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A CONTRIBUTION TO THE STUDY OF BRIGHT'S DISEASE WITH SPECIAL REFERENCE TO THE ETIOLOGICAL RELATIONSHIP OF THE BACILLUS COLI.

BY

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There is scarcely any subject in the realm of medical pathology which has been more carefully and persistently studied than Nephritis. Yet there is no disease, unless it be cirrhosis of the liver, which is more obscure.

From Bright onward, careful observers like Rokitansky, Ziegler, Weigert, Klebs, Ewald, Grainger-Stewart, and Wagner, have investigated the subject. Valuable experimental studies have been made by Grawitz and Israel, Ponfick, Aufrecht, Litten, Roberts, V. Kahlden, Pernice and Scagliosi, which have materially increased our knowledge. But while the histological features of the disease are well known, and have been accurately described, and the clinical features of the various stages are in a general way understood, the ultimate nature of the process is still a mystery.

With regard to acute nephritis, upon which there have been multitudinous studies of late years, we have probably attained something like the truth—the whole series of "infections" and mineral or other toxins being the etiological factors concerned in the vast majority if not in all the cases. The origin, however, of the chronic forms and their relationship or otherwise to the acute stage, may be said to be largely unknown.

The clinical symptoms, the character of the urine, give us merely the roughest sort of information, and every pathologist knows how difficult it is to predict the actual condition of the kidneys from the clinical ex-

amination in any given case. Indeed the confusion of the whole subject may be inferred from the numerous attempts at a rational classification of the various forms of kidney inflammation, which have been proposed, all of which differ more or less in important particulars.

This, I am inclined to think, is the result of too limited a view, and the failure to realize the different factors in the problem. To have any degree of comprehension of the disease, clinical studies, histological examinations, bacteriology, and experimental work, must be laid under contribution.

Acute inflammation of the kidneys is now said to be the result of the following conditions:—

1. Intoxication, e.g., from bacterial toxins, alcohol, lead, cantharides, phosphorus, chlorate of potash, salicylic acid, etc.

2. Complication of :—(a), The acute infections, as, scarlatina, smallpox, pneumonia, acute rheumatism, erysipelas, endocarditis, typhoid, diphtheria, septicæma, cholera, epidemic cerebro-spinal meningitis, gastro-intestinal disorders, etc. (b), Chronic diseases and cachexias:—arterial sclerosis, diabetes, syphilis, pulmonary phthisis, carcinoma, etc.

3. So-called "idiopathic" cases.

In prosecuting the study of such a subject it is well to remember that the kidney is not the sole field of observation, but that the participation of the blood, the vessels, and other organs, in the process should be taken into account. We should too, I think, separate from true "nephritis" or inflammation of the kidney, that whole group of cases classed under the first divison which are really "degenerations" of the kidney epithelium, and are not properly inflammations at all.

There is abundant evidence to prove that the toxic substances above mentioned do bring about degenerations of the nature of cloudy swelling, fatty degeneration, or even necrosis, in the epithelium of the secreting tubules.

Moreover, it has been established by experimental studies, notably those of Wandervelde (Act. d. pois sur les cell. epithél. n. canalicules contournées, Brux., 1894), that toxins such as those of cholera, cholera nostras, tuberculosis, diphtheria, pneumonia, influenza, and chemicals, such as chromic acid, lead, phosphorus, mercuric chloride, when injected into animals exert through the blood-stream a harmful influence upon the secreting epithelium bringing about changes identical with those found in the human subject.

Still it must be emphasised that such changes do not constitute nephritis, and since inflammation in the organism is so rarely dissociated from bacterial invasion, it may well be doubted whether when inflammation does supervene, it is not of the nature of a direct infection.

In the case of true acute nephritis, the trend of the investigation of the past 15 years points strongly to the unity of the process as a result of various microbic infections. The varieties of these are numerous.

Bouchard, (Des néphritis infectieuses, Rév. de Méd. 1, '81), in nine cases of typhoid with nephritis that came to autopsy, found the specific bacillus in every one and in several other living cases found the germ so long as the albuminuria persisted. But since this investigation was six years before the full studies of Gaffky on the bacillus, there may be some little doubt as to the value of the results.

Letzerich, (Untersuch. u. Beobacht. ueber Nephritis bacillosa interstitialis primaria. Zeitschr. f. klin. Med. Bd. 13, '87, S. 33.) described an epidemic of acute intersitial nephritis with the ordinary clinical symptoms which was due to a bacillus resembling the B. tuberculosis, but shorter. Injected into animals it produced nephritis.

Mannaberg (Zeitschr. f. klin. Med. '90), in fourteen cases of acute Bright's in acute endocarditis, found streptococci in the urine which he was unable to find in the urine of other cases after a prolonged investigation.

That acute nephritis could be epidemic apart from any relationship with scarlatina, was shown by Fiessinger (Ga. Méd. de Paris. Oct. 10,'01). Acute nephritis has also been known to follow infected wounds of the skin, impetiginoid eczema, pemphigus, vaccination, acute tonsillitis and various lesions of the alimentary tract. Among the bacteria which have been recently shown to produce acute nephritis, are the B. Typhi, the diplococcus lanceolatus, meningococcus intracellularis, B. Friedlanderi, streptococcus pyogenes, staphylococcus albus and aureus, and the B. Coli.

The condition is to be regarded as an attempt on the part of the kidneys to eliminate the toxins and micro-organisms of the various diseases. That the kidneys do excrete bacteria even in the absence of gross lesions of the organs is amply proved. Weichselbaum (Wiener med. Woch. No. 41, 1885), in a case of ulcerative endocarditis found streptococci and staphylococci in the urine; the B. Typhi is found in the urine in quite a large percentage of cases, and numerous other germs have been found in various diseases.

The best statistics on Bright's disease are those of Agnes Bluhm (Ueber die Aetiologie der Nephritis, D. Arch. f. klin. Med. Bd. 47, '90.) Of 140 cases of acute Bright's disease, 70 per cent. could be traced to acute infections. Only 2.85 per cent, were directly traceable to cold. One of the cases followed acute ileus.

The acute nephritis of the infections is of various types. At one time, degenerative processes in the secreting epithelium predominate, such as extreme cloudy swelling, fatty degeneration, desquamation, and imperfect nuclear staining. At another, the brunt of the toxin falls upon the glomeruli bringing about effusion into the Bowman's Capsules, congestion of the glomerular capillaries and shedding of the capsular epithelium; or occasionally small-celled infiltration into and about the Bowman's capsules. Or at still another, an acute interstitial infiltration of

leucocytes with œdema of the boundary layer (the "lymphomatous" nephritis of Wagner). Lastly, all three may be combined. The first form is most common, but the type seems to depend upon the nature of the infection. The tendency of scarlatina for instance, to cause a glomerulo-nephritis or an acute interstitial inflammation is well known.

Occasionally the primary infectious diseases are ushered in by an acute nephritis, which may predominate the clinical picture, as in the so-called "renal typhus." Generally, however, the cases occur late on in the course of a specific infection, and are to be regarded as complications due to the effort at elimination. They are probably exaggerations of the common conditions of cloudy swelling, between which and true inflammation, no hard and fast line can be drawn. Again, some of these cases may be the result of a mixed infection.

Further, all grades of severity exist, from a mild inflammation up to a true local suppurative condition. The infection may be in some cases an 'ascending' one from the bladder, but more commonly a 'descending' one from the blood-stream. Only on the latter supposition can we explain the nephritides which occur in skin affections, anginas, and intestinal disorders.

It should not be forgotten than an acute attack may be grafted upon a chronic nephritis which was unsuspected, thus simulating a primary attack. ("Acute recurring nephritis" of Wagner.)

The idiopathic cases are those which occur in previously healthy persons; often the only causes that can be assigned are chilling of the body, or excessive exercise in the cold. This form is especially apt to occur in alcoholics. That there is some relation between the skin and the kidney seems clear.

The etiology of these and the forms occurring in chronic disease will be discussed later.

When we come to consider the production of chronic nephritis the task becomes more difficult. It is usual to teach that the acute cases may become chronic, and that the cirrhotic kidney is an end-stage of the chronic parenchymatous nephritis, or is due to arterial disease, or again, to certain poison, as alcohol, gout, and lead. (The "primare Schrumpfniere" of the Vienna School.) This does not, however, explain all the cases; cases of contracted kidney occur where there was no history of any acute attack, and run an insidious course. And again, cirrhotic kidneys may occur in children, where there could be no question of arterio-selerosis or chronic intoxications from mineral substances.

Further, the cirrhotic kidney has been known to result from infective diseases, as pneumonia (diplococcus), and influenza. The etiological elements in this form then seem to be very various, and the course apparently without any fixed rule.

While it is generally admitted that acute nephritis is in the immense majority of cases, due to some infective agent, as yet, I believe, no one

has ventured to say that chronic Bright's disease is due to the direct action of bacteria.

Holst, indeed, is inclined to support the view that microbes by their toxins are able to produce nephritis without being present in the kidney *per se*, and that the action may appear late or after the primary infection has disappeared, thus producing the chronic disease. But this view does not seem consistent with the facts. Recent investigations, almost without exception, go to show that in acute nephritis microbes are present in the kidney. In the case of pneumonic nephritis, Massalong and Klebs frequently found the diplococcus lanceolatus in the kidney. Michelle, too, (Morgagni, Aug. 1896), in 19 cases found the pneumococcus in 18. In six cases of acute nephritis, and acute nephritis grafted upon chronic in pneumonia, I have found the diplococcus in every one.

Councilman (Trans. Assoc. Amer. Phys. Vol. xiii., 1898.), records the following results:—

42 cases of acute interstitial nephritis were examined bacteriologically post mortem.

In 24 diphtheritic cases the kidney was sterile in six.
In 11, the B. Coli was found.
In 5 the streptococcus pyogenes was found.
In 1 the streptococcus aureus was found.
In 8 the diphtheria bacillus was found.
In 1 the B. Foetidus was found.

In 5 cases of scarlatinal nephritis.
In 3 the streptococcus.
In 2 the B. Coli.
In 1 the staphylococcus.

In 8 of mixed infection of diphtheria with scarlatina or measles.
2 cultures were sterile.
3 the streptococcus.
3 the B. Coli.

In other six cases:—
3 the B. Coli.
2 the staphylococcus aureus.
4 the streptococcus.
1 the pneumococcus.
1 sterile.

He does not regard the presence of the colon bacillus found under such conditions as of much etiological value. He obtained the same results in the kidneys in the same diseases, in which no interstitial nephritis was present.

Thus he concludes that no weight could be laid on the presence of

bacteria in the kidneys as a causative factor in the acute interstitial lesions.

This conclusion does not seem to me to be warranted for it is amply proved that in these specific diseases germs are to be found in the urine where no gross lesion of the kidneys exists, at least clinically, and the production or not of nephritis depends on the correlation of several factors, outside of the mere presence of bacteria.

With a view of gaining further information and ascertaining whether bacteria were present or not in the various forms of Bright's disease, I have availed myself of the pathological material of the Royal Victoria Hospital from about 325 autopsies and also the clinical notes of all the cases of nephritis in the Wards for the past four years.

In approaching this investigation, I have thought that more valuable information would be attained by examining sections of kidneys which presented evidence of nephritis microscopically, in addition to those which were taken from cases which were recognised clinically. For by this means one gets a wider view of the subject, inasmuch as the study embraces all grades of the disease from the incipient forms up to the most advanced stages. Particularly valuable is the study of the early stages since it is only thus that a true appreciation of the process can be formed.

Sections were made from 105 kidneys presenting the varous forms of nephritis. All cases in which there was cystitis or any evidence of an "ascending" infection, or local tuberculosis, were excluded as unnecessarily complicating the subject.

Some of the material of the early years was hardened in Müller's fluid, so that many kidneys presented evidence of post mortem growth of bacteria, these were excluded in drawing conclusions. The material, however, which was hardened in Formol-Müller was satisfactory. All cases in which there was clearly a terminal infection as shown by plugs of bacteria in the capillaries were also excluded.

The method of staining was as follows:—

Celloidin sections, cut as thin as possible, were placed in carbolthionin for from 12 to 24 hours in the incubator. The formula of the stain was:—

Solution of carbolic acid, (1—40) 100 cc.
Thionin,..... 1 gramme.
Filtered as used.

The sections were then decolorised in weak acetic acid, dehydrated in aniline oil, washed in xylol and mounted in balsam.

Those sections in which pus cocci, or micro-organisms positive to Gram, were suspected, were also prepared by the Gram-Weigert method. The results were very satisfactory. Carbol-thionin is certainly the best

stain for bacteria in tissues that I have employed. The sections were examined by 1-18th Reichert oil-immersion lens and No. 4 eye piece.

The classification that I have adopted of the various forms of the disease, is purely a histological one based mainly upon my own investigations, but is practically that of the German School. The division is as follows, it being premised that is somewhat arbitrary, the various forms passing imperceptibly one into the other, the predominant feature being taken as the guide.

1. *Acute Parenchymatous Nephritis*, in which there was degeneration of the epithelium of the secreting tubules as evidenced by cloudy swelling, desquamation of cells, exudate, and imperfect staining of the nuclei, often with casts. It includes hæmorrhagic cases.

2. *Acute Interstitial*, in which there was an acute leucocytic infiltration about the glomeruli or in the lining cells of the Bowman's capsules tween the tubules, without grave degenerative changes in the tubular epithelium,

3. *Acute Diffuse*, where the first two forms were combined.

4. *Acute Glomerulitis*, evidenced by congestion of the glomerular capillaries, desquamation of the lining cells of the Bowman's capsules with effusion and exudation into the capsules.

5. *Chronic Parenchymatous*, in which there were marked degenerative changes in the secreting cells, but with a tendency to connective tissue proliferation; haemorrhagic cases included.

6. *Chronic Diffuse*, where the fibrous hyperplasia had progressed still further, bringing about atrophy and dilatation of the tubules with sometimes hyaline degeneration of glomeruli with periglomerular fibrosis.

7. *Chronic Glomerulitis*, a sub-variety in which the glomeruli showed predominantly, degeneration, atrophy and periglomerular fibrosis.

8. *Chronic Interstitial*, the terminal stage of the chronic diffuse, where the secreting cells were extensively atrophied with cystic dilatation of the tubules, sclerosis of the glomeruli and extreme fibrous proliferation.

9. *Arterio-Sclerotic and Senile*, where the process was most marked in certain vascular districts.

10. *Amyloid Fatty Kidney*, a combination of amyloid disease and parenchymatous degeneration.

11. *Amyloid Contracted Kidney*, amyloid disease in a cirrhotic kidney.

This classification is intended merely to afford a convenient division for the purpose of the present study.

In all, 105 specimens were examined and classified as follows, 28 being excluded for the reasons mentioned :—

Acute parenchymatous	26	Chronic glomerulitis	1
Acute interstitial	3	Chronic interstitial	10
Acute diffuse	4	Arterio-sclerotic and senile	13
Acute glomerulitis	0	Amyloid fatty kidney	2
Chronic parenchymatous	8	Amyloid contracted kidney	0
Chronic diffuse	11		

The results were very striking. Analysis of the different classes gave the following:—

Disease.	No. of Cases.	Bacteria Found.	Negative.
Acute Parenchymatous:			
Typhoid	5	B. Typhi 2, B. Coli (?) 2	1
Ulcerative Phthisis	5	Diplococci and Bacilli 2	3
B. Aërogenes Capsul	2	B. Aërogenes 2	0
Diabetes	1	Diplococci with halo; very small, 1	0
Lobar Pneumonia	2	" Lanceolatus 2	0
Mitral Stenosis	1	" with halo, 1	0
Diphtheria	1	B. Löffleri and Cocci 1	0
Pyemia	1	Staphylococci, 1	0
Eclampsia	1	Long B. with rounded ends, B. Coli (?) 1	0
Puerperal Septicæmia	1	Staphylococci and B. 1	0
Epid. Cerebro-Spinal Meningitis	1	Diplo. Intracellularis, 1 (Weichselbaum)	0
Acute Interstitial:			
Lobar Pneumonia	1	Small Diplo. (?) Diplo. Lanceolatus;	0
Pyemia	1	Cocci and Bacilli	0
Puerperal Septicæmia	1	Cult. gave Streptococci	0
Acute Diffuse:			
Cancer with septic peritonitis	1	Diplo. in cultures. 1	0
Typhoid	2	B. Typhi in areas of infiltration,	0
Lobar Pneumonia	1	Diplo. Lanceolatus 1	0

Of the 32 acute forms of various kinds, bacteria, generally the specific germs of the disease, were found in 28. The overwhelming proportion of positive results leads me strongly to the conclusion that in the vast majority of cases, if not in all, acute nephritis is due to the presence of specific microbes. That there were four negative results does not invalidate the conclusion, for the infection being embolic it is very probable that in such kidneys there are sporadic areas of inflammation surrounded by comparatively healthy tissues. Indeed, this sporadic form is recognized by several of the recent French observers, and is quite analogous to embolic suppurative nephritis.

It is suggestive that minute diplococci with halos were found in one case of pancreatic diabetes, and in one of mitral stenosis with passive congestion of the intestines, while in an eclamptic patient, bacilli were found strongly resembling the B. Coli. The significance of this will be seen later.

In the eight examples of chronic parenchymatous nephritis, four showed minute diplococci with a delicate halo mostly between the lobules in the cortical area. Of these one case, which was associated with *Atrophic Cirrhosis* of the liver, showed a few well marked minute diplococci with a halo. In two, one an alcoholic kidney, bacilli of doubtful nature were seen. Two others gave negative results.

The chronic glomerulitis case showed a slight acute interstitial in-

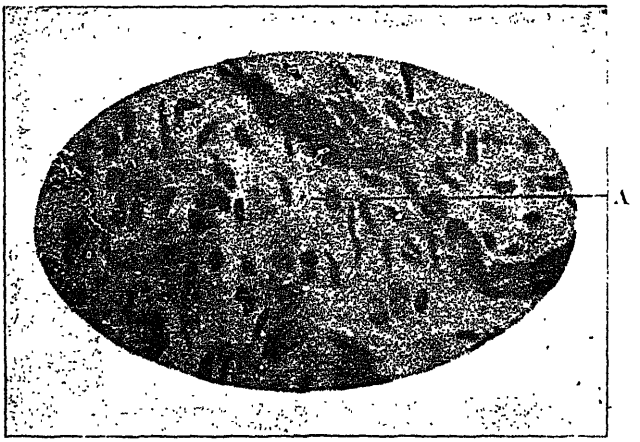


PLATE I. FIG. I.

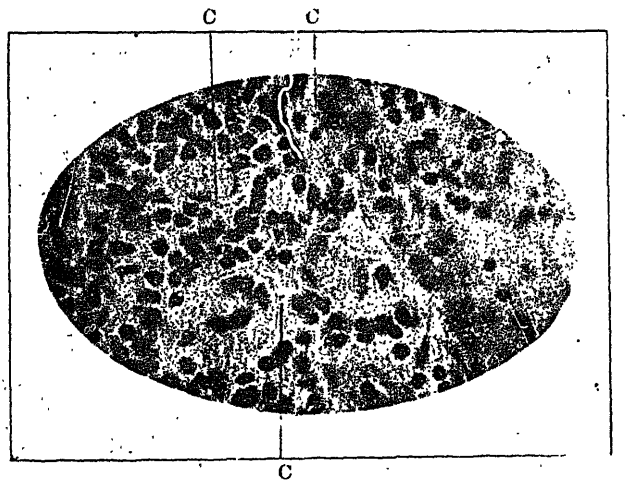


PLATE I. FIG. II.

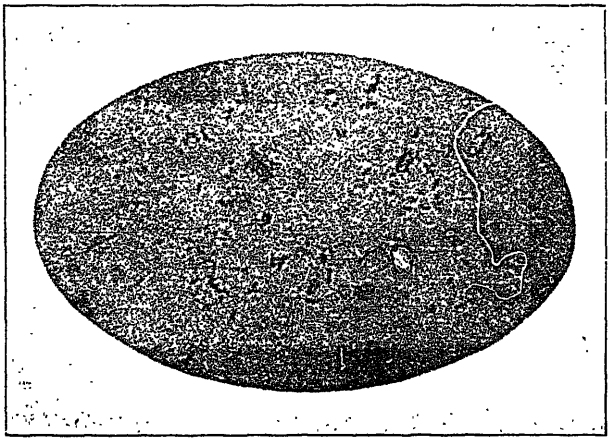


PLATE II. FIG. I.

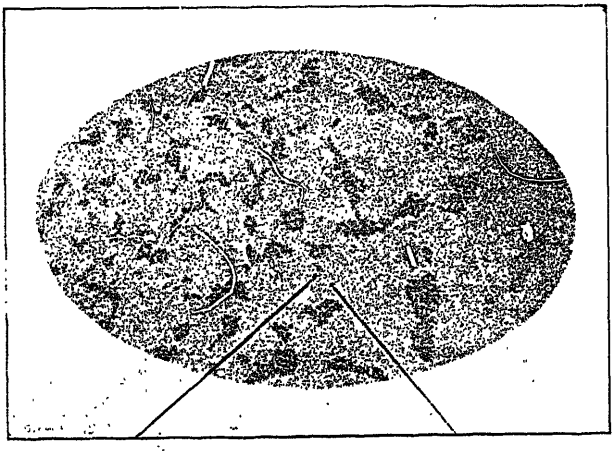


PLATE II. FIG. II.

