympathy expressed for his unexpected, sad, untimely end. A brave fighter for mankind has fallen a victim to his calling.

I, myself, full of sorrow, lose a tried and loved friend who had given me many evidences of his gratitude and affection.

Pfannenstiel's path in life led only upward to fame, honour, and success; the sad descent in resignation and disillusion was spared to him. Great is the loss to science, to those in need and, not less, to his friends."

THE AMERICAN ASSOCIATION OF CLINICAL RESEARCH.

A meeting of physicians and surgeons interested in Scientific Clinical Research is called for Wednesday, October 27, 1909, at John Ware Hall, Boston Medical Library, No. 8 Fenway, Boston, Massachusetts. The meeting will come to order at 10 A.M., and carry its sessions through Wednesday, and, if necessary, through Thursday and Friday.

The object of the meeting is,

First, to establish an American Association of Clinical Research; Secondly, to establish clinical research on an incontrovertible scientific basis in hospitals; and Thirdly, to institute an American Journal of Clinical Research, in which the work of members of the American Association and of others doing clinical research work in a scientific manner shall be published.

This invitation is extended to all physicians and surgeons whose interest goes beyond the immediate case work of ordinary clinical societies; and it is hoped that the invitation will be accepted by all medical practitioners, irrespective of their present medical affiliations, who can appreciate the necessity for establishing on an incontrovertible scientific basis the certainties and limitations of the present practice of medicine and surgery before attempting to add to the already large and cumbersome field of medicine.

The American Association of Clinical Research is not intended to disturb the present medical affiliations of its members nor to interfere in the very least with the duties they owe and the privileges they enjoy by virtue of their affiliation with any existing national medical body.

The American Association of Clinical Research is to take cognizance of the fact that the clinic requires cold facts and conclusive methods, and upon these fundamental requirements, the structure and the work of the American Association of Clinical Research are to be built.

It is of the utmost scientific importance to establish conclusively all that is at present true in medicine and surgery, and only upon such proved knowledge, to base any further advancement. The clinic deals with clinical entities and not, like the laboratories, with parts as entities. Therefore, clinical research differs, and must differ, from experimental laboratory researches. Clinical research must consider clinical entities, and when considering parts, it must consider them only as parts and not as wholes. All that subserves the object of obtaining and investigating clinical facts and principles belongs to clinical research and the laboratory is a part of the means of clinical research, but only a part.

The crux of the matter appears to be that experimental laboratory proof is not sufficient clinical proof. In order to advance in an irresistible line, clinical research must be based on a conclusive form or method of clinical proof. In experimental proof, we dislocate a part from a whole and attempt to prove the whole from the part, as though a dislocated part could always prove the whole. Or, we attempt to prove facts in one species by facts in another species, as though the two species were identical. For instance, the experiments made on animals to elucidate certain elements of fever bring out a fact of almost insurmountable difference between man and the lower animals, the fact that man has associated with the nakedness of his body a highly perfected power for regulating his temperature, a highly developed vasomotor system and a vast array of sweat glands, a characteristic complex of things which apparently no other species of animal life presents. Experiments made on animals to prove febrile or other clinical phenomena in man, may be suggestive, but for obvious reasons cannot be conclusive. To prove observations in man, the observations must be made on man and not on animals. But observations on man even are not necessarily conclusive. Individual observations on man cannot be conclusive, because the same experience cannot be repeated, and when we prove by numbers, we compare similar but not identical experiences. Analogy is not conclusive proof. Identity alone is conclusive proof; but since, in medicine, identical experiences cannot be repeated, we must provide simultaneous identical experiences in order to have proof by identity. Clinical proof

is conclusively established when all observations and experiments are made conjointly by at least two competent men, preferably of opposite ideas, at the same time. Conjoined critical observation and experiment, at the bedside and in the laboratory, as may be required, furnish simultaneous identical experiences, the proof proceeding on the principle that a whole can be proved only by the whole and not by dislocated parts.

These and other weighty questions await your assistance for a necessary solution. The benefit that will accrue, both to medicine in particular and to the medical profession and humanity at large in general, from a satisfactory establishment of scientific clinical research, can be easily surmised. Come prepared, yourself and your friends, to give to this matter your mature convictions and your personal assistance. Only from a critical interchange of critically acquired opinions, can we hope for clearness and for the clarification of the medical atmosphere now charged with confusion and difference.

Your communication, indicating your interest and your expectation of being present at the meeting in Boston on October 27, next, is eagerly awaited, and on receipt of the expression of your interest, further developments will be communicated to you personally in due time.

Any interested are asked to address communications at the earliest possible date directly to JAMES KRAUSS, M.D., 419 Boylston Street, Boston, Massachusetts.

Retrospect of Current Literature.

MEDICINE.

UNDER THE CHARGE OF DRs. FINLEY, LAFLEUR, HAMILTON, AND HOWARD.

VARIOUS AUTHORS. Gout. *The Practitioner*, July, 1909.

The entire July number of the *Practitioner* is given up to a series of papers upon Gout by fourteen different authors; and the perusal of it makes one inclined to say that definite statement as yet upon this subject, is somewhat premature; stated otherwise, we scarcely know enough about this obscure subject, as yet, to make its statement worth while. English writers and others have accumulated a vast store of experience and observation upon hygienic measures which are worthy of adoption by certain well-fed ill individuals, and a certain amount of this knowledge is doubtless properly applied to "gout" but much of it is applied to cases that are not gout. In fact, the trouble is that as yet we scarcely know what we mean by gout, and we certainly do not know what a good many other people mean by gout: we are often mistaking some obscure arterial disease for gout, and we are at times referring to equally obscure intestinal absorption as gout: but the disease

seems to be becoming hazier rather than clearer. Fortunately, the "uric-acid" patter has disappeared from such articles as those to which we refer, and the idea seems to have got its quietus in the best circles, although it is still rampant in the public mind.