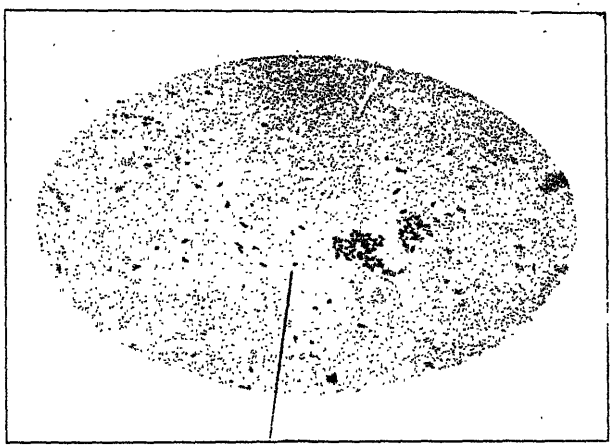


PLATE III. FIG. I.

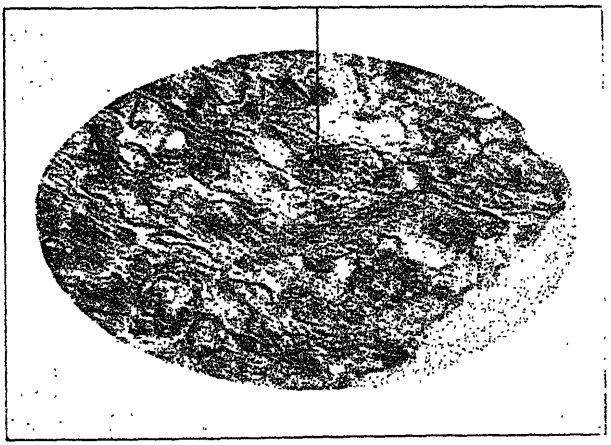


PLATE III. FIG. II.

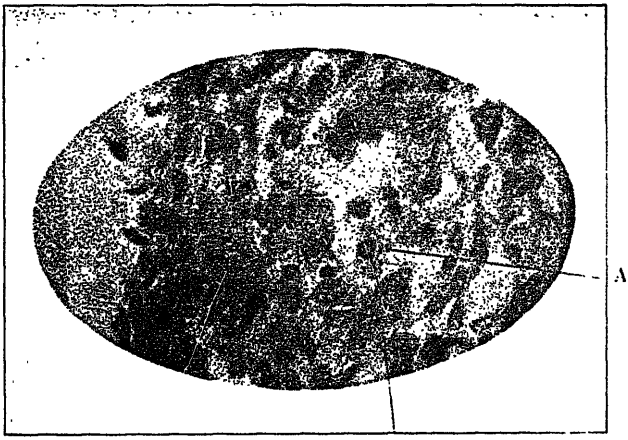


PLATE IV. FIG. I.

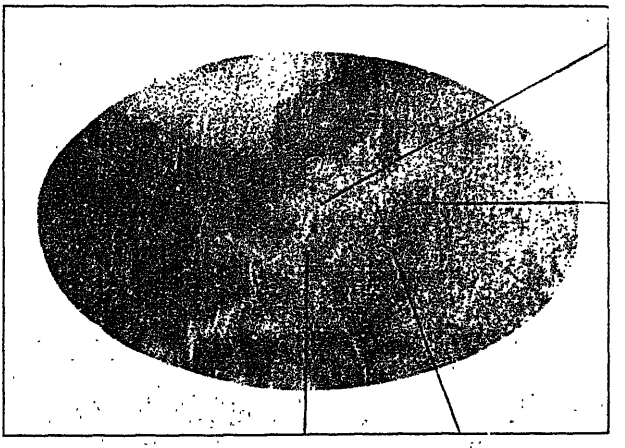


PLATE IV. FIG. II.

flammation as well, and a few rare diplococci were seen. The primary disease was septic peritonitis.

The amyloid fatty kidneys showed no germs.

Still more interesting and suggestive were the results found in the chronic diffuse, chronic interstitial, and the arterio-sclerotic type of the disease.

In the chronic diffuse nephritis, bacteria were found in all 11 cases. In two there were rather large diplococci, which might be the diplococcus lanceolatus as a lobar pneumonia was present. In five, small diplococci; in four short stumpy bacilli were seen with polar staining closely resembling the B. Coli. These were situated in the areas of round celled infiltration, beneath the basement membranes of the tubules, and in one case within the lining cells of the secreting tubules.

One case, in which the small diplococcus form was seen, was associated with atrophic cirrhosis of the liver.

There were 10 cases of chronic interstitial nephritis. In all were found the minute diplococci with a halo, mainly in the areas of round-celled infiltration, some few within the Bowman's capsules, and in one case within the cells of the tubular epithelium.

Figs. I. and II., Plate 1, show very well the diplococci in the small celled infiltration. In the 13 arterio-sclerotic and senile forms, three gave negative results, but the specimens were very poor; nine showed small diplococci with a halo, chiefly in the areas of round-celled infiltration, and also in one case in a glomerular capillary, in another, within a Bowman's capsule, and in a third with the lumen of a secreting tubule.

In two of the cases besides there were noted bacilli of varying forms. These were diplo-bacilli of small size, very short bacilli with rounded ends, a slender form with polar staining and others, large and curved conforming well to the usual appearance of the B. Coli.

To sum up, in the 45 cases of chronic nephritis of all forms, minute diplococci, as a rule with a distinct halo, were seen in 29, and bacilli having the ordinary appearance of B. Coli in 4 more. In only six were no bacteria seen, but this might easily be due to poor sections or errors in technique, for it is difficult in a large series of sections to get perfectly even results.

These diplococcus forms were very minute and might easily be overlooked with an ordinary 1-12th immersion. Sometimes it could be made out that they were really very short, fine bacilli with polar staining the intervening substances being almost colourless. They were generally in the areas of interstitial round-celled infiltration. Rarely I have seen them within the Bowman's capsules, and within the secreting cells of the contorted tubules; on one occasion within a lumen. The halo was probably not a true capsule, but due to the effects of refraction.

As to the nature of these diplococcus forms, it may be said that they are identical in appearance and size with the diplococci which Adami has found recently in the liver, associated with progressive portal cirrhosis, and which he has proved to be a variant of the colon bacillus. His very important investigations appeared in the MONTREAL MEDICAL JOURNAL in July, 1898, the British Medical Journal for October, 1898, and the Lancet of August 13th, 1898. He found diplococcus forms in all livers which stained a brownish hue and were probably dead forms, while in atrophic cirrhosis of the liver they were increased in number and stained well. He has, I think, established the fact that these forms are really a modified colon bacillus, and that the liver in health, is constantly excreting them, thus constituting a chief barrier of defence against bacterial infection from the gastro-intestinal tract. In experimental animals he found that in 15 minutes after intravenous innoculation with a pure growth of the B. Coli, the endothelium of the capillaries had enclosed the germs, and in two hours the bacteria were to be found within the parenchymatous cells of the liver. The germs which were of the ordinary colon type presented also diplococcus form. The diplococcus isolated from cirrhotic livers formed very minute colonies on nutrient agar and produced relatively little gas, but in other respects conformed well to the colon type.

With a view to discover if the colon bacillus is to be found in the urine of nephritis cases, I have examined the urine in one case of acute hæmorrhagic nephritis, and in one of chronic interstitial. The method employed was to sterilise the meatus and glans penis then to allow the patient to pass several ounces of urine and collect the residue in sterilised flasks. These were then sealed and placed in the incubator for 48 hours. In the first case I obtained the colon bacillus, but it died out rapidly, and I was not able to study it very closely.

In the second case, the chronic interstitial, various forms were found as seen in Fig. I., Plate II. These were stout bacilli, either straight or curved with rounded ends, some with polar staining ; they all resembled the ordinary colon forms. Besides these there were small ovate bacteria, and shorter more delicate bacilli with polar staining. There were also short chains composed of very short bacilli with rather blunt ends showing polar staining. All were negative to Gram. A broth transfer was made and after 48 hours all the usual forms of the B. Coli were seen with the addition of minute diplococci with a halo. These, owing to the crescentic form of the stained portions resembled gonococci. Small diplococci with halos were seen exactly resembling those seen in the sections, also a similar diplococcus, but larger.

When transferred to agar for 48 hours, a thick tallowy growth was produced, and microscopically the germs were short oval bacteria, very small, with the 1-12th oil immersion exactly like cocci ; also numerous

minute diplococcus forms. No bacilli were seen. (Vide Fig. II., Plate II.) This was transferred to a Bouillon made from kidney reacting, 1.5 per cent acid to phenolthalein; this showed minute diplococci with halos, diplobacilli, a slender bacillus with polar staining and besides these, the ordinary typical colon. (Fig. I., Plate III.)

Cultures from the coccus and diplococcus forms were made on broth, milk, potato, glucose, agar and litmus agar. They showed that in all respects the organism reacted like the B. Coli, with the exception that indol was not produced. Unlike Dr. Adami's diplococcus, this one produced a very heavy growth on agar.

When grown with sterilised bile on agar, the cocci and diplococci seen, were even smaller than those produced on plain agar.

With regard to the presence of B. Coli or other germs in the urine of chronic nephritis, information is lacking, and my investigations on this point are still going on, being hampered at present for want of enough clinical material. Still, in the cases I have examined I have found the colon bacillus, although as is well known, it is also present in other conditions, notably cystitis, nephrolithiasis and pyelonephritis suppurative. *Fernet* (Bull. et Mém. de la Soc. des Hôp. Paris, Dec. '92), in a case of acute interstitial nephritis occurring two months after an abortion, found the B. Coli in great numbers in the urine.

Several observations have been made on normal urine to discover if it usually contains germs. The best studies are those of Enriquez, (Recherches bact. sur l'urine normale, Sém. Méd., No. 57, 1891, p. 468,) This author collected the urine in the way which I have employed, and concluded that normal urine was aseptic.

In the urine of 11 healthy people, and five cadavers, the cultures in 10 were sterile, in five staphylococci, and in one, non-pathogenic bacilli were found. These last cases, however, were taken from tuberculous wards, and in two there was a history of previous infection. The urine of seven healthy rabbits was sterile. In the post mortem records I have studied, as a rule, there is no note of cultures taken from the kidneys or urine.

In three cases of tuberculosis of the intestine, the B. Coli was found in the kidney once and in the urine once; one case sterile. In two cases of typhoid fever, B. Coli in one: one sterile.

One case of tubercular pyelonephritis gave B. Coli.

One case of nephrolithiasis gave B. Coli.

One case of chronic mixed nephritis with amyloid disease gave the colon bacillus.

The presence of the colon bacillus so generally in the kidneys, which I have studied, receives additional importance from the fact that in this study I have been careful to exclude all cases in which there were cystitis, suppurative pyelonephritis, and tubercular abscesses—conditions

in which there is apt to be an 'ascending' infection with the colon bacillus. We must then conclude that the infection is a 'descending' one by way of the blood stream. That the presence of the colon bacillus is to be explained as a terminal infection or a post mortem overgrowth, I do not believe, for it is easy to eliminate cases of this kind as I did very freely, for the differences are quite distinctive. In ante-mortem terminal infections, the germs are largely in the capillaries, often forming large plugs, and consist of large fat bacilli, short bacilli, or sometimes diplococci, but always much larger and staining more deeply than the diplococcus forms I describe. Further, there is no evidence of inflammatory reaction about these large bacteria, while in the case of the diplococcus, they are enclosed by an inflammatory round-celled infiltration. Neither is it a post-mortem growth, for in this case, the germs are in the superficial cortical layers, and are always much larger and different in appearance and staining powers. Such germs can be seen with an ordinary No. 7 objective, while the diplococcus requires the 1-12th oil immersion at least, or better the 1-18th. Then again, the diplococci are always very few in number, perhaps only five or six in a section.

It is almost impossible to get perfectly normal kidneys in the post mortem room, but I have examined a few for diplococci in which microscopically the tissue showed no abnormality. In 10 such sections, 7 showed no germs; three showed rare diplococci similar to those in the nephritis cases, but on further examination I found that in one case there had been a hernia operation, and there was an acute local enteritis; in the second there had been a gastrotomy performed, and there was local peritonitis; and in the third a spina bifida had been removed. Thus in two there could have been infection from the intestinal tract.

That the process in chronic nephritis with productive inflammation is due to an embolic infection, is strongly supported by the histological features in the sections I have studied. The lesions in the chronic forms are identical with those in the acute interstitial as to their anatomical distribution.

In the great majority of the acute interstitial and acute mixed varieties, the areas of round-celled infiltration are to be found around the glomeruli or around the afferent vessels, and interlobular arterioles exactly as would be expected in an embolic infection. The same holds good for the chronic cases. In the arterio-sclerotic type, that the infiltration and proliferation is mostly confined to vascular districts needs only to be mentioned. In the early stages of the chronic diffuse nephritis one sees the inflammatory exudation in the same way about the afferent blood vessels, associated with connective tissue hyperplasia. The cells of the Bowman's capsules proliferate causing atrophy and hyaline degeneration of the glomerular tuft, or we get small fibrous patches about the vessels between the contorted tubules.

In both acute and chronic forms the vessels of the affected areas often show marked congestion. Later on, in the chronic interstitial type (contracted kindey), the fibrous tissue overgrowth is so generalized that this relationship to the blood vessels can no longer be made out. In my series, the process could be accurately followed out.

What is the starting point then of this colon bacillus invasion? The most obvious is the intestine. We have ample evidence that intestinal discorders can cause acute nephritis. It occurs in gastro-enteritis and in Cholera Asiatica, for instance.

Ebstein, (Deut. Med. Woch., June 15th, 1897), discusses acute nephritis as a complication of chronic gastro-enteritis. In a case he records in a woman of 27, there was a history of diarrhœa for nine months previously, pain in the epigastrium and anorexia, for six. The nephritis came on most acutely, and was fatal in a few days from eclampsia, coma and collapse. At the autopsy acute nephritis was found, a tapeworm in the intestine, acute follicular ulcerative enteritis and enlargement of the mesenteric glands. The spleen was normal. Influenza and all other infections as a cause were excluded and Ebstein concluded that the condition was due to an intoxication from the intestine.

Dupeu, (Acute Nephritis in Children.—Journ. de Méd., July 10, '97), states that acute nephritis may be a result of ordinary gastro-intestinal intoxication, particularly when there is dilatation of the stomach. It has been observed in children as young as 11—16 months fed by the bottle, and in whom vomiting and diarrhœa were prominent symptoms. In these cases it may last 2—4 weeks and present all the usual features of Bright's Disease.

With a view to determine the relationship, if any, of various gastro-intestinal disorders to nephritis, I have examined carefully the clinical records of the Royal Victoria Hospital for the past four years, having access to these through the courtesy of Prof. Jas. Stewart. In making the estimate I have been careful not to accept as an etiological factor the nausea, vomiting, and diarrhœa, which so often usher in or complicate an uræmic attack, but I have endeavored to find out if there was any history of such disorders existing for lengthened periods which might reasonably be regarded as of etiological moment.

There were 71 cases of nephritis of various forms divided according to the reports as follows:—

Acute Parenchymatous Nephritis	10
Sub-acute Parenchymatous	15
Chronic Parenchymatous	17
Chronic Interstitial	29

The etiological factors were:—

Chronic Alcoholism	15 times
Dyspepsia, (Gastro-enteritis, nausea, Vomiting, etc)	15 times

Infectious Diseases, (Influenza, Acute Rheumatism, Diphtheria, Typhoid).....	11 times
Exposures to wet and cold or to extremes of temperature	5 times
Appendicitis..	Once
Puerperal Eclampsia..	Twice
Gastralgia	Once
Acute Gonorrhœa	Once
Chronic Gonorrhœa..	Once
Insidious, (No definite cause)..	22 times

Thus it will be seen that of the 71 cases studied, 29 were subsequent to gastro-enteric disturbances, assuming as one fairly may that such would be present in the chronic alcoholics. This is a percentage of 40.84 per cent. of all cases. Excluding the acute cases due to the various infective fevers in which the etiology is quite established, the proportion becomes 50 per cent. In 30.98 per cent., the onset was insidious, and no cause could be assigned.

These facts go far to show that there is a definite relationship between nephritis and disorders of the alimentary tract, for when we consider that there were in the records no special investigations made to establish such relationship, but merely the ordinary routine investigation, the above figures become invested with even greater importance. Further, there were very few of these gastro-intestinal disorders acute in character, but in most there was a history of such symptoms extending over periods of months or years.

It will be interesting to examine the cases divided according to their clinical types in relation to previous lesions of the gastro-intestinal tract.

In the 10 cases of acute parenchymatous nephritis, no cause could be assigned, in 3, there was a history of:

Acute Tonsillitis (Rheumatic) in..	1
Extremes of Temperature, etc., in..	1
Acute Rheumatism, in..	1
Acute Infections, in..	3
Gastro-Intestinal Disturbances, in....	1

In the 15 sub-acute parenchymatous nephritis, the causes were:—

Acute Gonorrhœa, in..	1
Exposure to wet and cold, in..	2
Alcoholism (1 case with hernia)	3
Mild Dyspeptic Symptoms, in..	2
Insidious Onset, in	4
Unknown, in..	1
Puerperal, in.....	1
Catarrhal Appendicitis (?), in..	1

As would be anticipated, the acute infections are the most common causative factors in the acute and sub-acute forms, but in 7 out of the 25. some gastro-intestinal disturbance existed previously.

The etiological factors in the 17 chronic parenchymatous nephritis were :—

Infective Diseases, as Measles, Diphtheria, Mumps, Scarlatina, etc	2
Chronic Alcoholism	5
Wet and Cold	1
Gastro-intestinal Disturbances, (Diarrhœa, Dyspepsia, etc.	5
Unknown	4

In the chronic interstitial types, 29 in all :—

Wet and cold	1
Alcoholism	7
Gastro-Intestinal Disturbances, etc	6
Infections, (Influenza, Typhoid, Diphtheria, Chronic Gonorrhœa, 1 each)	4
Insidious	5
Unknown	6

Clinical evidence then strongly supports the view that Chronic Bright's Disease, and indeed Acute, may be a result of some long-standing gastro-intestinal disorder, 50 per cent. of cases giving this history. thirty per cent. of cases are insidious in onset, all the usual causes being absent; such might be called "Cryptogenetic forms." Can these be due to an infection from the intestine ? It is very probable, but the clinician must further elucidate this point by a more careful study of the history. I certainly have found the diplococcus form of the colon bacillus in several diseased kidneys, where no cause could be assigned for the chronic nephritis, also in the kidneys in one case of cancer of the pancreas, and in one of passive congestion of the intestines.

That albuminuria occurs as a complication of acute gastro-enteritis, chronic diarrhœa, dysentery, and the like, is well known. In 21such cases taken at random from the records, I have found albuminuria in five. Whether this fact is of much significance or not remains to be proved, although certain recent observers insist that all albuminurias are pathological.

But to afford a point of entrance for the B. Coli, a lesion of the intestinal tract is not all. There must be an increase in virulence of the bacillus, and this is the usual condition.

Macaigne, (Arch. Gén. de Méd., Dec., 1896,) has published some important experimental observations. He has found that B. Coli derived from the healthy intestine is harmless in the abdominal cavity, but it

becomes virulent if there is some disorder of the intestinal tract as diarrhœa, constipation, strangulation, etc. He could produce nephritis in animals by intravenous innoculation with B. Coli but usually obtained a suppurative form.

Klecki produced artificially, compression of a loop of intestine in the dog, and found that the virulence of the bacillus taken from this part was greater than that of the germ taken from an uninjured portion.

Sanarelli, (Ann. de l'inst. Pasteur, 1894, pp. 193 and 353), found in guineapigs suffering from typhoid fever, that the virulence of the colon bacillus in the intestine was greatly increased.

Anything then which causes a loss of the lining epithelium of the intestine with increased virulence of the germ, provides the starting point for a systemic infection. That this often happens is beyond doubt. The occurrence of pneumonias due to colon infection is well recognized in strangulated hernia, and in septic peritonitis due to the same germ, the bacillus coli has been found in all the organs of the body including the kidneys.

The usual line of infection is through the mesenteric glands and liver, which thus constitute the first barrier of defence, either through the portal blood or by the bile ducts or both ; further, it may take place through the abdominal lymphatics. Prof. Adami, in his work referred to, has shown that the liver normally contains the colon bacillus, but apparently in a dead state, and this agrees very well with what we have found in post mortems, where we very frequently fail to get germs from the liver. His investigations show that the cells of the liver take up the germs and excrete them in the bile thus rendering them inert.

This view, however, is in seeming opposition to that of Roger, (Sém. Méd., Oct. 19, 1898) who hold the view that the liver is powerless against the colon bacillus, and even assists its growth. His observations, however, were made on experimental animals, with virulent cultures so that the case is not the same as that with which we are dealing. Should the condition mentioned exist so that we get a relatively virulent germ introduced into the liver, then we get local results on the liver leading to parenchymatous degeneration, perhaps cirrhosis, and even to invasion of the systemic circulation. This invasion of the blood stream would, a priori, be more likely to take place the more severe the lesion from which the liver was suffering.

To determine whether there is any connection between hepatic disorders, as for instance, cirrhosis of the liver, and the various forms of nephritis, I have consulted the post mortem records of the General Hospital from 1883 to 1898, to which I have had access through the courtesy of Dr. Wyatt Johnston. In addition I have made use of the Royal Victoria records from 1895 to 1898. In the aggregate there were 1547 autopsies.

Atrophic cirrhosis of the liver, or atrophic cirrhosis with fatty infiltration, occurred 24 times. Associated with these :—

Acute Parenchymatous Nephritis was found.. ..	Twice
Chronic Parenchymatous Nephritis..	Twice
Chronic Diffuse Nephritis..	Once
Chronic Interstitial Nephritis..	15 times
No special abnormality to gross appearance..	4 times

This was a total percentage of 83.30, or Chronic Nephritis only in 75 per cent. Conversely, the proportion of chronic interstitial nephritis in all diseases other than cirrhosis of the liver, was 242 cases or 15.64 per cent.

In three cases of hypertrophic cirrhosis, acute parenchymatous nephritis was present in one; chronic interstitial in one, and no change in one. These figures speak for themselves.

Further it has been mentioned by several observers that fibrosis of the pancreas often goes with cirrhosis of the liver, facts pointing to a common cause. In the five Royal Victoria Hospital cases, this condition was present in every case. Of course the same infection that would attack the one would be likely to affect the other, the excreting ducts opening so close together. I have also frequently observed that there is a similar relationship between the kidneys and the pancreas in a large proportion of cases.

But while in the case of the liver and pancreas, the infection could be through the ducts, in the case of the kidneys, of course, it must be through the circulatory system. Moreover, it needs only to be mentioned that the toxins which are supposed to bring about nephritis act in a similar way upon the liver. This is seen in the case of chronic alcoholism, and it is far from uncommon to find in the infective diseases such as tuberculosis and typhoid, at one and the same time, an acute infiltration in the portal sheaths and in the interstitial substance of the kidney.

The disease must then be regarded as an attempt on the part of the kidneys to eliminate the bacteria which reach them. Much information on this point may be gathered from experimental work.

As early as 1874, Franke and Gscheidlen, and in 1879, Watson-Cheyne, were investigating the fate of bacteria injected into experimental animals. Their investigations together with those of Cohnheim, proved conclusively that such bacteria were excreted by the urine.

Wyssokowitsch, (Zeitschr. f. Hygiene u. Infectionskr., Bd. 1, '86), after a long series of experiments with various germs concluded that bacteria were only excreted by the kidney when there was some local lesion of the organ, in other words, that a physiological excretion does not exist.

Schweizer, (Virch. Arch. Bd. CX., 1887), on the other hand was of

the opinion that bacteria could pass the kidney epithelium in the absence of any lesions which it was possible to recognize by the ordinary methods.

The majority seem to think that some degeneration of the secreting parenchyma, be it never so slight, is necessary to permit the passage of germs into the urine. Such primary lesions would be afforded by the condition of congestion and cloudy swelling which is such a constant accompaniment of the acute infection.

Pernice and Scagliosi, (Beitrag. zu. Aetiologie der Nephritis. Arch. f. path. Anat., cxxxviii, 3.), injected various pathogenic and non-pathogenic bacteria beneath the skin such as, anthrax, B. pyocyaneus, staphylococcus, and B. prodigiosus. In the kidney they produced hyperæmic endarteritis, and haemorrhage into Bowman's capsules.

These lesions lead to the passing of the bacteria into the tubules and hence into the urine. The presence of the germs in the tubules caused swelling, fatty and hyaline degeneration of the epithelium, later, exudation and casts. The contorted tubules were chiefly affected, but also the straight tubules. Later there was desquamation of cells, collapse of the tubules and hyperplasia of the connective tissue. These authors got the same results with filtered products of growth.

Through the kindness of Professor Adami, I have studied the kidneys in the case of the rabbits inoculated intravenously with pure growths of B. Coli, which he employed in his studies on cirrhosis of the liver. These animals were inoculated in the auricular vein, and then killed at regular intervals.

Rabbit A., killed 15 minutes after intravenous inoculation with pure growth of typical B. Coli.

Microscopically, there were relatively few bacilli found, which were confined to the vessels of the cortical region and the neighborhood of the glomeruli. They appeared as fair-sized bacilli.

Rabbit B., killed 30 minutes after.

The bacteria were found in great numbers in the capsule and as large embolic masses in the arteriæ rectæ of the pyramidal portion. The glomerular tufts contained relatively few. Many could be seen in the perivascular lymph-spaces between the contorted tubules and between the collecting tubules in the medulla. These had the typical appearance. Bacteria could be seen in the endothelial cells of the capillaries, within the secreting cells of the cortical tubules, and in the lumina. When enclosed in cells they were, as a rule, smaller, often appearing as slender bacilli with polar staining, and sometimes as a diplococcus form with a distinct halo. In the cells they stained badly, and seemed to be in a state of absorption. Fig. II., Plate IV.

Rabbit C., killed one hour after.

Bacilli were much fewer in number, being mainly confined to the interlobular and straight vessels, but also being seen as shadows in the parenchymatous cells of the convoluted tubules.

Rabbit, D., killed four hours after.

The bacteria were seen largely in the interstitial substances between the convoluted tubules; many were within the excreting cells showing as faint diplococci or short bacilli with polar staining. Some were also seen beneath the basement membranes of the tubules, and with the lumina.

The glomerular capillaries contained very few. The diplococcus form was noted to be much smaller than the usual colon type. Cultures from the urine were sterile.

Rabbit E., killed 24 hours after.

Marked parenchymatous degeneration of the secreting cells; very few bacteria could be seen, mostly in shadows beneath the basement membrane of the contorted tubules.

These simple facts are in accordance with the observations of Chiari, Adami and others. After the intravenous inoculation of an animal, bacteria are found in all organs, principally the liver, kidneys, spleen and bone-marrow, but after a short time, chiefly in the liver. It is important to note that the endothelial cells of the capillaries and the secreting cells of the convoluted tubules in the kidney, have the power of ingesting bacteria, rendering them for a time, at least, inert. The same thing has been shown by Adami in the liver, when within 15 minutes after inoculation, he observed bacteria within the endothelium, and in two hours within the liver cells themselves. I have seen the same ingestion of germs by the secreting cells of the contorted tubules of the kidney in the case of acute nephritis in lobar pneumonia, and in septicæmia. (Fig. 1, Plate IV.) The tendency of the bacillus to assume a diplococcus form is noteworthy.

Thus the liver and kidney parenchyma are shown to play an important part in the resistence of the organism against bacterial invasion. This resisting power on the part of the parenchyma, however may be diminished in many ways, particularly by chemical and bacterial toxins, thus permitting the more rapid passage of germs through the organs.

Cavazzani, (Ueber die Absonderung der Bakterien durch die Nieren. Ctbl. f. allg. Path. u. path. Anat., iv. ii., 1893), found that after the injection into an animal of toxic substances such as cantharides or pyrogallic acid, the kidneys permitted the passage of bacteria through their substance much more quickly than in the case of animals which were not so treated.

That the kidneys are a most important factor in the elimination of germs from the body is beyond question; they may do this when least

suspected. Enriquez found streptococci in the urine, of a person whom he thought healthy. On more careful examination, however, a minute abscess was found on one finger; this gave a pure growth of streptococci.

Whether a normal kidney will allow germs to pass through it is a moot point. Orth thinks that it may do so, when no gross esion can be made out.

Neumann and Konjajeff, on the other hand assume that there must be a local kidney lesion. However, this may be, certainly the kidney does permit the passage of bacteria where one cannot find a lesion more severe than cloudy swelling.

It is certain, however, that for a time at least, the kidney cells are able to attack the bacteria, apparently digesting them, and rendering them inert. Later, when the vitality of the excreting cells is sufficiently lowered, living germs are to be found in the urine.

This view is in accord with that of Sherrington, (Journal of Pathology and Bacteriology, Feb., 1893), who found that the escape of bacteria tended to occur in the late stages of a communicated disease, and not immediately upon the introduction of them into the circulation. This means that only after the tubular epithelium has been depressed by soluble toxins, do the cells become pervious to the germs. He, however, concludes that his experiments do not support the suggestion of Cohnheim, that the body protects itself against bacterial action by the excretion of living germs through the kidney and liver.

In the light of the present study we get an entirely new conception of the process at work in the case of Bright's Disease. All cases, acute and chronic, are brought into the category of 'infections.' The nature of the infecting germ varies; in the acute forms it is usually the specific germ causing the primary disease, although in some cases it is the colon bacillus. In the chronic cases, in the great majority, it is the colon which is the infective agent, but there is some evidence to favor the view that a few germs like the bacillus Pfeifferi and the diplococcus lanceolatus are capable of producing fibrosis. Two processes are at work, parenchymatous degeneration and productive inflammation. Parenchymatous degeneration alone is not to be regarded as a true nephritis, but is the result of chemical and bacterial toxins, bringing about injury to the secreting epithelium. Whether inflammatory infiltration occurs in addition or not depends on several factors.

1st, the number and size of the infecting germs.

2nd, the degree of virulence.

3rd, their specific qualities.

If the germs are few in number and of small size, they may pass through the glomerular capillaries, and merely produce degeneration and necrosis without further change. If they be sufficiently numerous to

block the vessels or get into the capillary endothelium, then we get local inflammatory reaction with acute leucocytic infiltration.

A germ of low virulence brings about a low grade of infiltration, but if of high virulence, and in sufficient numbers, extreme degeneration is brought about, and interstitial abscess formation. The inherent quality of the germ is of importance. Thus some germs nearly always bring about suppurative inflammation, while others are more apt to bring about a reparative fibrous hyperplasia. This has been shown recently by Von Wunscheim, in a study of pyelonephritis. When the infection was due to streptococci or staphylocci, suppuration resulted, but when it was due to the B. Coli, he saw distinct evidences of connective tissue production. However, these differences probably have something to do with the virulence and abundance of the bacteria concerned.

In the chronic cases where fibrous hyperplasia is beginning to make its appearance, just as in the leucocytic infiltration of the acute cases, we see the fibrous change beginning about the afferent and interlobular vessels associated with vascular dilatation, followed later by compression and degeneration of the glomeruli, atrophy of the tubules, and the formation of casts. Interstitial proliferation then is the key-note of the process. This proliferation is the more readily brought about since there is present a germ which tends to produce fibrous hyperplasia; present too, in very small numbers in an infective process probably extending over years. And further, the progressive nature of the lesion is due to continuous action of a germ which has been shown to be present in all stages. I consequently cannot believe as Holst does, that a toxin can go on acting so as to bring about a fibrous hyperplasia, long after the original infection has disappeared. That an infective agent, like the B. Coli, for instance, can be shown to be the corpus delicti, in all the stages of Bright's, explains the anatomical distribution of the lesions, the pathological process, and the etiological momenta, in a way that none of the usual theories have been able to do. We must, I think, assume that before the germs can act there must be a lowering of the vitality of the epithelium through toxins or otherwise.

To explain the nephritis that occurs in a chronic disease in the case of the constitutional diseases, diabetes, tuberculosis, etc., we have mostly a degenerative process from toxic influences, or a mixed infection. In carcinoma we must look for secondary infection or an intestinal lesion.

The idiopathic or 'cryptogenetic cases, are most likely to be of the nature of infections from the alimentary tract, a mere congestion of this tract being sufficient.

To sum up, my conclusions are as follows:—

1. The different forms of Bright's Disease are to be regarded as

various stages in the same general process, there being a unity prevading the whole pathological picture.

II. All forms of nephritis are due in the immense majority of cases to infective agents; the acute, to the usual specific germs of the primary disease, and the chronic, as a general rule, to the bacillus coli, though other germs may, sometimes, be concerned.

III. Acute interstitial inflammation and subsequent connective tissue hyperplasia are the key-note of the process; this is, however, preceded by parenchymatous degeneration.

IV. The point of invasion by the B. Coli is the gastro-intestinal tract; for other germs it may be various.

V. The liver and mesenteric glands are the first barriers of defence; and the endothelial cells of the capillaries and secreting tubules of the kidney have the power of ingesting bacteria, this being an attempt at inhibition and elimination.

PLATE I. FIG. I.

Reichert oil-immersion $\frac{1}{18}$th. Without eyepiece.

Kidney. Area of round-celled infiltration showing minute diplococc at A. and B.

Patient, a male, aged 27; clinically a chronic nephritis of one year's standing; there was a history of repeated exposure to wet and cold. The kidneys were of the large white variety passing into the contracted stage; microscopically a chronic diffuse nephritis.

PLATE I. FIG. II.

Reichert $\frac{1}{18}$th.

Kidney. Area of round-celled infiltration showing a diplococcus at C.

Patient, a female, aged 21; clinically a chronic nephritis of 8 months standing; onset insidious.

Kidneys were extremely contracted; microscopically extreme interstitial nephritis.

PLATE II. FIG. I.

Reichert, $\frac{1}{18}$th.

Original growth of B. Coli from the urine of a patient with advanced chronic interstitial nephritis.

Shows colon bacilli of the ordinary type, bacilli with polar staining, cocci and diplococci; also chains of minute bacilli with polar staining.

Taken from a flask in which the urine had been allowed to stand for 3 days at 37°C.

PLATE II. FIG. II.

Reichert $\frac{1}{18}$th.

The same organism as last transferred to 1.5 per cent. acid agar for 48 hours.

Now single cocci and diplococci.

PLATE III. FIG. I.

Reichert $\frac{1}{18}$th.

Same as last on kidney bouillon 1.5 per cent. acid. Ordinary colon forms and minute diplococci.

Note.—The diplococci in the sections and in the slides from the cultures when viewed by transmitted electric light were seen to be really minute short bacilli with polar staining.

PLATE III. FIG. II.

Reichert $\frac{1}{18}$th.

Acute parenchymatous nephritis in acute lobar pneumonia.

Figure shows part of a glomerulus with numerous diplococci of pneumonia in a capillary.

PLATE IV. FIG. I.

Reichert $\frac{1}{18}$th.

Acute parenchymatous nephritis in acute lobar pneumonia.

Diplococci of pneumonia in the lumen of a contorted tubule. Under the microscope, however, the diplococci could be seen as shadows within the secreting cells.

PLATE IV. FIG. II.

Reichert $\frac{1}{18}$th.

Kidney showing secreting tubules from an experimental rabbit half an hour after inoculation with pure growth of B. Coli.

The bacilli are seen as diplococcus-like forms within the secreting cell shown at A.

NOTE.—For the above photographs I am greatly indebted to Dr. David Patrick who has admirably succeeded in a difficult task.

THE DISCRETIONARY POWERS OF A SURGEON.*

BY

A. G. Brooke Claxton,
Of the Montreal Bar.

Mr. Chairman, Ladies and Gentlemen :—

If I understand your profession aright, one of your chief duties is to fulfil the noble ideal which King Arthur set to his Knights of the Round Table.

" To ride abroad redressing human wrongs."

And in so doing, you are often placed in perilous situations, situations in which you have to make up your minds, what you must do, in a moment of time.

This evening I have the pleasure of addressing you on the recent case of Parnell vs Springle, and in treating of it, propose to say a few words regarding the discretionary powers of the surgeon.

By the declaration of her action plaintiff (Parnell) amongst other matters recited, that in February 1898, as she was suffering from some affection of the womb, she called on defendant for treatment, that after an examination, and a few weeks treatment, defendant (Dr Springle), advised that an operation on the womb was necessary, and that, that operation would be a very slight one, producing but a very slight wound which would be soon healed. In short she represented that what Dr Springle primarily proposed doing was a mere bagatelle.

Her declaration went on to say, that she consented to undergo this slight operation at the Montreal Western Hospital as it was more convenient for defendant to perform it there, and that, whilst under the influence of an anæsthetic, defendant, assisted by another surgeon, instead of performing the operation for which she had given her consent, did an entirely different one, cutting open the abdomen and removing the ovaries.

She claimed $1,999.00 damages, and set out amongst other reasons for asking that sum, (1) the fact that she had given no consent to the removal of her ovaries; (2) the fact that by this operation she had been deprived of her capacity to conceive, and bear children, and was thereby rendered unfit for marital life ; (3) the fact that by having been deprived of her means of becoming a mother, she had lost her hopes of uniting herself in the holy bonds of matrimony, and of finding in some good steady-going husband, the support and comforts, that usually attend the happy married life ; (4) that in law, defendant had no right to deprive her of a part of her body without first asking her consent, and

* Read before the Montreal Medico-Chirurgical Society, Feby. 20, 1898.

(5), lastly she alleged, that damages were also due her because defendant had circulated the details of this operation amongst plaintiff (Parnell's), numerous friends and acquaintances.

I may at once say that she did not prove one word of this last slander.

To this action, we replied, denying particularly every allegation of her declaration, claiming that Dr Springle was not responsible, as it was the hospital staff and not Dr Springle that performed the operation, and we then declared to the Court, the full details of what really did take place, which, I think I had better give you at length.

We specially pleaded, that it was true, that Miss Parnell came to Dr Springle to be treated; that he found her so sore to the touch, that it was only possible to approximately discover, what was the actual condition of affairs, and that after treating her for a couple of weeks, he advised that she should be operated on for ventro-fixation, and advised her to take a private ward in the Western Hospital where it would be more convenient for him to operate.

Plaintiff then saw some of her friends, and later on reported to defendant that she was willing to have the operation performed, but, that she had no money to pay the doctor or to meet the expense of a private ward in the Hospital.

Dr Springle then undertook to obtain a quiet bed in the public ward of the Western, where she would receive the best of care and attention, gratis, free of all charge.

Some days later plaintiff went into the public ward and was subsequently operated on by the staff of the hospital.

Amongst others of the staff there was present at the operation besides Dr Springle, Doctors Perrigo and Tatley and House Surgeons Irvine, McIntyre and Ford.

As Dr Perrigo had had greater experience in operations of this kind, defendant requested him to perform the operation and he did so, the others assisting.

You will recollect that the plaintiff had been told that, the operation to be performed was that of ventro-fixation, and that Dr Springle had expressed to her his hope that it would not be necessary to remove the ovaries.

Dr Perrigo made the necessary incision, and on his passing his fingers behind the uterus, to raise it into position, pus welled up, and, he at once ascertained that the tubes and ovaries on both sides had been formed into abscesses, a condition which I understand is technically called a double pyosalpingitis with bi-lateral tubo-ovarian abscesses.

The testimony which we brought out at the trial, was to the effect that it was one of the worst cases of this kind, that had come under

Dr. Perrigo's notice, and if my memory holds me good, I think, he has done this operation some 400 times.

On Dr Perrigo stating to the others what the condition was, a consultation was held, and it was decided that, if they allowed plaintiff to remain in the state that she was then in, an inflammatory condition of the abdomen would be set up, which would bring on general peritonitis, to be followed, most probably by death, and that under the circumstances, it was their duty in order to save the patient's life to remove the tubes and ovaries.

After discussing the features of the case Dr Perrigo removed the tubes and ovaries.

The operation that was carried out was therefore not the operation that it was primarily intented to have done, and was not the operation to which plaintiff had given her consent.

I know that with medical men, such occurs frequently, but in law, one must give a very good reason for doing something different from what a patient has given a consent to, or must stand the consequence in damages.

As good reasons for our change of operation, we showed that the operation was absolutely necessary and that it would have been impossible to have sewn her up after the first pus sac had opened, so as to obtain her consent to the removal of the tubes and ovaries, and later on if she was then alive to have performed the operation.

If she had been sewn up perhaps two days would have elapsed before she was entirely herself, and could have given a reasonable decision, and in such delay general peritonitis would have set in, and she would have died.

The operation as performed was therefore performed by the hospital staff, using their discretion, acting without the actual consent of the patient, in order to do a humane action.

In answer to the special allegation of plaintiff, that we had deprived her of the joys of matrimony, we declared that if she had never been operated on, if the staff had never removed these parts, even if she had out-lived the dangerous illness which would have very soon set in, she would have been an invalid for life, and that she could never have had children.

Operation or no operation, the Fallopian tubes were so congested, clogged up with pus that she could never have borne a child. All her generative parts were spoiled—ruined.

Previous to the operation her condition was that of sterility, she could not have become pregnant, so this side of her house of cards was rudely thrown to the ground, her own experts would not back up these flimsy pretensions.

We further pleaded, that, not only did the operation not cause any damages, but, on the contrary, it was the means of her continuing life, and, was absolutely necessary for the restoration of her health. Further, that as she gave her consent to Dr Springle to an operation, he was justified in doing everything in his power to remove the fatal disease from her body, which if left there, would have proved her destruction.