The last article, by Dr. A. W. Sikes, very usefully recapitulates the recent literature upon the subject; the purin bases and uric-acid, two products of proteid metabolism, have continued to excite much investigation; uric-acid has long ceased to be considered as a cause of gout, and now the purins tend to go to the same road, but it must be admitted that excess purins do often make gouty cases worse. Colchicin, useful as it is in gout, has apparently no effect on metabolism or on the excretion of purins, but affects leucocytes, first diminishing but afterwards increasing them. Hypoxanthin, a purin base, is produced normally in muscle, according to Burian, and is then oxidised to uric-acid, which is then partly destroyed by the liver and partly excreted by the kidneys. Exercise tends to increase the purin-bases excretion but the total purin, including uric-acid, is not much affected. Sir Dyce Duckworth deals with dietary, and expresses some scepticism upon the generally prescribed diets, and sounds the note of moderation. His permission to his patients regarding wine and spirits is fairly wide, as to quality, but he draws the line upon quantity: a reviewer is apt to get the idea that many gouty Londoners do not readily yield an implicit obedience on the question of food and especially of drink. The real point of the paper is a sensible, very necessary one, viz., that moderation means more than any selection. Dr. James F. Goodhart's paper is so interesting that we wonder to see it appear under such a title: "The Treatment of Uric-Acid," as a title, is the sort of thing of which we in America are frequently guilty, but the Practitioner ought to be above it.

Dr. Goodhart condemns the artificialities of protein foods, the rich gravies, the sauces, the spices more than the foods themselves, and in general shows a proper scepticism about the evils of red meats: fats, salt, acids are more likely to be dangerous. "Perhaps someone will now say, 'what then, is your own treatment for these uric-acid troubles?' Well! I have not got one."

Dr. Arthur P. Luff deals with the "Treatment of Gout in its Various Forms," and approaches the subject with a serious hypothesis as to its causation, developing the special treatment required for each form of the disease, and indicating the measures necessary for prophylaxis. One useful means of treating gouty joints referred to is by passing an electric current into the joint through a solution of the fluid or through cloths wet with some such substance as potassium bicarbonate or lithium iodide.

Under the heading of treatment of irregular gout, Dr. Luff deals with a number of symptoms which may be the result of gout, but which are necessarily indefinite, such as dyspepsia, hyperchlorhydria, hepatic torpor, plebitis, sciatica, and insomnia. This indicates how insecure is the diagnosis of gout, because the fact that these symptoms or signs arise in a gouty man does not necessarily mean that they are caused by the cause of gout: and the "cerebral" form of gout shows us how near we are to arterio-sclerosis (which term, by the way, is often as obscure as is the term "gout" itself). Dr. Luff deals with the question of diet, as do the previously mentioned writers, in a broad-minded way: it is moderation in all, rather than selection, that is required.

Dr. Samuel West, dealing with the relation of gout to the granular kidney and to lead-poisoning, gets us back to our starting point. "Excess of uric-acid in the blood....we are bound to consider as the essential factor in gout." In developing the subject, the writer points out that the relation between gout and the granular kidney is not a constant or an essential one. Although gout and lead produce marked renal changes, neither causes granular kidney: yet granular kidneys greatly increase the liability of their possessor to the attack of one or the other or both.

Upon the cardio-vascular manifestations of gout, Dr. Percy Kidd takes, reasonably, very non-committal ground: he indicates those writers who hold that definite gouty valvular change does occur, and on the other hand, those who hold that the cardiac manifestations are largely of a functional type. Dr. Kidd evidently feels a well-grounded scepticism on the "gouty heart," and points out that the desideratum is a really reliable clinical test for gout before we can declare that the cardiac signs so often found in the so-called "gouty" have any definite relationship to the disease. Dr. James Taylor in dealing with gout in relation to disease of the nervous system prefaces his remarks with the statement that these are indirect. He believes that glycosuric peripheral neuritis is a true gouty ailment, as is also sciatica. The border line between the gouty and the arterial lesions is evidently hard to define in the mental changes associated with both. Dr. Galloway in the cutaneous manifestations of gout has an easier task. Gouty eczema, undeniable in its causation, requires protective, anti-pruritic remedies; the treatment may readily be overdone.

Three papers follow upon the balneological treatment of gout, and each at bottom does full justice to the physiological effect of spa-life, and its good effect on elimination without exploiting, to too great a degree, the special water concerned.

Mr. C. G. Watson has some excellent plates showing the joint-changes of gout, and Dr. J. E. McCracken writes upon gouty throat: he indicates the importance of pyorrhœa alveolaris, and the usefulness of formamint tablets, which are supposed to set free formaldehyde in the saliva. He points out that the effect of this may be largely in the stomach and intestines.

In reviewing all that has been said from many different standpoints, one is struck by the unanimity with which these writers agree upon the basal facts of treatment, and whatever gout may be, it seems certain that the so-called gouty are being treated in their hands upon the basis of common-sense.

J. McC.

TELLING. "The Rheumatic Infection." *The Practitioner*, May, 1909.