The case came on for trial before Mr. Justice Curran, on January 19th, and after both parties had made a concise statement of facts, the plaintiff was put into the box on her own behalf.

I am not going over her evidence but will only say that in trying to make the most of her cause, she was lead into some gross contradictions and took up some positions which her friend, who followed, and whom we had had excluded from the Court during plaintiff's examination, could not substantiate.

The French surgeon who next took the stand gave us in cross-examination, just such evidence as we intended putting in ourselves.

Among other things he said was, that in order to form a just opinion about a surgical case, he must see with the eye and touch with the fingers, he otherwise would not care to criticise a confrere as there might be extenuating circumstances about which he could know nothing. One could not otherwise express an opinion.

We brought out just a few little matters which showed that plaintiff could not be relied on, so that any sympathy that the Court might have had for her as a woman, was fast vanishing by the time we were called upon to make our enquete.

For the defence, Drs Springle, Perrigo and Tatley, after relating what details each knew of the operation, and what lead up to it stated, (1) that the condition found, was that of pyo-salpingitis and tubo-ovarian abscess, with the accompanying adhesions, involving both sides, (2) that the operation had to be performed in order to save life, (3) that it would have been impossible to bring patient to, and then have operated, (4) that it would have been criminal in the eyes of your profession, to have left undone, what they found out ought to have been done, and which they did, (5) that patient's generative apparatus was in such a state that, if, no operation had ever been performed she could not have conceived, and, borne a child, (6) that it was a very ordinary occurrence for surgeons, in order to do their patients justice, to do something, that was primarily never intended, or spoken of, and (7) that no surgeon would operate without a free hand, untramelled by restricted conditions.

As soon as Dr William Gardner had given his testimony the Judge, as we had anticipated, refused to hear further evidence on our part, being perfectly satisfied that we had made out a sound defence, and

called upon plaintiff to submit medical evidence in contradiction, to ours. As plaintiff was unable to do so, the Court, most dramatically without even calling upon Counsel, immediately dismissed the action, a most unusual occurrence in important cases.

Let us now see what his Honour has decided.

Permit me to read some extracts from this most important judgment.

After reciting the pleadings the judgment reads :—

"Considering that it has been proved that the plaintiff went into said "Western Hospital for the purpose of bearing a slight operation, per- "formed upon her womb, and that after the abdomen had been opened, "for the performing of such operation, it was discovered that the ovaries "of the plaintiff were honey-combed with sacs of pus, and that the "tubes leading from said ovaries to the womb were clogged with matter, "in a state of putrefaction : that this state of the plaintiff was discov- "ered, through the bursting of one of said tubes, which emitted pus, "in considerable quantities."

"Considering that the three regular practicing surgeons present, in- "cluding the defendant, agreed that under the circumstances, that it was "absolutely necessary for the preservation of plaintiff's life, that the "ovaries should be removed at once."

"Considering that it was impossible to obtain plaintiff's consent to "such operation at the time, as she was then unconscious."

"Considering that the surgeon performing an operation is in duty "bound to do everything necessary for the preservation of the life of the "patient, according to the circumstances of the case, as they may "arise."

"Considering that under the roof made in this cause, defendant is "shown to have acted legally, and with prudence, and with every neces- "sary precaution, so that he is utterly blameless of the charges set forth "against him by plaintiff."

"Considering that plaintiff has failed to establish her allegations and defendant has justified his plea."

"Dot dismiss the present action of plaintiff."

What better justification could we have ?

What higher praise of the skill, care and attention shown in this matter by those connected with the Western Hospital ?

What greater tribute could be rendered to their keen sense of duty as demonstrated in this case ?

PREPARING FOR THE CASE.

Although I made a search in several score of French and English books on Medical jurisprudence, Tort's, Negligence, Delits and Quasi-Delits, outside of the case of Beatty & Cullingworth, I found nothing

exactly in point, but, I would like to set out to you what are the general principles of law in such matters.

You will recollect that it was not Dr. Springle who performed the operation, but, that it was the hospital staff. That we pleaded, that, inasmuch as Dr Springle did not personally perform the operation, in law he was free from any responsibility. Our object in so doing was, that, if matters came to the worst, and the Court should be against us on every other point, we would be able to have the action dismissed on that ground. Ordonraux, one of the best on medical jurisprudence, in section 88, says—"If the consulting surgeon be called in for the pur-"pose of performing an operation, and does perform it, he gives a new "direction to the case and becomes responsible for the immediate effects "of such operation."

We believed that, under that authority, Dr Springle would have been relieved, but, fortunately for us, it was not necessary to rely on any such technical point.

Just here, I beg to say, that while I can quite understand a hospital endeavoring to relieve itself of some action, taken against it because of some bungling of its employees, I certainly believe that it is its duty to take up the defence of any of its staff who are sued under such circumstances as these. Its staff are its agents, and as such agents the hospital should indemnify them for all obligations contracted by them within the limits of their powers.

As you all know a doctor is responsible for any damage caused by his imprudence, negligence, inattention, want of observation or maladroitness, or by his doing some unusual treatment—trying an experiment—instead of doing the ordinary accepted, scientific established way.

Further, that the general rule as to operations is that the surgeon must inform his patient of the nature of the operation to be done and must obtain consent before operating.

Instead of reading you a dozen paragraphs on this subjects, I will simply give you an extract from Beavens, on Negligence, Vol. 2, page 1402, which puts this point in a nutshell. He states :

"It is moreover clear that treatment involving probability of danger "cannot be implied to a patient without some communication to the "patient, and some expression or signification of consent by him".

Lower down on the same page he sets out that:—

"The patient should be given a general intimation of the likelihood "of pain or danger arising in a particular direction without a scientific-"ally accurate specification of the probabilities to which a patient would "be exposed."

That then is the general law on the subject that consent must if possible be obtained.

However, our case was altogether different. Ours was a case where it was impossible to obtain a consent, and it was absolutely necessary to do immediately what was eventually done.

Fortunately for the medical profession, seldom, if ever, has this matter been brought before our Courts. Pollock, one of the best authorities on "Torts," under the heading of "Works of Necessity" refers to this matter, and states, that an action would not lie against the first passer by, if he picked up a man rendered insensible by an accident, or, against a competent surgeon, who, if he performs an operation, in order to save a man's life, performs it without waiting for the man to recover consciousness and give his consent.

These works of charity and necessity must be lawful, as well as right, and are a justification to themselves. He gives the example of the captain of a ship casting the goods overboard, or, otherwise sacrificing property.

Treating of consent.

The American and English Encyclopedia of law, treating of consent states, that, if a person is in such circumstances, as to be incapable of giving consent to a surgical operation or to the infliction of other bodily harm, of a similar nature and for similar objects, it is not a crime to perform such operation, or to inflict such bodily harm upon him without his consent, or, in spite of his resistance.

The following illustrations are given :—

1. A is rendered insensible by an accident, which renders it necessary to amputate one of his limbs, before he recovers his senses. The amputation of his limb without his consent, is not an offence.

2. If the accident made him mad, the amputation in spite of his resistance, would be no offence.

But while the principle is to be found in the above, this case is a very different one ; an ordinary one for the surgeon but a very extraordinary one to be brought before the Courts. The only similar case from a legal point of view that I know of, is that of Beatty and Cullingworth, which is reported at length in the British Medical Journal.

Whilst operating, a surgeon suddenly finds out, that, to do his patient justice, he must change the operation, must do something that he never anticipated, something that he did not speak about to his patient and for which he has not, nor cannot have consent. What must be do ? Must he shirk his duty ? Must he hesitate to do, what he, as a medical man, considers to be his duty ? and do the first operation for which he has a consent, or, must he take the bull by the horns, and do what he thinks is the right thing to do ? Do something perhaps entirely different from what was first intended, and something, for which, of course, he has no consent from the patient ?

The case of Beatty vs Cullingworth was decided in favor of the

Doctor, giving him discretionary powers, and, we have now here, in the Province of Quebec, the final judgment of the Superior Court, which permits you, almost commands you, where no consent can be obtained, to follow your best instincts, to use your utmost skill, and do what you believe to be the right and proper action.

Do not, for a moment, fail to recollect that it is always your duty, whenever it is possible to forwarn the patient of his danger, and to obtain his consent, of the performing of the necessary operation, and whatever it may entail.

Now for a few practical suggestions.

Law is expensive and one of my objects in life, as a lawyer, is to keep my friends out of law. How can I help you in this matter ? Well, all of you know that there is nothing in law to prevent any one of your patients, or, any one at all, for that matter, is going to a lawyer, trumping up a case and entering suit against you.

While I cannot prevent that, perhaps the following might help to minimize the danger :—

No. 1. A physician must be very careful in talking about the ailments of his patients. He has no right to noise abroad the details of the maladies of his patients mentioning their names. He has no right to say, even to his best friends, for instance, that he has just had the honor of removing Miss X———'s tubes and ovaries, and, if asked, "What brought about the condition" reply "O, a horrible dose of gonorrhœa". That won't do.

An English practitioner was let in for some thousands of pounds damages, for just a little tale like that. You may speak as much as you like about the operation, but, you must not mention the name of the party operated on.

No. 2. In examining women, if possible, have a third party friendly to yourself present, so that, if the patient be hysterical, the third party will be able to state exactly what caused the hysteria.

No. 3. Inform the patient, as fully as possible, of the nature and likelihood, of danger of the operation, or treatment to be undergone.

No. 4. Before doing an operation, obtain in writing the consent of the patient. If a married woman, if possible, have the husband sign the consent as well as the wife, and if the patient be a minor, obtain the consent of the child's guardian, or its father or mother I would suggest something in the following form:—

"I consent to the doing of an operation to remove.....
".....,and to the doing of such further or other matter as Dr.
"X. shall deem necessary."

Sign and witness.

No. 5. When operating, have one or more practitioners present.

In Court the views of one surgeon who was present at the operation

in dispute, backed up by another, who was also present carries very great weight.

Those of you who were in Court, last month, while you must have been struck at the impression made by Dr Springle, and noted that as Dr Perrigo gave his evidence, any shadow of doubt, which may have existed in the judge's mind was gradually dissipated.

Summing up, what then are the Discretionary Powers of a surgeon ?

Is the law different from that high standard which your *Alma Mater* instilled in you and which each of you daily sets for himself ?

No. The law demands that when you are placed in circumstances wherein it is impossible for you to explain what ought to be done, impossible for you to obtain a consent to its doing, you must use your discretion.

You must do with all your might, with all your skill, with all your care and knowledge, whatever you deem best and right for the patient.

You Surgeons have always been noted for your being good Samaritans to the poor and sick, and I have reason to believe, that even such base ingratitude as was used towards Dr Springle in this case, will not deter him or any one of you from doing again, what he did then, and what I understand you are always doing, giving your best time and energies in doing such humane acts, as this one was.

In closing permit me to parody Falstaff's time-worn lines in Henry IV. and say :

"The better part of valour is discretion", in the which better part, may you save many lives.

STEREOSKIAGRAPHY.

BY

G. P. GIRDWOOD, M.D., C.M., M.R.C.S. (Eng.), F.R.S.C., F.I.C., F.C.S.. &c.,
Late Assistant Surgeon Grenadier Guards; Consulting Surgeon to the Montreal General Hospital; Professor of Chemistry, Medical Faculty, McGill College.

When Röntgen rays were first used for taking skiagraphs of the bones and other parts of the body, and of metallic substances therein; the difficulty of locating the exact position of these foreign bodies became evident. And in skiagraphs taken by the Röntgen or X Rays of bullets or needles in the hand, foot, or other parts of the body, the relative depth of the foreign body from the surface or its relative position to bones was very difficult to determine, the only practical evidence available being the sharpness of definition of the shadow. The nearer the object is to the surface upon which the shadow is cast, the sharper is the outline of the shadow, this sharpness of shadow being a very indefinite indication.

The taking of two skiagraphs from two points at right angles to one another and determining the position by the intersecting of the lines drawn from those points, gave some further information, but the difficulty of being certain that the rays which come off from the platinum distributor in the Crooke's tube are in the direct lines which were at right angles to one another, still left the matter in some doubt. Then wires were put at right angles to one another across the surface of the part to be skiagraphed, so that the skiagraph showed the relative position of foreign bodies or at any rate of the shadows of these wires, and the intersections of the lines producing the shadows indicated the position. This was still not all that was desirable, and in the case of the hands a skiagraph may be taken either with palm down or palm up, and the foreign body may be equidistant from either surface, so that sharpness of shadow would be the same on either side. And if a second skiagraph were taken from side to side of the hand, the carpal and metacarpal bones from this view lie over one another to such an extent that there is great difficulty in obtaining two skiagraphs at right angles to one another, which show what is wanted. Under these circumstances the idea was suggested of taking two pictures of the part, the tube being moved to a distance of 2 1-2 inches to the right or left of the original position between the taking of the two pictures, the part skiagraphed remaining in the same place. If the platinum plate in the Crooke's tube was so placed in each case that a normal from the surface thereof would strike the same spot, then the two skiagraphs would present exactly the same differences as the pictures presented to each eye would have, and

the skiagraphs so taken would give the true stereoscopic effect of seeing every part of the picture in its proper relative position to surrounding objects.

This idea was carried out, and the results were exhibited in Toronto at the meeting of the Society of Railway Surgeons, last June, and in March last, to my friend, Dr. Francis Williams, in Boston, who has done so much for Skiagraphy on this continent.

In carrying out this idea, and preparing the pictures now shown, which were the first, a piece of lead was fastened with a little gum paper on the back of the left hand over the metacarpal bone of the index finger. A second piece was placed, and fastened also with gummed paper in the palm of the same hand opposite to the metacarpal bone of the ring finger, and the hand placed palm down on a plate wrapped in yellow paper, in the usual way. The plate was put into the bottom of a cardboard box without a lid and with a slit cut in one side large enough to admit the wrist, a line of pencil marked on the wrist, so as to put the hand back in the same position, and a pencil outline of the hand made on the yellow paper round the fingers. Then a plumb bob was suspended over the centre of the hand, and the Crooke's tube arranged so that the centre of the platinum plate should be 1 1-4 inches to the right of the pendulum string, and 12 inches from the plate, and the tube was rotated in the clip until a normal from the platinum distributer should strike the same point as the point of the pendulum bob. With the pendulum moved out of the way and one picture taken, another plate was placed in the same yellow paper, the pendulum bob replaced, and the tube so arranged that the centre of the platinum plate was 1¼ inches to the left of plumb bob line, and so inclined that the normal thereto would strike the same spot as before, and a second picture taken. The pictures developed in the usual way, gave two full size, indeed, slightly magnified skiagraphs of my left hand, and, when cut in pieces small enough to mount as stereoscopic pictures, at once gave the true stereoscopic effect.

Being desirous of having the pictures reduced and in the absence of camera to do it at the moment, recourse was had to a photographer to reduce the originals to the usual stereoscopic size. Here comes the trouble, for unless the photographer will do implicitly what he is told and nothing else, it will be quite possible to have hands of opposite sides put together, or to have the hand reversed altogether, so that the hand appears with the palm up instead of down, or it may be with palm, up or down, of the hand of the opposite side, all of which may be seen in the specimens now shown. Partly through this want of appreciation on the part of photographers, partly on account of business preventing, and partly one thing and partly another, the getting of these skiagraphs reduced and mounted properly, occupied a large part of the summer; but success was at last attained, and those shown are the result.

The skiagraph when taken has to be copied by camera, using the original skiagraph as a transparency, and putting the film side towards the camera, the pictures reduced to 2 1-2, to 2 3-4 inches wide. These pictures are reversed from the originals as well as reduced, and these reversed pictures when printed give prints with white bones, white pieces of metal, on a black background. On mounting these with the right eye-picture to the right eye, and the left to the left eye, and viewing in a stereoscope all objects stand out in perfect relief.

But, if the photographer use the original negative as a transparency to produce his diminished picture with the film side away from the camera he will produce diminished prints with white bones and white pieces of metal, but the hand will be reversed also, and instead of having left hand palm down you will now have right hand palm down, and, having obtained these two sets of prints showing the two hands palm down, if you reverse the prints in mounting, you will have the right and left hands with the palm up instead of down.

All four of these photo-stereo-skiagraphs have been reproduced by the process of what is called half-tone, and been printed in the ordinary printing press, of which copies are here produced.

In the British Medical Journal of Dec. 3, 1898, an excellent account of the process for producing Stereoscopic Skiagraphs is given by Dr. Mackenzie Davidson. His process differs from that now recommended only in not making the normals of the platinum distributor in the Crooke's tube in the two positions converge. His are taken as though seen with two eyes, whose axes are parallel instead of converging on a point 12 inches distant, representing the appearance presented to each eye, when the axis of vision is convergent. The question of convergence or non-convergence of the lens in taking ordinary stereoscopic photographs was worked out in the early days of photography, some forty or fifty years ago, when Latimer Clark's camera for taking stereoscopic pictures was introduced, and the rotundity of the convergent lenses is an improvement. It is sometimes an advantage to mount the pictures to the wrong eyes, reversing thereby the side of view, as by so doing it is possible to obtain the effect of seeing the object stereoscopically from both palmar and dorsal aspect.

The four stereoskiagraphs now shown will, when viewed in the stereoscope, show left hand palm down, right hand palm down, left hand palm up, and right hand palm up. All are produced from one original pair of stereoskiagraphs taken, reduced, printed, and mounted in the manner described.

In these four pictures there is a piece of lead opposite the metacarpal bone of index finger, on the dorsum of hand, and another opposite metacarpal bone of ring finger, on the palm. In these pictures these pieces of lead appear at the same depth as regards the hands, and in all four, nearly

in the same places, but appear to vary in position as regards the bones. This variation is due to the changed position and convergence of the tube in the two positions.

The first pair, representing left hand palm down, were the first pair. These reversed produced right hand, palm down, and the reversal of the pictures in mounting from left eye to right, and vice versa, give the effects of turning the hands over, and viewing from the opposite side.

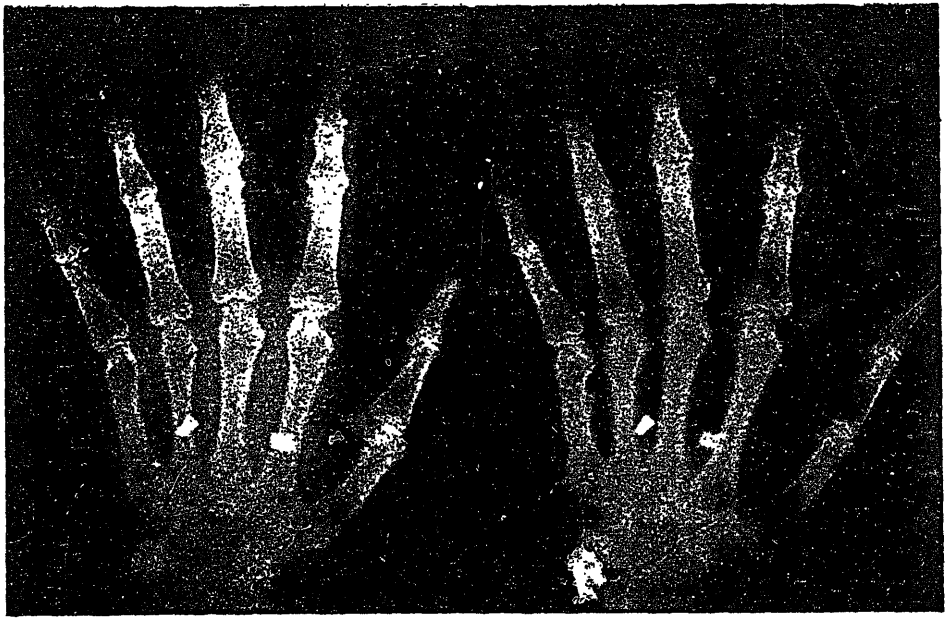
This whole town, as well as Boston, was ransacked to obtain a portable stereoscope but without effect, and as a stereoscope is now almost a thing of the past, seldom seen in any house, it became necessary to make a portable one. The necessity culminated in the home-made stereoscope produced which is simply a pair of half lenses mounted with their thin edges to the bridge of the nose between two pieces of cardboard, with a thin septum of blackened cardboard suspended from the middle to cut off vision from either eye beyond median line.

It is quite possible for any one with practice to see these stereoscopic pictures without a stereoscope. By converging the eyes on infinity, there is a point where these pictures will be visible, one in the middle of the other two, this one is stereoscopic, and formed by the overlapping of the other two, and in this middle one the appearance of perfect solidity is seen.

The term stereoskiagraph, which has been adopted seems at first a contradictory term, and some may cavil at the idea of a solid shadow picture, but on putting one into the stereoscope the correctness of the application will become evident, and it will be seen that the appearance produced is that of the solid, from which the shadow was cast.