After "clearing the ground" somewhat, the writer says "the view that the Rheumatic Infection is a *specific* infection is that toward which bacteriological and clinical research more and more converge. At present there are many pathologists who, while accepting the hypothesis of specificity, assert that the microbe has so far eluded discovery, but in England, at least, the researches of Triboulet, Poynton and Paine, Beattie, and others have carried conviction to the minds of many that the *micrococcus rheumaticus* which they describe is the cause of Rheumatism.

While pathologists may yet differ, Telling urges the view that notwithstanding the variety of cases these, if studied closely, will strongly support the view that rheumatism is a clinical entity and the atypical "rheumatisms" are of a different pathology.

The family history—a particular physical and mental type, the presence of one or more of the symptoms included in the "Rheumatic Series," the most important manifestations of which are arthritic phenomena, fascial inflammations (including fibrous nodules) cardiac lesions, chorea, and certain skin eruptions; and the symptom—complex and general course of the disease conforming to a particular type which, too, may clearly be recognized, the rheumatism of childhood and the rheumatism of the adult,—these enable the clinician to make a diagnosis with "an approach to accuracy."

In the rheumatism of childhood the frequency of the disease in near blood-relations is most marked and this frequency remains after careful exclusion of those cases loosely termed rheumatism.

Telling, while urging that rheumatism is essentially a disease of childhood and early adult life, broadly contrasts the two types, emphasizing the necessity of understanding the great difference in type,—that "the

history of rheumatism may be the history of a whole childhood," and that rheumatism may be limited to a single event, e.g. an arthritis, an endocarditis, or a chorea.

What constitutes the physical or the mental type is somewhat difficult of definition. The child is "nervous," "emotionally unstable." Physically it approaches what is known as "pretty struma," with long dark lashes, bright-coloured clear complexion, often with red or auburn hair.

After considering the question of an acute onset of so-called rheumatoid arthritis and the diagnostic value of the salicylates in suitable doses, the writer discusses the relation of rheumatism to chorea and concludes this paragraph with the remark that "our only duty to our patients is to treat every case of chorea as if it might be rheumatic." "Beyond rest in bed, I wonder," says Telling, "whether any drug shortens the course of chorea? I have tried most treatments but remain for the most part unconvinced of the real value of any of them; I think, however, the salicylate treatment deserves a more extended trial."

A timely and most reasonable plea for rest is presented while dealing with the subject of Cardiac Lesions—even in those cases of rheumatism in children where there is only a suspicion of endocarditis or myocarditis.

Erythema nodosum is regarded as having a very doubtful connection with the rheumatic infection. In 68 cases the author will admit that six showed at most a possible connection and six a very improbable connection with rheumatism.

Peliosis rheumatica of Schönlein is a disease needing a separate classification.

EDGEWORTH "On the diagnosis of Transitory Hemiplegia in elderly persons." *Practitioner*, May, 1909.

The writer refers in the first paragraph of this article to those of Bastian, in 1875, and Daly, in 1887, Savill, in 1897, and of Russell, in 1901; and to others more recent, all of which contain reports of such hemiplegias with certain theories advanced to explain them.

The four cases which are reported in this number of the *Practitioner*, are of more than ordinary interest. In the first case, there was a sensation of numbness "coming and going in waves" and slight loss of voluntary control in the right arm and hand. The finer movements of the right hand and fingers were a little fumbling, while the gross voluntary movements of the limbs were normal. Sensation was normal. The observation was made late one evening and by the next morning all symptoms had disappeared. In the second case there was aphasia and right hemiplegia. This patient had a similar attack two years before. Both attacks were transitory and disappeared within 24 hours. In the

third case there were also aphasia and paralysis of the right hand and foot. In this case the patient had suffered off and on for five years, from pallor and numbness of the second, third and fourth fingers of the right hand. By the following day the hemiplegia had disappeared and the retention of urine which accompanied the hemiplegia lasted for a day longer.

The fourth case was that of a patient who suffered during the last eight months of her life from frequent cerebral disturbances shown by motor aphasia, left hemiplegia, giddiness, and mental confusion. Each attack lasted from 24 to 36 hours, and began as a rule in the early morning: she woke up paralysed. It was invariably found that such attacks were associated with a cord-like condition of the radial artery and an incompressible pulse. The administration of nitroglycerine — 1 minim. of the liquor every 10 minutes—brought about in five or six doses a relaxation of the hypertonus and as soon as this occurred the paralysis rapidly grew better and disappeared. The writer says that there was no obvious physical cause of these paralytic attacks. They were not preceded by constipation nor excess in diet, nor by gastrointestinal disturbances. On the other hand, little worries or frights seemed to bring them on. Six days before her death she had an incomplete paralysis affecting the right arm and leg, while the face and tongue and speech were not affected.

During these eight months she had had two attacks of left hemiplegia, six attacks of aphasia, three attacks of vertigo, and three of vertigo and mental confusion.

It seems that such attacks as are described in the above four cases may be associated with: (1) No arterio-sclérosis, no hypertonus, no rise of blood pressure, or (2) arterio-sclerosis but no general hypertonus or rise in blood pressure, or (3) arterio-sclerosis, general hypertonus and rise in blood pressure.

The adequate explanation of these various cerebral phenomena is found in the theory of a localized hypertonus—an arterial spasm in cerebral blood vessels. Such a theory may be supported by the following arguments.

(1) It is recognized that localized arterial spasms may occur in parts of the body other than in the brain, for instance, in the extremities, in Raynaud's disease.

(2) In some cases the paralysis may be preceded by clonic spasms in the paralysed limb, or the attack may consist of a clonic spasm only. Such phenomena resemble the unilateral clonic spasms which may be produced by compression of one of the carotid arteries, and a general convulsion which may occur in Stokes-Adams disease.

(3) In some cases there may be a striking parallelism between the state of the radial artery and the cerebral phenomena.

(4) It was formerly thought that the cerebral arteries had no vaso-motor nerve supply, but the recent experiments of Wiggers show that vaso-constrictors are present.

The diagnosis of this class of paralysis is by no means easy especially when seen in the first attack. It was thought that the state of the tendon reflexes might aid materially in this matter. All that can be said on this point, however, is that, if the plantar reflex is extensor in a case of suddenly occurring hemiplegia the cause is an organic one; if not extensor the disease may be, though exceptionally, of organic origin, or it may be due to vascular spasm. Again the absence of any plantar reflex on the paralysed side does not serve to differentiate the cases, for this may occur, not only in those transitory cases but also, though exceptionally, in organic cases.

The onset of those cases due to vascular spasm is usually unattended by loss of consciousness. The rise of blood pressure is common in hemiplegia of hæmorrhage and may be present in the hemiplegia of spasm. Altogether the question of diagnosis as the author points out is one of more than academic interest as the treatment is of great practical importance. Experience shows that the administration of vaso-dilators in quantities sufficient to make the pulse quite soft will rapidly cure the condition, while the administration of such remedies in hæmorrhage or thrombosis may make matters rather worse than better.

WILLIAMSON. "Variations of Arterial Blood Pressure in Cases of Arterio-Sclerosis." *Practitioner*, May, 1909.

It was with the end in view that the physician might be able to detect in its early stage the process which leads to arterio-sclerosis, that Williamson undertook the investigation of blood pressure, studying the alterations brought about by change of posture, ingestion of food and the time of day at which the observations were made. By way of introduction he reviews the opinion of several authorities on the above mentioned points. His conclusions are as follows:

(1) In cases of arterio-sclerosis blood pressure readings taken in the evening tend to be lower than the morning reading, in other words the normal diurnal variations tend to be reversed.

(2) In the majority of arterio sclerotic and non-sclerotic cases, change of posture from recumbency to sitting causes a rise of arterial pressure affecting either the systolic or diastolic pressure or both. The change from the sitting to the standing position on the other hand, corresponds in a majority of the cases of arterio-sclerosis to a fall of systolic pressure

and a rise of diastolic pressure. The same tendency is noticed in the non-arterio-sclerotic cases.

In the cases of arterio-sclerosis whether associated with high or low blood pressure, the physiological alterations in arterial calibre as the result of change of posture from recumbency to sitting, is in a majority of instances reversed. The variations in arterial calibre resulting from change of posture are, in the arterio-sclerotic cases, on the average approximately normal in amount and seem to be about equal to those in the non-arterio-sclerotic cases.

(3) As the result of ingestion of food a fall of pressure affecting either the systolic or both systolic or diastolic pressures seems to be more frequent in the cases of arterio-sclerosis than in the non-arterio-sclerotic cases, and an equally common result in the arterio-sclerotic cases in an inverse variation of the systolic and diastolic pressures. This is likewise seen in the non-arterio-sclerotic cases.

W. F. H.

SURGERY.

UNDER THE CHARGE OF DRs. ARMSTRONG, BARLOW, ARCHIBALD, AND CAMPBELL.

W. KÖRTE, Berlin. "Operations upon the Gall Passages." *Archiv für klinische Chirurgie*, Bd. 89, Heft I, p. 1.

Körte in the above article gives an extensive resumé of his experiences in the surgery of the gall passages extending over four years terminating December, 1908, referring in detail to forty cases representing various unusual or severe complications. During this period two hundred and fifty-four operations in all were performed with a death rate of nine per cent. Exclusive, however, of thirty cases presenting severe or multiple complications, two hundred and twenty-four cases were operated upon with seven deaths—a death rate of 3.1 per cent. Of the thirty cases thirteen were cured and one improved. The sixteen deaths were due to complications existing prior to operation.

The author is of opinion that all cases of acute purulent cholecystitis should be subjected to immediate operation; that the dangers of such procedure are very much less than those resulting from such probable complications as rupture, perforation through necrosis of pressure of calculus, peritonitis, liver abscess, etc. As a further argument he urges that a gall bladder which has once been the seat of purulent inflammation, owing to the extensive destruction of the mucous membrane, adhesions to surrounding organs, or possibly fistula formation, can never again become capable of distention and contraction; and that even in cases where the acute inflammation subsides, a re-

crudescence of the affection must be looked for. Finally, in support of his contention Körte states results obtained. In an earlier series published, twenty-two out of twenty-five cases recovered, the three deaths being due to complications which existed prior to operation, and in the present paper Körte reports thirty-six new cases of acute purulent cystitis operated upon in the acute stage without a single mortality. In the latter series some of the cases presented gangrene of the wall—others foci of suppuration outside the gall bladder. In seven of the thirty-six cases co-existing stones were found in the common duct and were removed by choledochotomy; in six other instances it was necessary to employ drainage of the gall passages owing to the existence of an ascending infection. In connection with this latter series it is interesting to note that symptoms of gall bladder disease were absent in fifteen cases prior to the onset of the acute infection. The sudden onset with violent pain in the right side and vomiting gave rise in a number of instances to a primary diagnosis of appendicitis. In other cases there was a history of attacks of "peritonitis," while in still others the earlier symptoms had been attributed to gastric disturbances.

Körte believes that as a rule acute suppurative cholecystitis follows cystic occlusion by stone: only two exceptions to this rule occurred in the thirty-six cases.