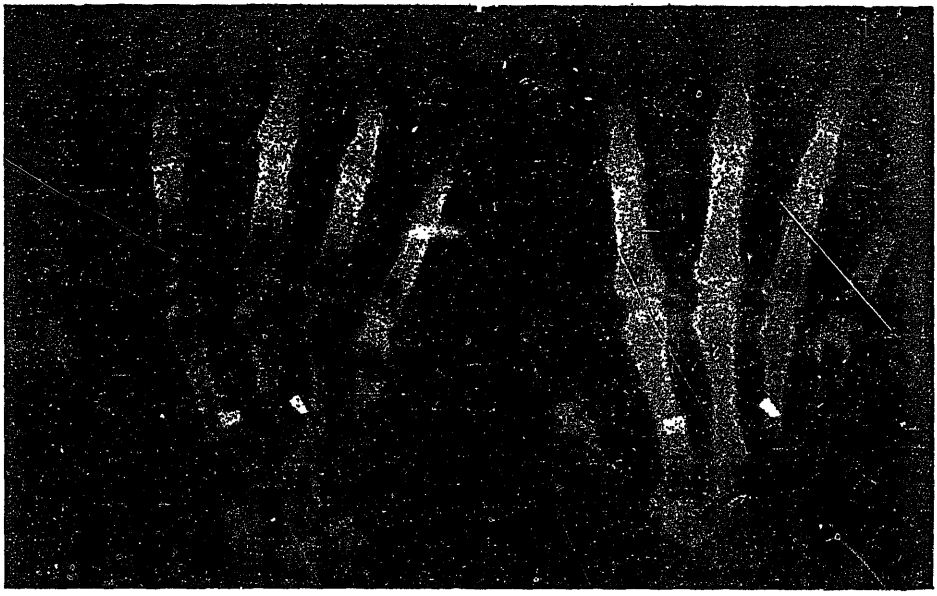
This method of exposing to view bones and objects within the soft tissues will greatly enhance the use of Röntgen's marvellous discovery to the surgeon, and it is to be hoped that physicians will also be allowed to share in the advantage. For them to be able to see stereoscopically the form and position of solidifications, of aneurisms, or hypertrophies, etc., will be of singular benefit to diagnosis.

In conclusion, gentlemen, there may be a question as to the correctness of the term skiagraph, and some may call the object a skiagram. Some years ago a similar question arose as to the use of the words telegraph and telegram, which was settled as telegraph, the instrument—telegram, the writing the result of the working of the instrumont; in the present case, a reference to the lexicon at hand gives *Γράμμα, ἄτος, τό*, a character engraved or written, a letter of the alphabet, a written promise to pay, a debt. *Γραφή ῆς ἡ*, a writing, a picture, the scripture, and in the same lexicon the word *Σκιαγραφία. ας, ἡ*, the tracing of a shadow, or outline, hence a sketch, so that it seems probable that the presently used term is correct, or has at least the authority of a lexicographer.



No. I.—Left hand palm down.

No. II.—Left palm hand up.



No. III.—Right hand palm down.

No. IV.—Right hand palm up.

REPORT ON THE CASES OF TYPHOID FEVER ADMITTED INTO THE ROYAL VICTORIA HOSPITAL DURING THE YEAR 1898,

BY

WILLIAM O. ROSE, M.D.,

Senior Resident Physician.

During the year 1898 there were treated in the wards of this Hospital ninety-five cases of typhoid fever, sixty-six males and twenty-nine females. Of these cases ninety-three were treated to a conclusion, the remaining two cases are still in the hospital and both convalescent. They are not included in the following analysis.

There were four deaths, or a mortality of 4.3 per cent. Death resulted in two of the cases from profound intoxication, in one from hæmorrhage. and in the fourth from perforation.

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

The following data may be of interest :

Age—

The average age of all the cases was twenty-five years, the youngest four years and the oldest fifty-eight.

By decades they would be arranged as follows :

Under 10 years	5	cases.
Between 10 and 20	20	"
" 20 and 30	50	"
" 30 and 40	9	"
" 40 and 50	7	"
Over 50 years	2	"

Season—

The largest number of cases developed in September, while the smallest number occurred in March and in November.

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

14 per cent. in October, November and December.

14 per cent. in April, May and June.

7 per cent. in January, February and March.

Duration of Cases—

The average number of days in the hospital was 38.16.

The average duration of the fever was 29 days.

The longest period of fever was 68 days.

The shortest period of fever was 8 days.

Symptoms—

ONSET AND COURSE :

In 94 per cent. of cases the onset was gradual, the most frequent

symptoms being: General malaise, frontal headache, anorexia, weakness, pain in the back, chilly sensations, and insomnia. Of these by far the most frequent were general malaise and frontal headache.

In two cases the principal complaint was pain in the neck.

In 6 per cent. of the cases the onset was acute with distinct rigor.

Chills occurred at or near the onset of the disease in 15 per cent. of the cases.

In 30 per cent. vomiting occurred during the first few days of the disease. In several cases it was, however, due to other causes, such as pregnancy.

Diarrhœa was present at the onset in 25 per cent. of the cases, but in not one case did it persist throughout the course of the disease and consequently enemata were given as a routine practice.

Epistaxis occurred in 10 per cent. of cases.

Delirium was present at one time or another in 11 per cent. of the cases. It was a very marked feature in all the fatal cases. In one case acute dementia developed on the tenth day of disease, and the patient became cataleptic and could not be induced to speak for six days.

ERUPTION:

An eruption occurred in 75 per cent. of the cases; in one case the eruption was the so-called "tache bleuâtre," and in another case it was petechial, while in all the remaining cases it was of the nature of "rose spots."

The earliest appearance of the rash was on the 3rd day.

The latest appearance of the rash was on the 60th day.

The shortest duration of the rash was 2 days.

The longest duration of the rash was 53 days.

The average duration of the rash was 12 days.

SPLEEN:

The spleen was palpable in 64 per cent. of the cases.

In one case it was palpated as early as the 3rd day.

In another case it was not palpable until the 28th day.

On an average the spleen remained palpable for 14 days.

In one case it was only palpable for two days, while in another it could be palpated for 37 days.

RELAPSE:

A definite relapse occurred in six cases.

The longest duration of the relapse was 32 days.

The shortest duration of the relapse was 11 days.

The average duration of the relapse was 19 days.

In two of the cases the relapse was much more severe than the original attack.

FEVER :

The highest temperature in any of the cases was 106°.

In one case the fever did not go above 100⅘°.

The average maximum temperature in all the cases was 103⅘°.

In 50 per cent. of the cases the temperature went above 104°.

Complications—

INTESTINAL :

Perforation of the bowel occurred in one case on the eleventh day. (See appended notes Case III.)

Intestinal hæmorrhage occurred in five cases,—in one case on the eighteenth day of fever and proved fatal ; in the remaining cases recovery took place, although in one the loss of blood was very great.

CIRCULATORY :

Cardiac dilatation was noted in two cases.

Systolic murmurs were noted in only four cases.

Femoral phlebitis occurred in one case, and brachial phlebitis in one case.

Tachycardia was present in two cases during convalescence.

Angio-neurotic œdema occurred in one case.

RESPIRATORY :

Broncho-pneumonia was present in two cases.

Pulmonary œdema in one case.

Pleurisy occurred in two cases, in one of which it was an alternating pleurisy.

Tuberculosis was a complication in two cases.

Bronchitis was marked at onset in thirty-two cases.

OTHER SYSTEMS :

Acute nephritis occurred in two cases.

Otitis media in two cases.

Secondary syphilis in one case.

Pregnancy about the fourth month was a complication in two cases. Although hydrotherapy was resorted to in both cases, the pregnancy was not interrupted.

LATE COMPLICATIONS :

Two of the patients were seen some months after leaving the hospital, both suffering from periostitis of the ribs.

WIDAL TEST :

This was employed in all cases and was positive in all but two cases. It was obtained in one case on the third day and was as a rule present on admission, *i.e.*, about the tenth or eleventh day of the fever. On an average it was found to be present as late as the thirtieth day. In one case it was present as late as the sixty-first day. It was found to be of considerable value in the differential diagnosis of some cases where the early symptoms pointed to tuberculous meningitis, septicæmia, etc.

Synopis of fatal cases :

Case I.—F. B., male, æt. 19, student. Admitted April 11th, 1898. No history obtained. On admission he was extremely delirious, subsultus tendinum very marked, constantly trying to get out of bed, picking at the bed clothes, etc. Insomnia ; constipation ; retention of urine ; spleen palpable ; rose spots over abdomen ; Widal test positive.

Subsequent Events.—On the second day after admission he was still profoundly comatose ; unable to take nourishment or medicine, so was given nutrient enemata. On the fourth day the delirium began to pass off. Pulse 130, weak and irregular. On seventh day there was a discharge of pus from right ear. On eleventh day patient became very weak, extremities cold and cyanosed. No delirium. Patient gradually became weaker and more cyanosed. He again became delirious. Pulse finally became imperceptible at the wrist and patient died on the thirteenth day after admission.

Cause of death, toxæmia.

Case II.—Male, æt. 34, laborer. Admitted Aug. 4th, 1898, on the tenth day of illness, complaining of headache, backache, anorexia, insomnia, and diarrhœa. He had been delirious at times since the third day of his illness, when he took to bed. On admission, a poorly nourished man, very weak, and at times quite delirious, and when not so his statements were utterly unreliable ; profuse eruption of rose spots over abdomen ; slight bronchitis ; no abdominal rigidity or tenderness. Urine containing albumen, granular and hyaline casts. Widal test positive. Temperature 102.2°, pulse 120, respiration 32.

Subsequent Events—After admission patient continued delirious for about six days, and had very laboured respiration. Constipation was a marked feature. On the 7th day after entering the hospital he was more rational, and felt better ; complained of no pain, and seemed to be doing nicely. Suddenly, however, on the 8th day, *i.e.*, the 18th day of fever, he had severe abdominal pain, and passed ℥viii. of dark clotted blood ; patient sank rapidly, and in six hours the temperature dropped from 102.2° to 95.2° ; pulse hardly perceptible. Death ensued in about nine hours.

Autopsy showed that the last six inches of the ileum was almost entirely denuded of mucosa in its entire circumference. The whole of the ileum and large intestine was filled with blood. Spleen, bile, and mesenteric glands, gave a pure culture of the typhoid bacillus.

Case III.—J. M., æt. 22, cabman. Admitted Sept. 7th, 1898, on the 4th day of illness, complaining of pains in the neck and abdomen and general weakness. These symptoms came on after a drinking bout, and he was compelled to go to bed on the second day. On admission, a well-nourished young man ; tongue coated ; bowels constipated ; slight abdominal tenderness ; spleen extends an inch below costal margin ; urine containing a trace of albumen. Temperature 102.2°, pulse 84, respiration 24.

SUBSEQUENT EVENTS.—For three days after admission patient seemed to be doing well. Pulse was regular and strong. On the 5th day there was slight cyanosis, otherwise his condition was good. Seven days after admission, *i.e.*, the 11th day of disease, patient complained of severe pain in lower abdominal region after urination. Three hours after, he vomited a large quantity of greenish fluid. On the 8th day the pain continued and the abdomen became distended and rigid, especially on the right side. Liver dulness slightly diminished. Considerable hiccoughing. On 9th day, *i.e.*, the 13th day of fever, distension was more marked. Liver dulness obliterated. Abdomen very rigid. Patient became delirious, deeply cyanosed, copious perspiration; pulse 180 and very weak. Death occurred 42 hours after onset of pain.

Cause of death, perforation.

CASE IV.—J. A. W., æt. 23, clerk. Admitted October 5th, 1898, on the eighth day of illness, complaining of headache, fever and anorexia. Patient had been an epileptic for thirteen years, and during that time had been constantly taking very large doses of chloral and the bromides. On admission, a fairly well-nourished man of average build; slightly cyanosed; low muttering delirium; subsultus tendinum very marked; "rose spots" over chest and abdomen; some œdema of the bases of the lungs. Teeth covered with sordes; tongue dry and coated; abdomen distended; albumen and a few granular casts in the urine. Temperature 102°, pulse 120, respiration 34.

SUBSEQUENT EVENTS.—Patient continued in his typhoid state with involuntary urination and defecation. Pulse very weak and rapid. He became gradually weaker, and pulse went up to 170, and was hardly perceptible. Death occurred thirteen days after admission, *i.e.*, the twenty-first day of disease.

Cause of death, toxæmia.

SIXTEEN CASES OF SERUM-TREATED DIPHTHERIA.

BY

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Attached to this report is a table summarizing my experience in the treatment of sixteen cases of diphtheria. Case 15 was my own, I having contracted the disease from the fatal attack of diphtheria which was the single exception to the rule of prompt relief, speedy convalescence and complete recovery. I am confident that the anti-diphtheritic serum, promptly used, was the means of saving my life, or at least preserving me from a long and serious illness.

The table of my cases shows that sixteen cases in all were treated during December and January, and thirteen persons immunized. All these, with the exception of one, were taken early and all made a speedy and uneventful recovery. Relief of the symptoms was very rapid, and complete cure ensued in from twenty-four hours to two and three days. In no case did the first injection fail of its effects; temperature was reduced and membrane began to disappear. Not a single case has as yet been followed by either post-diphtheritic paralysis or by nephritis. Judging by my own clinical experience in St. Thomas' Hospital, London, though some of these cases were mild, others represented symptoms which, under other circumstances, I should have considered alarming, e. g., cases 10 and 8, both these had temperatures of 104°, and the fauces were coated with large quantities of gray membrane, the children themselves presenting the appearence of extreme illness and prostration. The antitoxin used was obtained from the Biological Department of Parke, Davis & Co., and bore date of October 22, 1898, and November 21, 1898; both seemed equally efficient.

Case 14, fell into my hands at a late day, about the sixth day of the disease. In the first twenty-four hours I injected 4500 units (P. D. & Co.), all I had on hand, and wired for more to Vancouver. The disease appeared to be checked. Soft weather caused a delay on the line and eighteen hours were lost; during this time the disease began to make rapid progress, the membrane spreading to the nares and larynx, and when a fresh supply arrived the case was almost hopeless. On its arrival I injected 4500 units at one dose, and four hours afterwards 2500 more; all I had on hand, and before more could arrive the child died.

The last case, 15, is my own; the disease was doubtless contracted from the above case, I went to bed in my usual health at 1 a. m., on Thursday and awoke on Friday morning with a sore throat and a feeling

of prostration, my temperature was 100°, but no membrane had formed. At 11 a. m. I injected with a hypodermic 500 units (P., D. & Co.'s) into my left arm; in a quarter of an hour I began to feel decided relief and my temperature was 99.8°, at 11.30, in half an hour's time, my temperature was 99° and the soreness in the throat almost gone; at 1 p. m., my temperature was 98.2°. My own opinion is that the dose I took was too small, for at 2.30 I began to feel ill again, and the temperature rose to 102°, and by 4 o'clock I was extremely ill, almost delirious, throat very sore, nose and cervical glands enlarged. At 8 p. m., I got another medical man to inject 1500 units into my right arm, in about half an hour I began to feel relief, and by midnight my temperature had fallen to 102°, and on Saturday morning was normal. I remained in bed all day, feeling very prostrate and weak; toward night the throat began to be more painful again and a small spot of membrane was noticed on the fauces; another injection of 1000 units was given, and the next day I was almost in my usual health.

The notable points in this case are the extreme rapidity of action of the serum, which could be compared to a hypodermic of morphine for relief of pain. Also the fact that there are no ill-effects from its administration. I am firmly convinced that its prompt administration saved me from a long and severe illness if not from death.

From careful observation of these sixteen cases, there are several important facts to be observed. The serum should be given as early in the disease as possible. It has no unpleasant or harmful effects and can be used fearlessly. In late or severe cases it should be given in large doses, and if temporary relief is obtained it should be administered again if the temperature rises and the symptoms begin to return.

I would also point out another use to which it may be put, and that is its value as a means of diagnosis. I would urge its administration in all cases of sore throat in which there is any suspicion of diphtheria, especially during an epidemic of that disease; so certain is its action, that should that disease be present the symptoms will ameliorate, and should no effect be obtained the case will be scarlet fever or ordinary tonsillitis. The injection should not be made in the arm, as it will be followed by local dermatitis or urticaria.

It would appear to me that the adverse opinion given by some good authorities on the value of the serum treatment is due to the fact that they are hospital surgeons, and as such only see such cases as are far advanced. For instance, if my experience had been confined to case 14 my confidence in the serum would have been severely shaken, nor would I probably have had the confidence to administer it in such large doses; our experience at St. Thomas' was confined to such cases, admitted for tracheotomy. In the face of such evidence as these cases give, it is clear, that, if the medical attendant is capable of diagnosing a case of diphtheria, and uses the serum promptly, this disease is no longer the

formidable scourge of a few years age, but can be easily held under control, and an epidemic stamped out by free immunization.

Case.	Age.	Disease.	Day.	Relief.	Cured.	After effects.	Units of Antitoxin.
1	12 years.	Diphtheria and scarlet fever.	1st	In a few hours.	3rd day..	Urticaria and pain in joints.	5,000
2	11 "	Diphtheria	1st	" " "	24 hours .	Nil	1,500
3	26 "	"	1st	" " "	24 hours .	Nil	1,500
4	22 "	"	1st	" " "	24 hours .	Nil	1,500
5	50 "	"	2nd	" " "	2nd day..	Nil	2,500
6	25 "	"	3rd	" " "	4th day..	Nil	4,500
7	35 "	"	2nd	" " "	2nd day..	Nil	4,500
8	13 "	"	1st	In two hours ..	2nd day .	Nil	1,500
9	8 "	Diphtheria and scarlet fever.	1st	In a few hours.	2nd day..	Nil	500
10	10 "	" "	1st	" " "	2nd day..	Nil	500
11	23 "	Diphtheria	2nd	" " "	24 hours .	Nil	1,500
12	26 "	"	1st	" " "	24 hours .	Nil	1,500
13	7 "	Diphtheria and scarlet fever..	1st	" " "	24 hours.	Nil	3,000
14	14 mos..	" "	6th or 7th.	No relief.....	.. ..	Death.....	12,500
15	34 years.	Diphtheria	8 hours.	Immediate.....	.....	Nil	3,000
16	10 "	"	3rd	.....	6 hours :	Nil	1,500

Cases 15, 3 and 4 were injected in the forearm and all had slight urticaria locally, in case 1 the urticaria was general.

Eleven cases were immunised 500 units, of which only one took the disease, but that was on the day following the injection.

The term " relief " means either fall of temperature, or lessening of pain in throat. In no case were there any immediate unfavourable symptoms noticed in connection with the injections.

Case Reports.

APPENDICITIS WITH UNUSUAL CONDITIONS.

BY

J. Alex. Hutchison, M.D.

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R. W., entered the Montreal General Hospital on January 14th, '99, for the relief of recurring attacks of abdominal pain. There was a clear history of five mild attacks of appendicitis since September '98, each attack accompanied by vomiting. He was operated upon Jan. 19th, during the interval, shortly after the last attack, while there was still present some tenderness in the lower right iliac region. The appendix could not be palpated. The usual incision was made. The omentum was found covering, and adherent to, the external and anterior portion of the cæcum. This was ligated and separated easily, leaving the cæcum quite free. No signs of inflammation were present, except a narrow strip adjacent to the usual situation of the appendix. A small puckered projection with an irregular edge showed where the appendix had separated. After further search the appendix was found in the mass of omentum ligated off, and adherent to the pelvic brim. It was separated and removed. Fearing that the loss of omental support might lead to the reopening of the cæcum, a few Lembert sutures were put in. Cultures were taken from the site of the appendix, and the wound was closed, leaving in a gauze drain. The pathological report by Dr. Anderson, shows that the cultures gave a negative result. The specimen is that of the appendix vermiformis showing considerable thickening of the coats, and on the mucous membrane there are several hæmorrhagic spots. A fæcal concretion was found. The case was unusual, inasmuch as complete separation of the appendix had taken place, without any escape of intestinal contents, or the formation of abcess. I have been unable to find a similar condition reported. The patient made a very good recovery.

These notes were taken from the case-report of my House-Surgeon, Dr. Alistair Smith.

MEMBRANOUS COLITIS DURING PUERPERIUM.

BY

N. D. GUNN, M.D.

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Mrs. B. primipara, aet. 24, was confined on December 16th, 1897. The following notes are taken from the daily record kept by Miss O'Connell:—

The labour was uncomplicated and not prolonged. There was no hæmorrhage or laceration, and the uterine contraction was good. *The first day* was uneventful, the pulse 62, and the temperature normal; the *second day* the nipples were sore to the touch.

On *the third day* the nipples, besides being sore to the touch, were noted to be cracked and fissured, but there was no rise of temperature. Slight pain complained of over the abdomen was looked upon as uterine in origin.

The fourth day, the abdominal pain was severe and griping, and not relieved by simple enemata. The pulse was 80, the temperature normal, and lactation was established.

The fifth and sixth days the temperature was still normal, the pulse 76, and the griping continued. The lochia were bright in colour and normal in amount and aroma. The nipples remained fissured and tender, causing much terror to the patient.

The seventh day the nipples were a little better; the pulse and temperature continued normal.