Primary cystectomy was performed in thirty-three of the thirty-six cases. In two drainage of the gall bladder or gall bladder duct was alone employed. In a third complicated by pancreatitis primary drainage and at a subsequent sitting cystectomy and choledochotomy was the mode of procedure.

To return to the original series,—there were sixty-two cases of chronic empyema of the gall bladder, twenty-seven of which were associated with stone in the common duct. In sixty-one cases primary cystectomy was performed, combined in forty-three cases with duct incision (in twenty-seven cases for stone and in sixteen for more perfect examination of the gall passages). In one case primary drainage was followed one week later by extirpation of the diseased gall bladder. In four of the above series pus was encountered outside the gall bladder,—in one instance between the gall bladder and the abdominal wall and in three cases between the gall bladder and the stomach. Two deaths occurred in cases complicated by stone in the common duct and one death where empyema of the gall bladder alone existed.

Of chronic calculous cholecystitis one hundred cases were encountered—forty-five of these cases being associated with stone in the common duct.

Two deaths occurred in cases complicated by common duct stone and infected bile.

Of hydrops of the gall bladder there were four cases, two of which were complicated by stone in the common duct. In all cases radical operation was carried out without mishap.

Of chronic cholecystitis without stone there were eight cases. These cases had suffered from time to time from severe attacks of pain simulating gall-stone colic. Adhesions were found at operation in all cases. Examination of the extirpated gall sacs showed the presence of chronic inflammation. Pancreatitis was present in three cases. Excision of the gall bladder associated in two instances with drainage of the common duct was practised. One fatality occurred from gangrenous perforation of the gut, due, it was thought, to embolism.

The operative technique of cystectomy remains essentially the same as that formerly described by Körte. The incision begins near the middle line in the epigastrium and extends outward parallel to the margin of the ribs, then descends obliquely downwards and outwards to the level of the umbilicus. The inner portion of the rectus muscle near its attachment to the costal margin is obliquely divided. The outer portion of the rectus together with the lateral nerve remains undisturbed apart from blunt dissection. In the upper part of the abdominal wound division of the ligamentum teres, which should be subsequently sutured, gives better access. In addition to the protection of the abdominal muscles from infection, the field of operation should be isolated from the colon, omentum, stomach and duodenum by means of gauze sponges. In separating the gall bladder two flaps of serosa are provided to cover the denuded liver. After separation of the bladder the cystic duct is divided between clamps. Where the duct is distended with fluid, aspiration before division should be practised. More difficult than the removal of the large inflamed gall bladder is that of the small, sclerosed, usually friable bladder which lies deeply under the liver, especially when that organ is the seat of chronic cholangitis. The author is greatly impressed with the importance of a thorough examination of the gall passages (the cystic, common, and hepatic ducts), without which no one can with certainty exclude the possibility of stone or tumour. Where many small stones are found in the bladder, one must in every case slit up the cystic duct to the point of its entrance into the common duct. In cases where one meets with one or more large stones and the cystic duct is narrow and its mucous membrane normal, one may be reasonably sure that the deeper passages do not contain concretions.

Where stone exists in the common duct, where there is doubt as to the

presence of such calculi, or where turbid secretions can be expressed through the cystic duct, choledochotomy should be carried out. In ninety-two choledochotomies fistula and stricture formation occurred in one case only.

For all deep sutures Körte has returned to iodine cat-gut as the most satisfactory.

The classic symptoms of gall-duct stone—icterus, the absence or diminution of bile in the fæces, colic, chills and fever, and the absence of palpable gall-bladder dilatation—are by no means always present. The differentiation of this affection from tumour occlusion may also be most difficult, and while one can from operative procedure obtain good results in cases of occlusion by stone even under critical conditions, it is quite otherwise in cases of gall-duct occlusion through tumour, where the chances of a favorable outcome are small.

In ninety-two cases icterus was twenty-five times either absent or very slightly observed. In some of these cases the choledochus concretion was small: in other cases, however, there were found medium-sized and quite large concretions. Two cases of icterus were observed in the absence of stone, due to inflammatory swelling of the papilla.

Riedel has drawn attention to insidious cases in which periodical attacks of fever and chills, followed by slight icterus or perhaps without icterus, and associated with weakness, arise as a result of choledochus concretion.

A small, shrunken gall-bladder is usually associated with occlusion by stone—a large, palpable gall-bladder with obstruction by tumour; and while this Courvoisier-Terrier law holds good on the whole, there are many exceptions (thirty-five per cent in Körte's series).

A retroduodenal position of the stone was met with nine times. In only three cases was duodenotomy performed in order to remove papillary stones. Körte has not noticed any bad results from this procedure, but avoids it if possible.

Körte employs drainage of the gall passages in all cases of choledochotomy, the drain remaining in from ten to twelve days, and in exceptional cases longer. Further, in all such cases a drainage tube is placed in the field of operation, to provide for escaped secretions or plugging of the duct tube. Körte has seen but one persistent gall fistula after the removal of the drain. Sometimes gall escapes for a time, but as a rule the fistula closes quickly if all stones have been removed.

Where stone obstructs the gall-duct the gall is often turbid or distinctly purulent. In seven of Körte's cases where no stone was met with turbid infected gall was withdrawn and a drainage tube inserted.

Körte lays stress upon the maintenance of drainage where small, dark particles about the size of a pin head or hemp seed occur in the gall which flows from the liver, and the employment of irrigation (sterile water) until clear gall is discharged. These bodies were shown by Rona to consist of bile pigment, carbonates and phosphates, but he was unable to suggest a suitable solvent. Körte believes that alkaline drinks hasten their disappearance.

This sediment evidently forms in the hepatic ducts following occlusion by stone, and where the ducts are dilated much of this sediment may be present. Körte considers the presence of these bodies a proof that concretion-formation may take place not only in the bladder but also under certain conditions in the gall passages of the liver, and also that their presence has an important bearing upon relapses.

Part II of Körte's article deals with the more severe complications.

Acute peritonitis due to perforation of the gall-bladder was met with seven times. Two cases recovered following operation: five died. These seven cases show that the danger of perforation in suppurative inflammation of the gall-bladder is not slight. In every case recovery might have been secured by timely action. It is worthy of note that the two cases which recovered underwent operation very soon after perforation.

Purulent cholangitis following obstruction by stone in the ductus choledochus was found twenty-six times, and without stone in seven instances. Although referred to before, it is well to lay stress upon the necessity of providing drainage of the gall passages in all cases where the gall is infected, whether stone be present or not. As Körte points out, it is but a step from this condition to the grave complication of hepatic abscess and necrosis.

The writer finally touches upon the question of tumours of the papilla and pancreas in their relation to biliary obstruction.

E. M. von E.

PROFESSOR DR. HANS KEHR. "Fifty-Nine Noteworthy Operations upon the Gall System." *Archiv für klinische Chirurgie, Bd. 89, Heft, I, p. 97.*

In this extensive article Kehr has selected fifty-nine cases for detailed report from a series of two hundred and thirty cases of disease of the biliary passages operated upon during the years 1907 and 1908.

The cases reported are grouped under the following headings:

I. Cystostomies. In over two hundred cases cystostomy was practised only seven times: twice where there was a co-existing pancreatic necrosis;

once where there was a luetic infection of the liver; and in the remaining cases on account of constant retching under the anæsthetic. Kehr re-cites the following reasons for performing cystostomy as seldom as possible:

- (a) Cystostomy does not give any security that the cure is permanent.
- (b) Even if further stone formation does not take place, subsequent inflammation of the damaged gall bladder is likely to occur (17 per cent of the author's earlier cases).
- (c) Fixation of the gall bladder to the abdominal wall and the formation of permanent adhesions frequently give rise to unpleasant dragging sensations.
- (d) Small stones in the cystic duct are readily overlooked in cystostomy.
- (e) The death rate in cystostomy is hardly one per cent less than in cystectomy.

II. Carcinoma.

III. Errors in diagnosis, etc., including appendicitis, pyloric obstruction following cholecystostomy, mistaken diagnosis of hysteria, persistent fistula and the results of a forgotten tampon.

IV. A series of sixteen cases in which simple cystectomy was performed.

V. Eleven cases in which, in addition to cholecystectomy, appendectomy, gastroenterostomy, or excision of an echinococcus cyst was carried out, and which are from the point of view of differential diagnosis especially interesting.

This paper, together with that by Körte reviewed in this issue, is a valuable contribution to the literature on this subject.

E. M. VON E.

G. W. CRILE, Cleveland. "Further Observations on Transfusion, with a Note on Hæmolysis." *Surgery, Gynecology, and Obstetrics*, July, 1909.

Dr. Crile in this short report reaffirms the conclusions to which previous work had led him with regard to the value of direct transfusion of blood, discusses at some length the behaviour of the heart during the procedure, brings out prominently certain points in the technique, and adds a short note upon the question of hæmolysis in the blood of the recipient.

"As to clinical results," he says, "there has been no recent evidence which justifies any material modification of the conclusion previously given:—that, in pernicious anæmia, toxæmia, certain drug poisonings, leukæmia, Hodgkin's disease, carcinoma, and uræmia, no benefit has

been observed." . . . "If performed before irreparable damage has been done by the anæmia, transfusion is specific in acute hæmorrhage. In suitable cases it has been of very great value in the prevention and the relief of the circulatory phenomena of shock."

It has been amply proved that preliminary, contemporaneous, or, if necessary, post-operative transfusion is of extraordinary value in the cases of grave, or even impossible, operative risk. Notably is this the case in two classes of patients;—those in whom there has been serious, perhaps continuous, internal hæmorrhage; and those who have been reduced by long illness, starvation, or otherwise to a condition quite unsafe for the operation indicated.

As to the heart, Crile says that this organ has shown itself to be the most important consideration in transfusion. The heart muscle itself is peculiarly dependent upon a sufficient circulation and oxidation. In severe anæmias, the myocardium is, and for long, perhaps, has been, anæmic. This impairment of its nutrition leaves it with a much narrowed margin of safety; so that, during transfusion, it may be unequal to carry the increased burden thrown upon it by the rapid influx of fresh blood from the full-pressure donor, and heart dilation may follow with the result of threatening or actual cardiac paralysis. "This condition is best met by careful adjustment of the rate of flow, and by having an assistant continually percussing the heart dullness, so that at the first sign of dilatation the flow is checked or stopped." Digitalis is also recommended.

At the end of the article there is added a couple of paragraphs upon the vexed question of hæmolysis in the procedure under discussion. Crile remarks that a hæmolysis *in vitro* does not necessarily imply a hæmolysis *in vivo*. "In fact, their agreement may be the exception. For example, I have transfused eighteen cases of tuberculosis. In most of these the donor's blood hæmolized the blood of the recipient in the test tube, but not in the patient. On theoretic grounds, transfusion in these cases should be fatal, but in practice no unfavorable results appeared."