The eighth day, nervous symptoms were marked. There was twitching of the lower limbs, sudden outbursts of crying, and anorexia. Bromide of potassium was given in 15 grain doses, p.r.n.

From *the eighth to the eleventh day* there was no change except in the pulse, which became weaker, and ran from 84 to 90. Nursing was suspended, owing to the sore nipples and nervous condition of the mother.

The eleventh day the abdominal pain increased, and tenderness was noted over the bowels, but not over the uterus. There was some distension and gaseous eructations, but no diarrhœa. A simple enema produced two evacuations in the second of which there appeared for the first time membranous ribbon-like masses, white in colour, and also jelly-like masses of clear mucus. The temperature was 102 2-5°, the pulse 120.

The twelfth day. The patient spent a good night, but awoke looking anxious and worn with pains in the bowels and lower limbs, but no diarrhœa. An enema again brought away much mucus, and many

membranous bands several inches in length. Temperature was 102 2-5°, pulse 114.

The thirteenth day was the worst during the illness. The temperature rose to 103 2-5°, the pulse to 128. There was great anxiety, complete anorexia with headache. Phenacetin in 5 grain doses every four hours, old port, 2 ounces every two hours, with a hypodermic of morphia 1-4 grain at night, was ordered.

The fourteenth day. The morphia produced a most happy effect, sleep was profound during the night, and the highest temperature 99°, and pulse 86. The evacuations still contained large amounts of mucus and membrane.

On the fifteenth day, the temperature had fallen to 98 2-5°, the pulse to 84. The wine was still continued. The appetite had slightly, and the spirits much, improved. The pain in the abdomen was almost gone and the tenderness fast disappearing. The bowels still required an enema, and the casts and mucus remained about the same in amount. In the latter no change was experienced until *the eighteenth day* when there was a decided diminution in the amount. On this same date a facial neuralgia developed with a subnormal temperature of 98 4-5°.

On *the twentieth day* the pain in the face was worse and some swelling appeared about one of the lower molars. The patient became highly nervous again, the mucus in the stools and tenderness over the abdomen were increased, and the temperature rose to 100 2-5°. The offending tooth was extracted under an anæsthetic on the twenty-third day, when the nervous symptoms subsided and temperature fell to normal. Morphine was dicontinued and a tonic of nux vomica and dilute muriatic acid given in its place. Convalescence was fairly well established, the patient sitting up most of the day.

On *the twenty-fifth day* the nurse left and the patient assumed control of the child. The mucus had greatly diminished in amount, and was not present in every evacuation. By *the thirtieth day* the patient could be declared well, as the nervous symptoms were all gone, and the mucus shreds absent.

This case presented a very interesting diagnostic problem. With tenderness, rise of temperature, and fast pulse, one might suspect septic trouble, and it was only through the nurse's saving the membrane that the diagnosis was made so soon clear. I have not heard of a case in a puerperal woman, and I believe it to be a rare complication. The course was much shorter than would be expected as most cases of this disease last indefinitely. (I have one woman under observation who has suffered almost constantly for eight years.) I attribute the onset to the pain and worry caused by the child's nursing in a woman of a highly nervous organization. I attribute the hasty recovery to suspension of lactation, forced feeding, and the complete rest given by morphine.

THE LOCAL TREATMENT OF INTRA-UTERINE SEPSIS.

BY

A. GROVES, M.D., Fergus,

Hitherto the local treatment of sepsis of intra-uterine origin has been unsatisfactory, and in spite of modern aseptic and antiseptic methods the death record is yet by no means insignificant. The usual treatment by first curetting the uterus, and afterwards washing it out every few hours, with a solution of mercuric-chloride or some similar antiseptic solution is far from being followed by uniformly good results. Continuous irrigation is an advance upon intermittent washing, and in the cases in which I adopted it some years ago, I had good results, but the treatment is very wearisome and annoying to the patient.

In a case of intra-uterine sepsis we have to deal with a soft, flabby uterus, possessing feeble contractile power; in its interior are decaying shreds and remnants; and its absorbents are bathed in a highly septic and infective fluid. The problems are to get rid of or render innocuous the decaying material, to destroy or remove the septic germs, to seal up the absorbents, and to promote the contraction of the uterus. The treatment I now adopt and from which I have so far had unvarying success is as follows:—

I first explore the uterus with my finger, and if there is a retained fragment of placenta of any size it is removed with the finger nail. I never now use a curette, in septic uterus, for to me it seems most unscientific and dangerous to blindly scrape the inside of a uterus bathed with septic discharge. Every piece of epithelium removed, opens a fresh absorbing surface, so that we may consider that the more thorough the curetting the greater the danger to the patient.

My next step is to pass a cylindrical glass or hard rubber speculum of large calibre and through this wash the uterus thoroughly with warm water, passing the tube up to the fundus. When the water flows back clear, I inject tincture of the perchloride of iron. The syringe I employ for this purpose consists of a hard rubber tube about the size and length of a No. 10 catheter, in fact a No. 10 gum elastic catheter will answer very well, having attached a syringe bulb capable of holding an ounce or so of fluid. This syringe bulb I fill with the tincture or iron, pass it to the fundus, and inject it.

This excites a contraction of the uterus, expelling the fluid through the speculum. If the iron does not come away at once a second syringe-full is injected, which invariably induces contraction, with expulsion of

the fluid. The uterine cavity is again washed with water to remove any of the tincture which otherwise would trickle down and excoriate the vagina. This douching and injection should be repeated within thirty hours, and the treatment, if necessary continued until all danger is past. The effects obtained by injecting the iron, are:—First, the instantaneous destruction of all germs exposed to its action, for no germ or spore can withstand pure tincture of iron; in the next place all the absorbents are sealed up so that even if any septic matter remained in the uterus it would not be absorbed; and lastly, the uterus is stimulated to contract. This treatment is simple, safe, satisfactory and painless. No special skill is required in carrying it out, and there is no risk of injuring the patient. I believe a very considerable mass of placenta under the treatment above outlined, might, without danger remain in the uterus until it was disintegrated and expelled. In proof of the satisfactory results obtained by this method of treatment, I shall quote a few cases in the order in which they occurred, and without selection :—

Case I., Mrs. H., had been confined a week before I saw her. On my first visit, 10 p. m., March 28th, 1897, her temperature was 105°. F., and pulse 136; expression in every way bad; skin livid; chills frequent and severe; in fact, her condition was apparently hopeless. The uterus was explored with the finger, and found to contain only shreds, and acting on the principle that an attempt at scraping them away would open large absorbing surfaces, curetting was avoided. After thoroughly washing out the uterus with water the tincture of the perchloride of iron was injected, and nothing further done locally. By the evening of the 29th the temperature had fallen to 103°. F. and her condition was greatly improved. Until 9 p.m., on the 30th, steady improvement went on and her temperature fell almost to normal; at this time a severe chill occurred, ant at 10 p. m., her temperature was 105°. F., The uterus was again washed out, and the iron injected, and by next morning her temperature has fallen to 100°. This last chill, in my opinion, was due to overlooking the fact that the duration of the protection afforded by the iron is limited, and that not more than twenty-four or at most thirty hours should elapse before a second injection is given. The injection was repeated on March the 31st, and on April 1st, after this the patient went to on an uninterrupted recovery.

Case 2. Mrs. C., on the fourth day after her confiniment took a severe chill, and her temperature at 8 a. m. on the following morning was 103° F. At this time the uterus was washed out and injected. Her temperature on the following day was only 100° F., when a second treatment was given; after this steady progress to recovery took place.

Case 3, Mrs. F., on the third morning after confinement, presented

the usual symptoms of septic infection with a temperature of 104°.

I employey the old routine treatment of washing out the uterus with carbolic acid, and bichloride of mercury for two days, but as the patient gave every sign of progressing steadily to death, I injected the tincture of iron, repeating the treatment on the following day; prompt recovery followed.

Case 4. Mrs. D., was first seen on the sixth day after her confinement, when her condition was practically hopeless under ordinary treatment. Three treatments at intervals of twetny-four hours were sufficient to stop the septic infection and relieve all her symptoms.

The above cases appear to demonstrate that the treatment laid down is positive and unfailing in its results; in no case where the treatment was carried out was there other than a successful issue.

RETROSPECT

OF

CURRENT LITERATURE.

Medicine.

UNDER THE CHARGE OF JAMES STEWART.

Atypical Temperatures in Pneumonia.

JAPHA. "Ueber ungewöhnlichen Fieberverlauf bei gemeiner Pneumonie." —*Deut. Arch. Klin. Med.* Bd. C 2, H. 1, 2.,

In this article, Japha makes use of the records of Frankel's clinic in Berlin to illustrate the comparative frequency of departures from the usual temperature curves of pneumonia. In the majority of cases this disease runs such a typical course and has such striking clinical features, that we are perhaps a little apt to forget the numerous departures from the classical type, and to overlook their significance.

A group of five cases of wandering pneumonia are first described, with intermittent temperatures, or as we should prefer to term them, pseudo-crises. In these the temperature falls to normal or subnormal, and rises again in a few hours or, at most, a day. With the fall of temperature there is sweating and marked improvement in the pulse, respiration, and subjective condition of the patient. With the return of the fever, the pulse and temperature again rise, and physical examination reveals evidence of fresh inflammation of a new area of pulmonary tissue. Several such falls of temperature followed by renewed fever and extension of pneumonic areas may occur and constitute typical examples of wandering pneumonia. The average duration of these was only eight days, not much longer than in ordinary forms of the disease.

Marked remissions in the course of pneumonic temperatures have not received any very satisfactory explanation. A series of eight cases are reported in which the charts showed several marked falls of temperature. The possibility of such falls being due to a mixed infection is discussed, but no new facts are disclosed which would tend to bear out such a theory. Malaria has often been invoked as an explanation of such aberrant types, but the absence of the plasmodium from the blood, the absence of splenic tumor, and the uselessness of quinine, are clear proofs of its

falsity. The marked character of the remissions are suggestive of streptococcus infection, but no cases are cited in support of this view. The author falls back on the fact that such cases are frequent in children, and that a difference in soil may influence the reaction to the ordinary agent in the disease, Frankel's pneumococcus.

Relapse in pneumonia is universally admitted to be a very rare condition, and in this respect contrasts strongly with typhoid. On the other hand, recurrence, rare in typhoid, is extremely common in pneumonia Six cases of relapse are recorded by Japha. The duration of the afebrile interval between the two attacks was, 1, 3, 5, 12, 16, and 26 days. In five cases the second attack occupied the same site as the primary, and in one only were different portions of the two lungs affected in the two attacks. In the second attacks the temperature rose suddenly in four cases, in one there was a rigor, and in another herpes. The duration of the second illness varied from periods of from two to thirteen days. During the interval, signs of the primary condition disappeared completely in three cases, and in the others some of the physicial signs persisted.

Ribbert points out that the usual fate of the pneumococci is to perish in the exudate; he believes, however, that in the cases under consideration, some of these organisms may escape and set up a fresh attack. Then, again, it is well recognized that the pneumococci may persist in the mouth in an active form after pneumonia, being left there by the sputum, and so form a possible source of reinfection by inhalation. In one of Japha's cases in the afebrile period there was an attack of tonsillitis which he regards as a possible origin of the second attack, or as a link between the bacteria in the mouth and the new area of activity in the lung.

Enlargement of the Heart in Chlorosis.

GAUTIER. "Ueber die morphologischen Veränderungen des Herzens bei der Chlorose auf Grund Klinischer Beobachtungen."—*Deut. Arch. Klin. Med.*, Bd. 62, p. 120.

In this article the author points out that the only morbid cardiac signs which have been closely studied in chlorosis are those observable by ausculation, whilst the morphological changes have been comparatively neglected, and many of the published results contradictory.

In a study of 23 cases observed at Ostromnoff's clinic in Moscow, evidence of enlargement of the heart was found in twenty, in some of the cases being quite considerable. The enlargement persisted during the continuance of the chlorosis, and only disappeared some time after the blood had resumed its normal character. Although all cases in which any possibility of cardiac enlargement from other causes, such as rheumatic endocarditis, were excluded, the number in which this

change occurred seems unduly large, and probably only represents the cardiac changes in the severer types of the disease.

In demonstrating cardiac enlargement the author points out that the absolute cardiac dulness, obtained by light percussion, merely indicates the borders of the lungs. For accurate results the relative area of dulness should be estimated and not infrequently this is found to be increased where the absolute dulness is of normal extent. In order to eliminate the personal equation a number of observations were made mapping out the relative normal dulness and showing that the average greatest distance of the left and right borders of the heart from the mid-sternal line is respectively 9.5 and 4.5 cm. These figures correspond fairly closely with observations of Rosenstein's and other writers. In round numbers it may be assumed that if the left border extends over 10 and the right over 5 cm. from the median line, the heart is enlarged. The writer regards cases reaching the "normal" line as suspicious, and shows that under the influence of treatment three of them receded, proving that undoubted enlargement existed. The difficulty of fixing a normal line is obviously inferred in these statements, and the difficulty of accurately mapping out a heart by deep percussion will be appreciated by all clinical observers. Towards the left, enlargement is usually more obvious and greater, and in 21 cases dulness from 1 to 8 cm. beyond the normal line was observed.

These observations certainly justify the writer's statement that an increase in the cardiac dulness is observed in the majority of cases of chlorosis. That these statements as to the size of the heart can be accepted as correct, in such a large proportion of chlorotics seems improbable, and the author himself emphasizes the fact that only severe and old-standing cases were under observation. In recent or in slight cases, evidence of cardiac enlargement is commonly absent, but in the severe cases the writer's views as to moderate and even considerable enlargements are probably correct.

Some interesting observations were made of the diminution of the heart in size under treatment. It was observed that a rapid diminution often took place in the first week or fortnight, a certain amount of enlargement, however, often persisted, and but slowly disappeared after the blood had regained its normal characters. This rapid diminution in size can only result from disappearance of dilatation, whilst the slower decrease following indicates the presence of hypertrophy. Other reasons for believing that hypertrophy is present are the full, regular pulse and the absence of any symptoms of cardiac distress such as might result from dilatation. None of the cases were kept sufficiently long under observation to note a permanent hypertrophy, a feature which has been noted by certain English authors.

A considerable amount of space is devoted to the consideration of Virchow's theory of a congenital hypoplasia of the vascular system as a cause of cardiac hypertrophy in chlorosis. The writer agrees with the opinion, now pretty generally held, that such a condition is present only in rare instances, and that it cannot be a frequent factor in inducing hypertrophy in these cases, is evidenced by the fact that the heart diminishes and usually assumes its normal size under treatment. The most probable explanation of the cardiac change is that the heart muscle shares in the weakness of other muscular structures, that dilatation results, and then hypertophy. Palpitation is not considered as an active cause, as in most of the cases it was not a marked feature. Judging from the frequency of this symptom in chlorosis it seems, however, not improbable, that this agency may be of some importance as an accessory factor.

F. G. Finley.

Surgery.

UNDER THE CHARGE OF GEORGE E. ARMSTRONG.

Treatment of Hypertrophy of the Prostate.

BRANSFORD LEWIS. *Philadelphia Medical Journal*, December 10, 1898.

ANDREW J. DOWNES. *Philadelphia Medical Journal*, December 24, 1898.

EUGENE FULLER. *Medical Record*, November 19, 1898.

In the paper referred to, Dr. Bransford Lewis describes the method of treatment of enlarged prostates by the use of the electro-incisor, a method first introduced by Professor Bottini, of Pavia, and subsequently modified by Frendenberg, of Berlin. The instrument is shaped somewhat like a lithotrite, the cautery-blade sliding in a groove in the staff, which latter is tunnelled for the passage of ice-water up and back through it for cooling purposes. In operating, the effect desired is that of a cauterizing incision, and to produce it the blade must be heated until it is of a light red colour. A cystoscopic examination of the bladder should be practised to determine, as far as possible, the conditions which obtain within the viscus, the customary rectal examination should also be made before operation. General anæsthesia is unnecessary. The parts are cocainized, by the introduction of one-half drachm or more of a four per cent. solution, into the prostatic urethra, and the vesical neck.

The instrument is introduced in the ordinary way, and once it has entered the bladder, the beak is turned directly backwards so as to hook over the projecting ring at the neck of the bladder. Once in position, the current is switched on, and the knife is slowly caried forward through the obstruction. The incision must not be made too quickly, lest the cauterizing effect be insufficient. It may be found necessary to make more than one incision, and perhaps a median and two lateral cuts will prove of most service. There is practically no hæmorrhage following on the operation, and the patient is able to be about in twenty-four hours. For the first few days, the condition at the neck of the bladder may be aggravated by some œdema of the part, but this soon passes off.

Of the three cases which Dr. Lewis has operated upon, one is of such recent date, that the result cannot yet be judged. The other two cases were markedly benefitted, the amount of residual urine in one being re-

duced to two or three drachms, when at the time of the operation there was practically complete retention.

Dr. Downes' case was also satisfactory. The patient, aged 71, had been obliged to use a catheter for one year, and had developed cystitis. Even with the bladder emptied and irrigated, he could only go three hours without micturating. One ounce of a two per cent. solution of cocain was used to anæsthetize the part, a few drops being placed in the prostatic urethra and the remainder thrown into the bladder so as to bathe the prostatic surface. The solution, was withdrawn after an interval of two minutes. Three incisions were made, one in a posterior direction, one in the left lateral, and one anterior. The actual time of operating, from the introduction of the incisor to its withdrawal, was five minutes. After operation, the urine dribbled for some hours, and was then passed voluntarily, and at increasing intervals. For three days before operation the amount of urine (daily) was thirty ounces. On the tenth day after operation, it amounted to sixty ounces. The patient's general health improved *pari passu*, and he is now in excellent health.

Dr. Fuller, of New York, gives in detail the operative measures which he has pursued in these cases during a number of years. His method is to do a supra-public cystotomy, introduce a pair of serrated scissors and, having cut through the capsule, to enucleate the hypertrophied gland with his fingers. In the average cases he finds it possible to do this, but if, owing to the denseness of the growth and the firmness of its adhesions to the surrounding tissue enucleation *en masse* is found impossible, he uses Jessop's prostate scissors to cut it away piecemeal. After operation the wound is partially closed, the sutures at the upper and lower angles of the wound being made to include the bladder wall itself. By this means the organ is kept in close contact with the abdominal wall, and no extravasation into the space of Retzius can occur. He inserts two supra-public drainage tubes, and a large rubber drainage tube is also passed into the bladder through a perineal incision. This method of treatment has proved very successful in the author's hands. He has practised it on twenty-seven cases, which he divides into classes, viz:—Those with marked atheroma of the arteries, of whom there were five, and those in whom there was little, if any, arterial degeneration. Of the five patients, three died ; one of cerebral apoplexy, one of post-operative hæmorrhage, and the third probably of thrombosis. Of the twenty-two cases in the second division, but two were fatal, one of suppression of urine, and one with obscure peritoneal symptoms. Some of these cases were dealt with in emergency, and most of them were suffering from the effects of vesical infection.

There can be little doubt that the procedure recommended by Dr.

Fuller is more likely to be followed by complete cure than the Bottini-Frendenberg operation. It has the great advantage of providing the free and complete drainage so necessary in these conditions, and in enabling the bladder to recover some, at least, of its lost tone. It is also suitable in cases where complete retention has occurred, when operative measures of some kind must be practised. Such cases would be entirely beyond the limits of the cauterizing operation, which is necessarily followed by more or less swelling of the tissues in the neighborhood of the incision. One would also imagine that after the lapse of some time, the development of cicatricial tissue and consequently contraction of the furrows made by the cautery would eventually lead to a condition as bad, if not worse, than that which existed before the operation. The advantages of the Bottini-Frendenberg method are its simplicity, the necessity of local anæsthesia only, and the short time during which the patient is prevented from following his occupation.

E. J. Semple.

The Use of Gloves in Surgery.

LOCKETT. *The Philadelphia Medical Journal* January 11, 1899.

In the present state of surgical asepsis, all sources of infection may be practically excluded except the skin of the patient, and the hands of the operator and his assistants. It is believed that the skin of the patient is more thoroughly disinfected, as a rule, than the operator's hands, and it is said that the skin of the patient hardly comes in contact with the wound. It has been found experimentally very difficult to render the hands, especially the fingers and the parts beneath the edge of the nails, thoroughly aseptic. It is believed that the difficulty can be, in a great measure, overcome by covering the hands with a material which can be made absolutely sterile, and which, while impermeable to bacteria, does not materially interfere with the sense of touch, the handling of instruments or ligatures, etc., or the manipulation of such delicate tissues as the peritoneum and intestines. These considerations led to the use of gloves. Halstead began the use of rubber gloves in 1889. Mikulicz introduced the use of the cheaper cotton gloves. He does not now use them in their original state, but incorporates in them some impermeable material, or employs a glove made of impermeable material. Prof. Keen becoming dissatisfied with the cotton gloves, conducted some experiments which showed that they could not be trusted. A bouillon-culture of prodigiosus poured into a finger of each glove passed through and was found to contain the bacillus prodigiosus. The results of Keen's experiment seem to prove the absolute inefficiency of cotton gloves; both in their original state and when paraffined; they fail to prevent infection from the hands. Perthes, of

Leipsic, uses rubber gloves, or silk gloves with a rubber covering. Halstead and McBurney use rubber gloves. They are sterilized by washing them with soap and water to which a little aqua ammonia has been added. They are then boiled for fifteen minutes in a 1 per cent. sodium carbonate solution, and laid in a sterilized towel until the operator or his assistants are ready to put them on. If the dry hands are rubbed with dry sterilized starch, the gloves can be drawn on with ease, even if their interior is moist. If the hand is moistened with glycerine or lubrichondrin, wet gloves may be easily drawn on.