F. LEGUEU, L. MOREL, and H. VERLIAC. "Rectal Anæsthesia." *Archives Générales de Chirurgie*, June-July, 1909.

The induction of anæsthesia by means of ether vapor introduced into the rectum is by no means a new procedure. Scarcely had ether itself been discovered, or rather its anæsthetizing properties been discovered, before it was suggested that it might be used by way of the rectum. In the one year, 1847, Roux made the suggestion; his interne, Dupuy, carried it out successfully on laboratory animals; and Pirogoff applied it

in the human. In spite of Pirogoff's *imprimatur*, the method fell into disuse, until, in 1884, there occurred a sort of renaissance of rectal anæsthesia, in Lyons and in America. Poncet, however, on the basis of experiments in animals, soon condemned it in no measured terms; and again it was not until within the last few years that the method has attracted much attention, chiefly, this time, through the investigations of Dumont of Berne, Cunningham of Boston, and Leggett of New York.

The present article reviews the whole matter with the usual Gallic clearness of exposition. The disadvantages and advantages are set forth in order and discussed. To summarize, the method possesses two undoubted advantages over narcosis by inhalation:—a more rapid recovery, and a lessened tax upon the lungs; it possesses certain advantages of more doubtful nature:—freedom of the operative field in operations upon the head and neck, a more rapid induction of anæsthesia, a lessened consumption of ether, a diminution in post-anæsthetic vomiting, and a greater efficiency in the case of alcoholics.

On the other side there is much to be said. Many of the patients complain of colic and tenesmus during the early part of the induction. This, like certain others of the objections raised, depends more on a faulty technique than upon the principle of the method.

Meteorism is a more serious matter. This is usually so great as to constitute in the author's opinion an absolute contraindication to all laparotomies.

Cardio-respiratory disturbances have been not infrequent, from the mere alarm to collapse and actual death on the table. Such accidents are doubtless due to an overdose; the anæsthesia becomes not a *rectal* one alone but an *intestinal* one. In this point, the reviewer sees an analogy with the spinal analgesia, in that, the anæsthetic once introduced, it becomes difficult if not impossible to prevent the drug exercising its complete effect after danger symptoms have appeared; one can do little either in the way of withdrawing the drug or in hastening elimination. The patient has to be tided over such conditions by stimulants of various sorts; his ultimate safety depends on his own reserve fund of vitality.

In the fourth place, the patients not infrequently suffer after operation from colic, tenesmus, dysenteric diarrhœa with serous or even bloody stools. This, the American school has maintained, is chiefly due to the entrance of liquid ether into the rectum, and may be avoided by an improved technique. The authors conducted a series of experiments upon rabbits, and found the constant presence of severe congestion of the rectum and colon, going on usually to surface ulcerations, but going on also in two instances to perforation of the sigmoid flexure. Anschütz and Baum in one patient found at autopsy two weeks after a rectal

anæsthesia numerous intestinal ulcers in process of healing; in another patient, a perforation of the cæcum was apparently caused, with death in twenty hours from fulminating peritonitis.

In spite of these grave objections, the authors, upon the basis of animal experimentation, and with the introduction of certain modifications of technique, conclude that the method has a very definite place in surgical practice.

They advise, first of all, the preliminary use of ethyl bromide, just as in New York Leggett advises beginning with ether by inhalation and continuing by the rectal route. The authors proved apparently that this early anæsthesia relaxes the ileo-cæcal valve, thus allowing an even distribution of the ether vapor from the start through the whole intestinal tract, and an accurate following of the ordinary signs of anæsthesia. They also advise a mixture of oxygen with ether vapor, and claim that they obtain in this way a very smooth anæsthesia with a more normal maintenance of cardiac and pulmonary function. As to their apparatus, this conforms in the main to the principles laid down by Cunningham and by Leggett, with an intervening bottle of water for the ether to pass through, and a safety exit for intestinal gases or fluids. In addition it provides a separate inlet, by a Y glass tube, for oxygen. With this method, their animals showed very little intestinal congestion and no ulceration. They also find that the various disadvantages above mentioned are largely circumvented; there is practically no meteorism, no diarrhoea, no tenesmus, no intestinal rupture, and no danger of cardio-respiratory failure above that of inhalation. This last was due to a primary resistance of the ileo-cæcal valve, with subsequent sudden yielding and sudden overwhelming of the small bowel with a large amount of ether collected in the large bowel. The preliminary administration of bromide of ethyl overcomes the valve at the beginning, and the anæsthesia then becomes regularly progressive and therefore capable of being intelligently followed as in the inhalation method.

In conclusion, the method when carried out with intelligence, and with the use of ethyl bromide and oxygen, is not more dangerous than the inhalation method; its disadvantages, due to the older technique, are largely overcome. It is inapplicable in the presence of intestinal derangements, acute or chronic abdominal diseases, and perineal or genital operations. It offers no advantage over other methods in operations on the extremities, but does offer indisputable advantage in operations on the head, neck, and thorax. Finally it is a method to be used only as an exception.

RETROSPECT IN DISEASES OF CHILDREN.

T. WOOD CLARKE. *Amer. Jour. Med. Sci.*, May and June, 1909.

Clarke gives a useful review of medical literature on gastric digestion in infants and finally adds some of his own investigations in that subject.

Before the days of the stomach tube work was of but little value beyond that of Langendorff, demonstrating pepsin in the stomach of a dead foetus (1879). Work on autopsy material or on animals has not been of much assistance.

Kussmaul first used the stomach tube (on adults) in 1867, but it was not used on infants till Epstein showed its therapeutic value in 1880. Raudnitz first examined the stomach contents in 1887 though Leo in 1888 was the first to make systematic examinations in a large number (134) of cases. In 1889, Puteran published 1,027 tests in 248 normal infants. Since this date many publications have appeared chiefly on four details, viz.: motility, acidity, pepsin digestion, and rennin coagulation.

While there are many contradictory results, the following statements are apparently reliable, viz.:

All the factors present in the adult are found in a weaker form in the infant.

In the new-born at the breast the stomach empties itself in from one to one and a half hours, this time increasing with the age.

The few drops of juice found in the stomach before a meal are the remains of the previous meal and not a secretion.

The motility is more rapid in breast-fed than in bottle-fed infants and more rapid in the healthy than in the sick.

The acidity immediately after a meal is nil, but appears shortly and increases during digestion, being greater in older than in younger children. On a diet of barley-water free hydrochloric acid appears in several minutes, but on a diet of milk it does not show itself for an hour or more, the casein in the meanwhile absorbing the free acid. In disease the free acid appears later than in health. In pylorospasm the acidity is increased.

Lactic acid and volatile fatty acids probably do not occur in normal breast-fed infants, but are fairly common in artificially fed or sickly children. Part of the acidity is due to a fat-splitting enzyme in the stomach.

Pepsin is constantly present at all ages in health though to a slighter degree than in the adult. Peptic digestion goes on to peptones—not further. Stomach contents at times will not digest fibrin because the

acid has been combined with casein, and foreign protein without addition of more acid will resist the enzyme. Rennin occurs in the stomach after the first few weeks; whether it appears in the first week is unknown.

Clarke in his second paper then reports 122 observations on 24 infants as near normal as possible and varying from 2 to 8 months of age. From those he concludes that:—

1. Motility varies inversely with the concentration of the food, thus more dilute foods may be given more frequently.
2. Lime-water does not reduce acidity, neutralization of some acid being overcome by increased stimulation of acid; the net amount may even be increased.
3. Sodium citrate markedly reduces acidity by production of sodium chloride.
4. Barley-water has no constant effect on gastric digestion.
5. The type of infants with persistent vomiting shows either hyper-acidity or hypo-acidity.
6. Test feedings show to which class a case belongs.
7. Five per cent. solution of milk sugar is the best material for a test feeding. This should be left in for 30 minutes and may be followed by a mixture of milk and water to test the degree of response of the gastric glands.
8. Protein digestion is slight and proportional to the amount of hydrochlorid acid present.

MARTHA WOLLSTEIN. "The Site of Tuberculous Infection in Infants."
Archives of Internal Medicine, April, 1909.

Martha Wollstein publishes statistics on the vexed question of the commonest site of tuberculosis infection in infants. Her figures are based on 185 autopsies on tuberculous infants under 3 years of age and also on other autopsies.

Of all infants under 1 year of age coming to autopsy, 12 per cent. had tuberculous lesions; of those in the 2nd year, 36 per cent. had tuberculous lesions and of those in the 3rd year, 33 per cent. Of infants under 3 months of age 1.8 per cent. had tuberculosis.

In the 185 tuberculous cases 13 had lesions limited to the respiratory tract and only 1 showed lesions involving the intestines alone. Four additional cases were of undoubted intestinal origin while 40 were equally clearly of respiratory origin; 1 was of mixed origin. In 8 cases the mesenteric lymph nodes were involved without an intestinal lesion, but with a pulmonary involvement. Of intestinal ulcers most were in the lower ileum. In the kidneys young miliary tubercles were found in 67 cases, usually in both kidneys. Pulmonary lesions varied from miliary

tubercles to cheesy areas and cavities. The right upper lobe was that most frequently affected.

This study thus showed the rarity of undoubted intestinal tuberculosis and the predominance of the respiratory origin over the alimentary. The tendency of the tuberculous process in lymph nodes is toward degeneration as caseation and suppuration were the rule in these cases.

F. M. F.

TRAUMATIC NEUROSES.

The divergent opinions held by physicians and lawyers in regard to what are called traumatic neuroses are noticed by E. E. GAVER, Columbus, Ohio (*Journal A. M. A.*, July 17), and owing to the tangled condition thus caused, he thinks worthy persons often fail to get just compensation, while unworthy ones sometimes recover damages. While he does not believe that the German system of insurance against accident is a perfect solution of the problem involved, it is, he says, a great improvement over no system at all, as is the case here. The special features of the three cases he reports are as follows: The first was diagnosed as an organic case and operated on for brain abscess which was not found. Later it was diagnosed as a case of traumatic neurosis of the hysterical type, which it proved to be and the patient recovered entirely, after obtaining damages from the city where the accident occurred. The second case was one of hysterical traumatic neurosis manifesting a rather fragmentary dissociation of personality, and the third was a temporary insanity from head injury, with former dissipation as a possible contributing factor. There are few cases of traumatic psychosis in which some such preceding factor, or heredity, can be absolutely excluded.

John R. Hicks of New York says that all methods of technique used in the ophthalmoreaction are faulty in that they do not sterilize the eye before making the instillation. Harmful microbes in the eye are facilitated in their action by the use of the test solution, and cause ulceration that is severe in some cases. The author explains his method of sterilization of the eye by using antiseptic solutions in the eye for a week before instillation. He has obtained positive tests in the eyes of patients in whom there was no tuberculosis when the eye was not sterilized.—*Medical Record*, Aug. 7, 1909.