The use of gloves is probably an additional safeguard against infection. They are very useful to the accoucheur. He can always have a pair wrapped up in a sterilized towel in his bag, and thus always be ready for use.

There are two drawbacks to their general use by the general surgeon; first, they dull the invaluable sense of touch. This objection is largely gotten over by practice, and those who have persisted in their use find them after a time to lessen very little, if at all, their ability to define and separate adhesions, and to handle ligatures and instruments. The second objection is that they are liable, at any moment to be punctured by a scalpel or a needle, and through this puncture, if the hands have not been previously sterilized, infection may escape. It becomes necessary, therefore, to use every means to sterilize the hands before putting on the gloves. Then if the hands are sterile, why use gloves? If the hands are not sterile, the gloves, when used by a surgeon handling sharp and pointed instruments, give a false security. They are of great value to house-surgeons in doing their ward dressings.

Those who have adopted them are most emphatic in their praise. It also seems to be conclusively proven that if gloves are used they should be made of rubber.

Air Distension in Operations upon the Biliary Passages.

VAN HOOK. *Annals of Surgery*, February, 1899.

Dr. Van Hook distended the billiary passages by means of a sterilized bicycle pump, inserted into the apex of the gall bladder. By this means he claims that the billiary passage may be determined among adhesions, stones be more easily located, and finally the strength of the suture line determined.

G. E. Armstrong.

Pharmacology and Therapeutics.

UNDER THE CHARGE OF A. D. BLACKADER.

On the Prolongation of Nitrous Oxide Anæsthesia by Means of a Mouth Tube.

McCardie. "On the prolongation of nitrous oxide anæsthesia by means of a mouth tube."—*Treatment*, September 22, 1898.

In an article published in a previous number of the Journal, attention was drawn to recent efforts to prolong nitrous oxide anæsthesia, by the addition of the nitrous oxide of oxygen in small quantities. Dr. McCardie, in the present paper draws attention to another method which he has found of much service in his work in Birmingham. He has slightly modified the idea of Mr. Coxan, who read a paper recently before the Society of Anæsthetists, in which he described a method of prolonging nitrous oxide anæsthesia in dental operations, by means of a mouth tube. This tube as altered by Dr. McCardie, is of strong metal about nine inches in length, 3-4 of an inch in diameter at the junction end, diminishing to a diameter of 1-2 inch for the remaining part. This tube in its last two and a half inches is curved, forming about a quarter of a circle. The method of employing it is as follows:—Nitrous oxide is given in the ordinary way to the full anæsthetic degree; then the face piece and stopcock are removed from the apparatus, and the metal tube is fixed in their place, by an assistant; meanwhile the operation is proceeding. When the patient has nearly recovered color the tube is introduced to the back of the mouth on the side most convenient to the operator, and the full stream of gas is directed into the pharynx so as to impinge on the side of its wall behind the tonsil. Anæsthesia, he claims, can in this way be maintained as long as may be necessary. The important points in practice are the following:—The tube should be fully 1-2 inch in diameter, so as to permit a sufficiently large stream of gas to escape. The gas bag should be kept fully distended throughout the administration, and may be passed between the arm and side of the body, to increase the delivery pressure. The end of the tube must be placed at the back of the throat, lying on the tongue, with the curved portion horizontal, so that the stream of gas is directed towards the side wall of the pharynx, in this way preventing blood being blown down the air passages. Nitrous oxide should be administered through the tube, until the natural colour has nearly returned to the patient's face; then such a continuous stream of the gas

should be kept up, as to maintain a moderate blueness of the lips and face throughout the operation. It is advisable that, when possible, the tube should be directed by an assistant who can also swab out the mouth, while the anæsthetist keeps full command of the head and jaws, controls the gas supply with the foot and manipulates the gag. The posture assumed has, in every administration, been the ordinary one in the dental chair. As a later improvement, Dr. McCardie has devised a small nasal clamp which closes the nostrils, and is to be fixed immediately after the removal of the face piece. He says that in those cases, in which it is practicable, digital compression of the nares has an advantage over instrumental compression, in that it gives one more command over the head, and can be applied easily at any period of the anæsthesia. He states that there is practically no limit to the prolongation of nitrous oxide anæsthesia by this method. It involves no complicated apparatus, and may, it is hoped, do away with the use of that absolutely dangerous drug in dental surgery, chloroform, and its combinations. It must be remembered, however, that as many as twenty cases of death during or immediately following the administration of nitrous oxide have been recorded ; and if the anæsthesia be prolonged beyond the ordinary time, the risks are proportionately increased. These are the greater liability to shock, to syncope from fall of blood pressure, and to the increased chances of blood or foreign bodies finding their way into the larynx. It is not, in the writer's opinion advisable to use this method, or indeed to prolong nitrous oxide anæsthesia at all in old people, especially those with diseased arteries or fatty hearts; in the very weak; in cases where marked pulmonary disease exists; or in young children, though the latter for operations elsewhere than in the mouth, will take gas very well, indeed, if mixed with oxygen. The disadvantage of the method is that it needs some practice, on the part of the anæsthetist, and his assistant, if one be present, to successfully keep the tube out of the way of the operator. Dr. McCardie does not think that for long or severe operations this method of including anæsthesia should replace the combination of nitrous oxide, and ether, inhaled from a Hewitt's apparatus, but he considers it to hold a place midway between the ordinary gas inhalation on the one hand, and the use of gas followed by ether, on the other. It must be remembered that whenever prolonged anæsthesia by nitrous oxide is to be induced, every precaution should be taken against the additional dangers involved.

At the close of the paper, Dr. McCardie records the details of seven cases in which anæsthesia was prolonged for periods varying from two minutes and thirty seconds, to nine minutes and fifty-five seconds. Recovery from prolonged anæsthesia induced in this way is extremely

rapid, and not marked by any untoward symptom. The quantity of nitrous oxide required may be caculated as eight gallons, for the induction of full narcosis; and eight gallons for every additional half minute anæsthesia is prolonged.

On the Treatment of Prurigo by Calcium Chloride.

In a very interesting article on the treatment of prurigo, Dr. Saville (Treatment, December 22, 1898), refers to the many remedies which have from time to time been employed for the relief of the intolerable discomfort due to this disease. Local treatment, he thinks to be frequently of service; a creolin bath in the proportion of one drachm to ten gallons of water, or an alkaline bath containing sodium bicarbonate, eight ounces, and water at 90° F., thirty gallons often afford much relief; plain water, sometimes, soothes, but not infrequently aggravates the condition. Ointments and lotions are practically of little use owing to the wide distribution of the trouble. Among the most serviceable may be mentioned lead, or zinc lotion, or preparations containing zinc oxide or bismuth suspended in lime water. Hydrocyanic acid has a local sedative action, and may be employed in weak solutions not stronger than one drachm to four ounces. A lotion of equal parts of solution of ammonium acetate, methylated spirits, and rose water forms a pleasant and soothing application. All these measures, however, are only palliative, and recourse, must generally be had to constitutional remedies. Among the more useful of these he mentions carbolic acid internally in doses of 1-2 grain; tincture of gelsemium in 20 mimim doses thrice daily; (such doses must be used with caution as untoward effects may supervene), chloral hydrate in doses of 10 or 15 grains, given thrice a day, but its narcotic properties in these doses interfere with its usefulness, and if long continued, a dangerous habit may be induced; pilocarpin in doses from 1-20 to 1-10 grain, two or three times a day, by promoting perspiration is often very valuable; the bromides, in cases attended with marked neurotic symptoms are useful; but in ordinary cases beyond inducing sleep and thus helping the patient to cease scratching, they are generally of little avail. In 1896, in an article published in the Lancet, Dr. Wright, of Netley, drew attention to the favourable results frequently attending the administration of calcium chloride in this very troublesome affection. Since then, many observers have tried and confirmed the efficacy of this drug, in relieving not only cases of general pruritis and prurigo, but in the itching which accompanies many forms of skin eruption. Dr. Saville gives the details of several cases in which its administration proved of the greatest service. Full doses are demanded; not less than 20 grains, three times a day, and, if necessary, the amount should be gradually increased; doses of thirty or forty grains have often succeeded, after a smaller amount

had failed. The drug should be administered after meals in a wineglassful of water; thus given it produces little gastric disturbance. Patients sometimes complain that it makes them thirsty; to cover the salt taste, the remedy may be given in chloroform water, with the addition of a little tincture of orange peel. Dr. Saville does not think it is so efficacious in the lichen urticatus of childhood, as in adult and senile cases; but he thinks it possible that he has not given the remedy in sufficiently large doses. Dyspepsia if present, must be treated upon general principles. In all cases it is well to avoid sweet foods, and allow butchers' meats only in small quantity. Perserverance may sometimes be required. Dr. Saville states that he has often succeeded in obtaining a cure by persevering with the remedy for three to six weeks, although no improvement was observed during the first two weeks. When recovery has taken place, the dose should only gradually be reduced. In proportion to the inveteracy of the case, larger doses are required and longer perseverance. In Dr. Saville's experience the drug appears to act more promptly in those cases which are attended by erythematous blotches. He emphasises the importance in all cases of paying careful attention to the alimentary tract, but adds that we must abjure a narrow specialism which confines its attention either to the skin, the alimentary canal, or the nervous system; the affection ought to be regarded as a product, not of a single cause, but of a multiplicity of factors, by the neglect of any of which we may fall into error and fail to relieve suffering.

Ophthalmology.

UNDER THE CHARGE OF J. W. STIRLING.

Ophthalmoscopic Evidence of General Arterial Disease.

R. Marcus Gunn. "Ophthalmoscopic evidence of general arterial disease."—*Transactions of Oph. Society of the U. K.*, 1898.

This valuable paper of Mr. Gunn's, read before the Ophthalmological Society, called forth quite an animated discussion, and certainly is of much value, and worthy of the high enconiums passed on it.

Mr. Gunn describes certain ophthalmoscopic changes due to an affection of the retinal arteries, and which he holds are indicative of similar changes in the general arterial system, deducing numerous case reports in support of this.

The changes noted in the eye are, an irregularity in the breadth of the arteries, they being contracted at one part, and dilated further on. The arteries are also very tortuous, their light reflex is narrow, and exceptionally bright, especially in the secondary and tertiary branches, they also lose in transparency so that where they cross a vein, the underlying vein can not be seen through them, the opposite condition holding, when the vein crosses over the artery. Of most importance, however, is the fact that where the diseased artery crosses a vein, it impedes the venous flow. There is also often a slight œdema of the retina, and sometimes hæmorrhages.

The explanation of these symptoms is an altered condition of the coats of the arteries, an arterio-sclerosis, with the accompanying rigidity. The result of the impeded circulation, is diapedesis, and hæmorrhages.

Old age favours these changes, but certainly alone does not produce them. The gouty diathesis and chronic alcoholism are strong etiological factors.

Glaucoma, thrombosis, embolism, cataract and Tay's choroiditis are prone to occur in these vascular conditions, but the point of greatest clinical significance is the association with more general arterial disease especially in the brain and kidneys.

Mr. Gunn closes his paper with the citation of many cases in which the relation of the above mentioned ocular arterial lesions with later developing cerebral vascular changes, is almost startling, and which certainly impress one with the importance of the early discovery of vascular lesions in the eye, and of their prognostic import.

Sympathetic Ophthalmia.

ALFRED MOLL. "Experimental bacteriological investigations in sympathetic opthalmia."—*Centralblatt für Augenheilkund*, December, 1898.

Considering Deutschmann's theory of the migration of bacteria along the optic nerve from the exciting to the sympathising eye, as pretty well exploded, Moll has conducted a series of elaborate experiments on rabbits.

As the result of the work done, he draws the following inferences:—In animals, which have had inoculated into the general circulation a well marked characteristic bacillus (pyocyaneus in Moll's cases), the irritation of one eye is followed by appearance of the bacillus in the aqueous of both this eye and the other one; in the control experiments, however, the aqueous humor is sterile, in animals whose eyes have not been subjected to irritation or injury. These results support the neurotic theory of the origin of the sympathetic ophthalmia as modified by Schmidt ,Runpler, and others. According to this theory, the injury in the exciting eye, occasions a disposition to sympathetic inflammation in the second or sympathising eye, which sympathetic inflammation only occurs if a chemical or bacterial poison be present in the blood.

Disturbance of Vision from the Electric Current.

DR. KRETSCHMER, Liegnitz. "Disturbance of vision from the electric current."—*Centralblatt für pratk Augenheilkund*, December, 1898.

Kretschmer, reports the very interesting case of a man aged 50, who was struck by the falling wire of a trolley car. After a short period of unconsciousness and irritative phenomena in the affected parts, motor and sensory paralysis of the right side of the body and left half of the face rapidly developed, there was complete deafness of the left ear, and blindness of the left eye, and also obliteration of the inner half of the right field of vision, and amblyopia in the outer half. The only changes visible in the fundi of the eyes was venous congestion and blurred edges of the disc. Gradually, with occasional attacks of twitching, the paralysis of the arm, and later of the leg, improved, but the blindness and deafness remained unchanged. In the outer half of the right field of vision the vision improved somewhat. The fundi assumed a normal appearance, and the pupils were active to light and accommodation.

The current had a strength of 500 volts at its origin, but must have been considerably weaker at the point where the break occurred.

Connection of Eye Affections with Other Diseases.

SCHMIDT-RIMPLER. Connection of eye affections with other diseases."—*XXI Band des speciellen Pathologie v Therapie*, Wien, 1898.

WOLFFBERG. "Vascular retinitis from tooth affections."—*Wochenscrift für Therapie und Hygiene des Auges.* No. 14. 1898.

HILBERT. "Interstitial keratitis following influenza."—*Die Ophthalmologische Klinik.* No. 4. 1898.

HILBERT. "Coloured vision resulting from influenza."—*Lchender's Klin. Monatsblatter*, April, 1898.

DESVAUX. "The role of general disease in the etiology of diffuse keratitis."—*Archives of Ophthalmologie*, January, 1898.

SAEMISCH. "Scabies of the cornea."—*Lchender's Klin. Monatsblatter*, December, 1898.

DIANOUX. "Ocular troubles in diabetes."—*Annales d'Oculistique.* October, 1898.

Schmidt Rimpler's work forms part of the elaborate system of special pathology, and therapy brought out by Nothnagel, of Vienna.

It obtains special importance on account of the many observations and cases noted by Schmidt Rimpler himself. It is all of value, but special note must be made of the eye changes observed in diabetes, for these embrace those seen in one hundred and fifty cases collected by the author.

Cataract was the most frequently noted change, being observed in sixty-eight cases, then follow affections of the optic nerve, in thirty-seven, retinal disease in thirty-four—after this follows a big drop to fifteen cases of amblyopia, ten of paresis of the external ocular muscles, eight of accommodation disturbances, seven of iritis, and choroiditis and five of vitreous opacities.

In this connection we may refer to Dianoux's paper. He considers cataract as the most common ocular complication of diabetes. The soft cataract developes in young people in the acute or pancreatic form of diabetes and rapidly matures. In the chronic diabetes of adults Dianoux doubts if cataract is more common than in non-diabetics. The operation for senile cataract in diabetics may be quite successful, but in the soft form of cataract the operation is often followed in seven or eight days by pulmonary apoplexy or death, at any rate, the patient generally dies in a year or fifteen months.

Dianoux, speaking of retinal hæmorrhages, says they are found nearly always in old people—they may absorb—not being found in young diabetics, he doubts if the hæmorrhages are directly due to diabetes, but thinks they are rather due to arterio-sclerosis. The prognosis is, however, bad, as death may occur at any time from cerebral softening. Central scotoma, also, are seen, but differ from the tobacco and alcoholic in that they never disappear.

Wolffberg's case was that of a woman, aged 26, who suffered from the following visual disturbances, which were improved or cured by the removal of a carious tooth. The symptoms were distorted letters, accommodative weakness, slow pupillary reaction, increased tension of the eyeball, medium mydriasis and very marked hyperæmia of the macula lutea.

Hilbert's case of intersitial keratitis occurred two and a half weeks after the outbreak of the influenza, and healed without leaving any trace behind.

The case of coloured vision was that of a man, aged 30, who previously had perfectly normal eyes, but after an attack of influenza saw all objects as blue, accompanied by attacks of vertigo, which disappeared in fourteen days after using Blaud's pills. In another case there was yellow vision.

Desdaux argues against hereditary syphilis being so frequently accepted as the cause of interstitial keratitis, because 30 to 50 per cent. of the cases are due to other causes, namely tuberculosis, and after this, influenza, rheumatism, gout, uterine affection, childbed, and rickets.

Saemisch's rare case of scabies of the cornea can scarcely be considered in this connection, seeing that scabies could be discovered nowhere else in the patient's body. The patient was a youth of 18, on whose left cornea a central dense infiltration was found with a leash of vessels running from the periphery of the cornea to it. On scraping it out, and examining the material microscopically a female Sarcoptes Scabiei, was discovered, with numbers of eggs, in her neighborhood in various stages of development.

Ocular Therapeutics.

WOLFFBERG. "Ichthyol and ichthalbus in ocular therapeutics."—*Wochenschrift für Therapie des Anges*, 18.

CHETWOOD-AIKEN. Bromo-hydrate of arecoline as a myotic."—*British Medical Journal*, January 14, 1888.

MESSNE. "Some results with protargol in eye disease."—*Centralblatt f. Augenheilkunde*, January, 1899.

Wolffberg, considering that ichthyol acts as a contracting agent on dilated blood vessels in all parts of the body has been prescribing ichthalbin internally in glaucoma, and iritis, in addition to the local treatment, and with very good results. He also mentions a case of retrobulbar hæmorrhage which underwent resorption with surprising rapidity under this treatment.

Chetwood-Aiken highly praises the bromohydrate of arecoline in a one-half per cent. solution, as a rapid myotic. It produces a slight tingling on being instilled into the eye, lasting a few moments, but without

any conjunctival or ciliary congestion, Myopia begins in two or three minutes, and reaches its maximum in twelve minutes, and lasts half an hour, and disappears in an hour and a half. There is spasm of the ciliary muscle. The tension of the eye is but slightly decreased. There is no headache as with elsevin, the action is more rapid and powerful, and shorter than that of esevin.

It is stable in solution and keeps for a long time unchanged, overcomes the dilation of homatropin rapidly, and is cheap.

Articles descriptive of protargol and its effects are rapidly appearing, and they are on the whole laudatory in tone. The sum of them is that protargol finds its chief sphere of usefulness in acute inflammation of the mucous membranes, especially those in which there is fairly free muco-purulent secretion. It is used in a strength of 2 per cent. to 10 per cent., but mostly 5 per cent. Watery solution, dropped into the eye or brushed on the lids.

J. W. Stirling.

Society Proceedings.

MONTREAL MEDICO-CHURURGICAL SOCIETY.

Stated Meeting, February 6th, 1899.

Dr. J. Helen Macdonald, of Montreal, was elected an Ordinary Member.

Brain Physiology.

Dr. WESLEY MILLS gave some demonstrations on Brain Physiology in continuation of others put before the Society within the past three years. Previous ones had been on frogs and on mammals, those given on this occasion on pigeons. First were shown the brain of a normal pigeon intact, and in comparison with this a brain with practically the whole of the cerebrum removed. The bird during life was able to sit up, balance, swallow, fly, etc., but was constantly in a soporose condition, from which it could, however, be aroused. It had lived for six days. Next were shown two living pigeons. From one of these there had been removed, three days previously, the posterior two thirds of the cerebrum. This bird was not in the least drowsy, but in most respects was like a normal pigeon. It speedily recovered from the operation. It could walk, fly, balance on a perch, see, hear, feel, etc. It pecked like a recently born chick, at spots on paper, but so far had not actually fed spontaneously. It also frequently preened its feathers in an elaborate fashion. Very similar in general was a bird, from which, at least two thirds of the cerebrum had been removed by a horizontal incision. The bird had been the subject of operation more than two months since. For some days it was rather dull. At first it had also pecked at food, but never had actually taken it up, and swallowed it. The bird after a certain time began to lose weight. It was therefore fed more frequently and given cod liver oil with maltine. It soon regained all the weight lost, and was now a vigorous pigeon, apparently normal in all respects except that it did not eat, recognize other pigeons as such, etc. It cooed, preened its feathers, looking about as if taking a natural interest in its surroundings, and made short flights.

The question arose as to the degree to which any features in its behaviour were the result of the exercise of will-power, or intelligence proper.

Views on the nature of the intelligence, especially its development, and of the will, are now changing rapidly, and it was hoped that the study of birds thus operated on, taken in connection with other animals that had been deprived of a greater or less portion of the cerebrum

would throw light on such psychological problems as well as others of a purely physiological character, and on the correlation of the physiological and the psychological.

Some Interesting Eye Conditions.

Dr. BULLER read the following histories, and Dr. BYERS exhibited the specimens:—

Irido Cyclitis Traumatica—J. K., aet. 3 years, was struck in the right eye in July, 1898, with a piece of wood and received treatment from a general practitioner. He was brought to the Hospital on October 18th, 1898, to see if there was any damage to the other eye. The following condition was present:—The right eye was shrunken, slightly injected, and easily irritated, with a large transverse cicatrix through the shrunken cornea extending from the anterior margin nearly to the opposite side, and with very extensive inclusion of the iris. There was no plus tension. The condition of the injured eye was typical of the much dreaded plastic irido-cyclitis, which in children seems to have a specially malignant tendency towards the other eye, and obviously demanded enucleation. The case was one in which I should probably have performed Mules operation in preference to enucleation, had I seen it before the eye became shrunken.

Sarcoma of the Choroid—This occurred in an old man with the usual sequence of events, detatchment of the retina, blindness, glaucoma, with intense pain, came on some months after the detachment had occurred. The eye was enucleated in April last, and the patient was last seen about a month ago, and was quite well. He will probably succumb to a recurrence of the disease in the liver within three years from the date of the operation.

Sarcoma of the Choroid — This case is remarkable for the comparatively youthful age of the patient, who was only 31 years old. When first seen in October there was a very large detatchment of the retina of unusually opaque appearance. Early in December the eye became glaucomatous and intensely painful. The diagnosis of tumour was based chiefly on the sequence of events.

Foreign Body in the Vitreous. The patient came with a history of injury 23 years previously and the eye was found in a condition of chronic irido-cyclitis and quite blind. Enucleation was performed to relieve the pain and guard against probable sympathetic ophthalmia. This case illustrates the general rule that a foreign body remaining in an eye sooner or later destroys it.

Glioma of the Retina—The eye was removed in August, 1895, and the patient is still living and in excellent health. The eyeball was, as seen, half filled at least with the growth. Its non-recurrence is a most gratifying fact as most of these cases recur locally and generally, and

terminate fatally. No particular precautions were taken to prevent recurrence.

Chronic Irido Cyclitis, with Glaucoma, Ciliary Staphyloma, etc., in an old man. Thirty years ago he ran a needle into the eye and after the resulting inflammation had quieted down, he could distinguish between light and dark for ten years. Then the eye became blind and has been irritable off and on ever since. The total loss of vision and frequent attacks of pain and irritation in a hopelessly degenerated eye as occur in every case of so-called glaucoma consummation, were ample reason for enucleation of the eyeball. The patient has enjoyed perfect comfort ever since.

Strangulated Femoral Hernia.

Dr. A. E. GARROW read the report of the case, and Dr. NICHOLLS exhibited the specimens. (It will be published later.)

Dr. JAMES BELL did not think that Dr. Nicholls had put the cause of death fairly. It should not be attributed to the operation, but to the obstructed condition of the bowel.

Dr. F. R. ENGLAND asked if the second operation had been done for the relief of the symptoms only. He thought that it would have been wiser to have gone a little farther and found the obstructed point.

Dr. LAPTHORN SMITH asked if the frequency of pneumonia in these cases could be attributed to the drawing of vomited matter into the lungs, or if the infection took place through the circulation.

Dr. J. M. ELDER said that the patients do not die if the obstruction is temporary, but if the strangulation has existed for more than twelve hours the patient rarely gets well. He said that Dr. Wyatt Johnston has been following up very closely several cases that have died in the General Hospital, and has found that there was a septic phlebitis in every case. He has traced the infection, not through the omental veins, but through the mesenteric veins. A few hours will produce sufficient poison to cause the death of the patient. He asked if the secondary obstruction had occurred in the knuckle of bowel that had been originally strangulated.

Dr. GARROW, in reply to Dr. England, said that during the week there had been two distinct histories of obstruction. The condition became rapidly bad, and was too grave to permit of a search for the obstructed knuckle. The only chance that remained was to give temporary relief to the distended bowel, and endeavour to build up the patient, and at a subsequent time to do the more serious operation.

Dr. NICHOLLS, in reply, said that the obstruction occurred in the portion originally strangulated, the walls were distinctly necrotic. In reply to Dr. Smith he said that he had never met with a case of pneumonia which he could attribute to fæcal inhalations. In this case

there were absolutely no sign of such a thing. The infection took place through the circulation.

Stereoskiagraphy.

Dr. G. P. GIRDWOOD read a paper on this subject. (See page 193.)

Dr. WESLEY MILLS thought a person might have stereoscopic vision yet not be able to see stereoscopically. It is a matter of special experience. Seeing is a psychological rather than a physiological action. He certainly could not see some of the pictures as Dr. Girdwood saw them.

Empyema of the Accessory Cavities ef the Nose.

Dr. R. H. CRAIG read a paper on this subject. (To be published in April.)

ASSOCIATION OF AMERICAN ANATOMISTS.

ELEVENTH ANNUAL SESSION.

The eleventh annual session was held in New York City, December 28-30, in conjunction with the "Naturalists" and other affiliated societies. Most of the meetings were held at the Medical Department of Columbia University. Forty-one members attended and twenty new members joined, making a total membership of one hundred and forty-one, of whom ten are honorary. The localities and names of the new members are as follows:—From Ann Arbor, Prof. J. P. McMurrich, University of Michigan; from Baltimore, Professors F. P. Mall and L. F. Barker, and associate R. G. Harrison, of the Johns Hopkins University; from Buffalo, Dr. N. S. Russell, assistant in anatomy, University of Buffalo; from Ithaca, Dr. L. Coville, lecturer and demonstrator in anatomy, Cornell University Medical College; from Montreal, Dr. J. G. MacCarthy, senior demonstrator of anatomy, McGill University; from New York City, Prof. J. D. Erdmann, of Bellevue Medical College; Dr. Evelyn Garrigues, assistant demonstrator of anatomy, Woman's Medical College; Dr. Ales Hedlicka, associate in anthropology, Pathological Institute of New York Hospitals; and the following assistant demonstrators of anatomy in Columbia University:—Doctors G. E. Brewer, C. Carmalt, H. D. Collins, G. W. Craig, W. Martin, W. H. Rockwell, and A. S. Vosburgh; from Philadelphia, Prof. J. C. Heisler, of the Medico-Chirurgical College; from Savannah, Dr. E. R. Corson; from Washington, D.C., Dr. C. I. West, demonstrator and lecturer in topographical anatomy, Howard University.

The address of the president, Dr. Burt G. Wilder, discussed "Misapprehensions as to the Simplified Nomenclature;" the speaker urged especially a fuller recognition of what had been done by the English anatomists, Barclay, Owen, Pye-Smith and T. Jeffery Parker, and hoped the nomenclature of the future would be called the "Anglo-American."

The Association voted that abstracts of papers be required in advance, and that brief abstracts be included in the programme; that the time for reading papers be limited to thirty minutes; that the secretary-treasurer be allowed his railroad fare and ten dollars toward his hotel expenses at each meeting. The association also accepted the propositions of the editors of the (English) *Journal of Anatomy and Physiology* as to making that journal the official organ of the Association, and nominated Prof. George S. Huntington as the American editor. The details of the arrangement will be given in a circular to be issued by the secretary of the Association. Dr. E. W. Holmes, of Philadelphia, was

elected member of the Executive Committee, and the president was authorized to fill the vacancy in the Committee on Anatomical Nomenclature caused by the resignation of Dr. Dwight.*

The subject assigned for discussion, "The teaching of Anatomy in our Medical Schools," was opened by Dr. Holmes, "The defects of our present methods," and further considered under ten divisions, viz:—1. Preparatory Education; 2. The value and place of General Biology and Comparative Anatomy; 3. Histology and Embryology in the medical course; 4. The relative value of didactic methods; 5. Practical anatomy and how to teach it; 6. The order of topics; 7. The correlation of structure and function in teaching; 8. The use of charts and blackboards; 9. The qualifications requisite for a teacher of anatomy; 10. The desirability of terminologic consistency; by Dr. Gerrish (4, 6 and 8), by Dr. Huntington, (2, 3, 5 and 6), and Dr. Wilder (10). In view of the extent and importance of the subject it was suggested that at future meetings a smaller number of divisions be more fully considered.

The following papers were read and discussed, all were illustrated by specimens, and charts or photographs, and several by lantern-slides or enlarged photographic projections: By J. A. Blake, "The roof and lateral recesses of the fourth ventricle considered morphologically and embryologically;" by G. E. Brewer, "Preliminary report on the surgical relations of the duodenal orifice of the common bile-duct;" by E. R. Corson, "An X-ray study of the normal movements of the carpal bones and wrist;" by F. Dexter, "Morphology of the digestive tract of the cat;" by T. Dwight, "The origin of numerical variations of the vertebræ," and "The living model showing the platysma in contraction," by S. H. Gage, "Further notes on the relation of the ureters and great veins;" by I. S. Haynes, "An explanation of a new method of cutting cross sections of the cadaver, with demonstration of the technique;" by Ales Hedlicka, "The normal human tibia;" by G. S. Huntington, "Morphology and phylogeny of the vertebrate ileocolic junction;" "Visceral and vascular variations in human anatomy;" and "The sternalis muscle;" by W. Martin, "The cæcum and appendix in 100 subjects;" by J. J. MacCarthy, "The internal structure of the hippocampus;" by B. B. Stroud, "Note on the staining of isolated nerve-cells," and "Preliminary account of the degenerations in the central nervous system of frogs deprived of the cerebrum;" by B. G. Wilder, "Some current misapprehensions as to the objects of the Cornell collection of brains." For lack of time there were read by title only, Dr. Wilder's paper, "Further tabulation and interpretation of the paroccipital fissure (occipital division of the intraparietal complex," three papers by Dr. Huntington,

* Dr. E. C. Spitzka, of New York City, has since been selected.

"The genito-urinary system of the American pit-viper;" Contribution to the anatomy of the reptilian vascular system;" "Cerebral fissures and visceral anatomy of the Eskimo from Smith's Sound," and Dr. Haynes' discussion of teaching.

At its closing session, December 30, the Association adopted without dissent the report of the Committee on Anatomical Nomenclature presented by the majority (Gerrish, Huntington, and Wilder.) It comprises four divisions, viz.:—

A. Brief statement of reasons for preferring certain terms (about fifty in number), already adopted by the Association.

B. Recommendation of mesocœlia as a name for the cavity of the mesencephalon, with reasons therefor.

C. Recommendation of 181 names, of bones (120), and muscles (61), identical with those in the B. N. A. (Ba.)

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PRIVATE WARDS IN PUBLIC HOSPITALS A CAUSE OF HOSPITAL ABUSE.

Our correspondent, Dr. Bell, with his usual courtesy, characterizes our contention, that the existence of private wards in public hospitals is a cause of hospital abuse, as extraordinary and illogical, but is careful not to attempt to refute any of the arguments put forward. His letter deals with other aspects of the question. The charge of fifty cents a day to patients from the city who can afford to pay, and to all patients from outside the city who enter the public wards, is objectionable; and our correspondent states some of the objections very clearly. Our correspondent's idea, that to the public wards should be admitted not only the poor who cannot pay anything, but also those who can afford to pay $1.25 per day, we will not characterize as "extraordinary and illogical" but as impraticable.

We must face the question of hospital abuse fairly and squarely. There are many reasons to account for the wonderful proportions that it has assumed during the past decade and these must all be carefully studied and considered. One of the reasons seems to us to be the existence of private wards in public hospitals, and one of the remedies to be the diffusion of the idea that public hospitals are for the poor and private hospitals for the well-to-do. Our contention is that the class of patients who occupy private wards popularize hospital treatment. By example as well as by treatment they teach, that in many instances there are advantages to be obtained in hospitals that cannot be obtained in private houses. Others, learning this, try to obtain these advantages at the least possible cost. We contend that public hospitals, supported by subscriptions from the charitable public, are for the poor and should be maintained for the poor, and that private enterprise can be trusted to provide, for those able to pay, quite as good facilities for the treatment of medical and surgical diseases as are provided for the poor by public benefaction. Public benefactors provide a very comfortable House of Refuge for the

poor and the old and destitute, but the Windsor Hotel provides a better room and a better table for those who can afford to pay for them. Private enterprise will also provide thoroughly equipped private hospitals for the well-to-do as soon as it can be done without financial loss, but it cannot be done while the public wards of our hospitals contain as many patients, who are able to pay for their treatment, as at present.

HOSPITAL ABUSE.

The movement set on foot by the Montreal Medico-Chirurgical Society looking towards a lessening of hospital abuse is taking definite shape. A meeting of the representatives of the Montreal General, Notre-Dame, Royal Victoria, and Western Hospitals, together with representatives of the Montreal Medico-Chirurgical Society, and of the Profession, was held in the rooms of the General Manager of the Molson's Bank, on Thursday the 16th of February. All present were unanimous in the opinion that something should be done to lessen this growing evil and that the present time was opportune. It is to be regretted that the authorities of the Hotel-Dieu Hospital have declined to take part in this work.

Now that steps are to be taken to do away, as far as possible, with hospital abuse, the result largely of agitation by the members of our own profession not connected with hospitals, it becomes of the utmost importance, that the physicians throughout the city and country do their part loyally. The matter is really largely in our own hands. Hospital physicians and surgeons are often charged with encouraging this abuse. A moment's reflection, however, will show that medical boards have every thing to loose and nothing to gain by the admission to the public wards of patients able to pay for medical service. Medical boards are largely dependent upon the members of the profession who recommend patients to the hospital, and who are supposed to know whether or not those recommended are poor and unable to pay medical fees. It follows that medical men must be loyal in their recommendations, and not give letters of recommendation to the public wards of the hospitals to those who are not properly entitled to them. If we only stand together, much good can be accomplished and that very soon.

Obituary

SIR JOHN STRUTHERS, M. D., L. L. D.

It is with great regret that we have to record the death of Sir John Struthers. Professor Struthers was well known to all students of anatomy by the original work he had done in that subject. He was essentially a modern anatomist, one who accepted completely the principles of evolution as expounded by Darwin and others, and who added much to our knowledge of comparative and morphological anatomy. He was well known as an authority on the anatomy of the Cetacea, and his specimens of the rudimentary hind limbs of whales adorn many of the anatomical museums of Great Britain.

Sir John Struthers, in 1884, came out to Canada with the meeting of the British Association for the Advancement of Science, and met at that time many of the medical men of Canada. His genial manner, his genuineness and earnestness, his love for the subject (anatomy) he was most identified with, impressed all. At the same time he took a great interest in Canada as a country and was much interested in her great possibilities. He was eagar to learn all about her medical schools, most of which he visited for the purpose of reporting unofficially their condition to the Medical Council of Great Britain and Ireland of which he was a member. His speech at the great dinner of the Canadian Medical Association, held at the Windsor during the meeting of the British Association, will long be remembered by those who heard it. It was not the least remarkable of the great speeches made on that occasion by our visiting brethern of the British Science Association. Although comparatively an old man when he died, (seventy-six) yet up to the very last he was deeply interested in medical education and hospital reform. He was always in the van and in Edinburgh, where he latterly resided, he was one of the most active reformers on the Board of the Royal Infirmary.

Sir John Struthers was the very best type of a Scotchman, he was determined, cautious, exact, rigid in his conduct and gifted with a strong personality, but beneath all this he had a great fund of human sympathy, and anyone who knew him well could appreciate the kindness of his heart. To his friends, he was always the same, steadfast, loyal, and willing to champion their cause. Those opposed to his views had a very vigourous adversary.

Sir John was born about 1823 and graduated M. D. at Edinburgh University. He was formerly one of the Surgeons of the old Royal In-

firmary. He taught anatomy at the Surgeons Hall, Edinburgh, and Professor Rutherford, who has just died, was one of his demonstrators. On the death of Goodsir, he gave the lectures on anatomy in the University for one session and was a candidate for the chair but failed to get it by a small vote, the successful candidate being Mr., (now Sir William) Turner. In 1863, he was appointed Regius Professor of Anatomy to the University of Aberdeen, from which appointment he retired as Emeritus Professor in 1889. Since his retirement he resided in Edinburgh where he took such an interest in medical affairs, that he was elected President of the Royal College of Surgeons and as such received the honour of knighthood in January 1898. He was one of the few remaining links of the days of Knox and Goodsir, Syme, Simpson, Miller, Christison, Hughes Bennett, and others of the noted medical worthies who adorned Edinburgh fifty years ago and added lustre to its Medical School.

GESTA MEDICORUM.

"QUICQUID AGUNT MEDICI NOSTRI FARRAGO LIBELLI."

Dr. Röntgen, of Wurzburg, who was recently called to a chair in Leipzig, has declined the offer.

After much debate it was decided to admit women-physicians into the Medical Society of Buda-Pesth.

At the May meeting of the Chicago Society of Internal Medicine, Dr. Adami, has been invited to read a paper.

A new monthly journal has appeared in New York. It is called the "Medical Advertiser," and is edited by Dr. F. T. Hopkins.

Dr. Edwin G. Wood, gold-medallist at McGill, in the class of '85, has been appointed professor of Practice of Medicine and Clinical Medicine at the University of Nashville, Tenn.

Dr. Fred. Wainwright who was for a year interne at the Montreal General Hospital, has recently taken the diploma of L.R.C.P., and M.R.C.S., after four months study in London.

A Chinese Medical Journal, entitled "A Monthly Journal of Medicine, Surgery, and Hygiene," has appeared. It is edited by Wan Tun Mo, a graduate of the Imperial College, at Tientsin.

We regret, that owing to the continued illness of his wife, Professor Adami, will be unable for the next few months to prosecute his work at the university. He has the best wishes of all for a speedy return.

A committee has been appointed in the Medical Department of the University of Pennsylvania, to collect $300,000, which is to be devoted to erecting Pharmacological, Physiological, and Pathological Laboratories.

In the recent prize competition held by the Philadelphia Medical Journal, Dr. Thomas Snyder, of Queen's University, Kingston, received the second prize of $50.00, in the section of Gynæcology and Obstetrics, for his essay on Eclampsia.

Dr. H. K. Wright, who has lately been demonstrating in Nervous Pathology at Cambridge, has been appointed recently assistant pathologist to one of the county Asylums, where he intends to continue his studies on the pathology of the nervous system.

Smallpox is such an uncommon disease in Canada that a few sporadic cases in Ontario and Quebec, for a time, gave rise to some disquiet. The disease was first heard of at Coteau, and then various centres appeared in the neighborhood of Smith's Falls, and St. Andrew's, Que.

It is reported that all the cases in Quebec are now well, and no new ones have appeared. In Ontario vigorous measures were inaugurated and the disease is now abating.

The Jenner Institute of Preventive Medicine, has lately established itself in its new building on the Chelsea Embankment.

This institution has recently received from Lord Iveagh the sum of £250,000 for the purpose of establishing research scholarships.

Dr. W. G. Reilly has been appointed Medical Registrar of the Royal Victoria Hospital, in the room of Dr. H. K. Wright, who has spent the last year in special study in England and Germany, and has been recently appointed assistant in Neuro-Pathology, in a large Hospital for the Insane, in England.

The College of Physicians and Surgeons of the Yukon Territory, Canada, was recently organized by the election of the following officers: President, Dr. E. D. Dunn; vice-president, Dr. R. R. Macfarlane; registrar, Dr. A. F. Edwards. These with Drs. J. W. Good and H. H. Hurdman constitute the council. Bona-fide practitioners of medicine are eligible to membership upon presenting proper credentials, passing an examination, and the payment of $100.

It is gratifying to see some attempt at progress in civic health matters in Montreal. For years the Morgue has been a disgrace to a civilized community. The authorities, we understand, are looking at a property on Rachel street, with a view to leasing it. The city should own its own Morgue, as it should be thorougly up to date. The Civic Contagious Diseases Hospital has also been condemned, and will have to be vacated. The result is yet to be seen.

It is deplorable that there is no place in the city to which infectious diseases other than Diphtheria and Scarlatina can be sent. Every physician, in active practice, knows how difficult it is to deal with measles, for instance, when it is often desirable to remove the patient. And it was

only the other day that a man died of erysipelas, having been refused admission to several of the city hospitals.

Such things should not be.

"INTERNATIONAL CLINICS."

J. B. Lippincott & Co., Philadelphia, in the Ninth Annual Announcement of this well known quarterly, give notice that the price with and after the April, 1899, issue will be for cloth binding, $2.25, and half leather, $2.50, per volume, the annual subscription being thereby reduced from $12.00, and $13.00, for the respective bindings, to $9.00 and $10.00. New or renewal subscribers in Canada may address their orders to:—Charles Roberts, 593a Cadieux Street, Montreal.