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THE DIAGNOSIS OF SURGICAL DISEASES OF THE KIDNEYS.

BY

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Ever since it has been possible to diagnose renal diseases the physician and surgeon have, in the main, confined their attention to two chief methods of examination, abdominal palpation on the one hand and chemical and physical analysis of the urine on the other. No one can call in question the service which each method has rendered and continues to render us in the diagnosis of kidney disease, but at the risk of repeating what of late years has begun to figure very largely in works and papers dealing with this question it is perhaps not out of place to emphasize the shortcomings and limitations of such methods. Depending upon these, there are few surgeons who, directly or indirectly, have not come in contact with cases dying subsequent to operation from renal insufficiency, i.e. uræmia, cases which perhaps possessed but a single kidney, or at all events but a single healthy organ or even less than this, but where an operation in the dark had removed what little healthy tissue remained. Again, by such methods it has been impossible to differentiate bladder and renal disease, but it is unnecessary to enlarge further: the bare fact that so many ingenious instruments have been invented to enable us to separate the urines and examine these separately, that so many preliminary operations have been devised in order to enable us to estimate the working power of the kidneys before removing or incising one, even the reluctance to remove a diseased kidney which the surgical world has shown to within recent years, indicate the inadequacy of the older methods.

It is therefore the more elaborate and exact methods of which we would speak here. These consist of (1) the use of the simple examining cystoscope, (2) the use of instruments by means of the cystoscope, e.g. the ureteral catheter, wax tipped catheters, etc., or the use of instruments of inferior precision, such as the various segregators, (3) the estimation

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of the so-called functional efficiency of the kidneys by means of examination of the blood and of the urines collected from each kidney separately and simultaneously, (4) the use of the X-rays, (5) the use of the X-rays in combination with ureteral catheterization, X-ray bougies, pyelography, etc.

Perhaps Henry Fenwick is the greatest advocate of cystoscopy pure and simple, as a means of diagnosing renal disease. Through observation of the ureteral meatus we are frequently enabled to detect œdema, dilatation, congestion, ulceration and scarring and retraction, which with alterations in the urinary stream discharging from the meatus may suffice to lead to a correct diagnosis. Thus, in tuberculosis of the kidney, as Casper has pointed out, a marked bullous œdema may completely conceal the ureteral mouth, later this may give place to ulceration and definite tubercles may appear—definite evidence of tubercular disease of the kidney of the corresponding side. So, too, through the use of methylen blue or indigo-carmin injections we can colour the urine blue and by observation of the orifices and a determination of the time taken for such coloration of the urine to occur we are frequently enabled to determine the affected kidney and to some extent to estimate the degree to which it is diseased.

But while such methods are of great use, and while in instances where bladder disease is widespread and we are unable to go farther and catheterize the ureters, we must depend on such examination, yet we feel that we should, where it is possible, go farther, and by making use of the ureteral catheter secure much more complete and accurate data on which to found our diagnosis. The objections raised are first, that one is liable to carry infection up the ureter and may thus infect a sound kidney. Secondly, it is difficult, or at least requires more skill than simple cystoscopy, and in addition causes the patient more discomfort.

To these objections it is perhaps best to reply in the light of one's own experience, which happily coincides with that of those who have given this practice a far wider trial. My experience then would show that the additional discomfort caused by catheterization is minimal, and that in our series of cases, now numbering some hundreds, we can find no single instance where infection of a sound kidney could be referred to our interference. It is therefore, especially, the use of the ureteral catheter and the so-called functional diagnosis, or determination of the functional capacity of the kidneys, to which we wish to call your attention to-day.

The means of measuring the function of the kidneys are the following: (1) the observation of the time required to excrete a given quantity of indigocarmin (e.g. 4 cc. 4% sol.) (Voelcker and Joseph) or methylen blue (Achard and Castaigne). This is given subcutaneously

and particular attention is paid to the time elapsing before the first discoloration occurs. (2) The determination of the time necessary for a given quantity of phlorizin to appear in the urine as sugar, and the period over which this glycosuria continues. Phlorizin has the property of circulating in the blood as phlorizin, but of being altered by the kidney cells to sugar. We have, therefore, a means of measuring the activity of the renal cells. The shorter the time required for sugar to appear, the greater the rapidity of secretion, the better the function of the kidney (Casper and Richter).

Other substances than those enumerated here have also been tried, but the above are the most important. Illyes and Kovesi, for example, endeavored to determine the elasticity or the capacity of the kidney to respond to a large increase in body fluid brought about by taking large quantities of water.

(3) The determination of the freezing point of urine (Δ) and of the blood (δ) after Koranyi. This also plays an important part and is chiefly advocated by KümmeI and his associates. Relying on the fact that the freezing point of any liquid is depressed below that of distilled water according to the number of molecules which it contains, it offers a means of measuring the organic and inorganic molecules in the urine (or blood). Naturally, as the concentration of the urine varies from time to time so must the freezing point, but taken in conjunction with the freezing point of the blood, which is constant in health (-0.56°), but which in renal insufficiency may be depressed even to -0.65° or lower, it has, if we believe KümmeI's statements, proved a valuable means of avoiding death from uræmia in operative cases. To the same subdivision belongs the estimation of the electrical conductivity of blood and urine which fulfils the same purpose, while still further tests are the estimation of the toxicity and the quantity of chlorides and other salts.

In the earlier work all these tests were applied solely to the common urine—the bladder urine—with or without careful regulation and measurement of the foodstuff and water taken within a definite period of time, and many a complicated formula has been worked out to permit the observer to determine whether the renal function was sufficient to support life and whether the individual was in a position to bear any surgical interference with his renal secretion. It must be confessed, however, that apart from the information furnished by the determination of (δ) the freezing point of the blood we were still left much in the dark as to the actual state of the kidneys. Should, however, δ be below normal there was good reason to conclude that the kidneys' function was barely sufficient to sustain life and forbade any surgical interference. It is at this point that a very important point was brought into prominence

by Casper through his work with the ureteral catheter, a point soon recognized by other urologists and physiologists, viz., that in health both kidneys secrete urines which in all important points, such as acidity, specific gravity, amount of urea, chlorides and other salts and in their freezing point are practically identical, and that such kidneys excreted indigocarmin and secreted phlorizin as sugar in equal quantities and within the same period of time.

This was established not only by clinical experience after collection of the urine from the two kidneys simultaneously in a large number of cases, but also by animal experiment. We were enabled, therefore, by comparing the urine of one kidney with that of the other to determine whether a kidney was or was not diseased and to what extent the disease affected its function. A simple example will suffice. The first case is that of a woman who had an abdominal tumor. Examination was undertaken in order to exclude the kidney as the organ affected. The bladder and right and left urines showed the following values:

	Common or bladder Urine	Right	Left
Reaction	Acid	Acid	Acid
Sp. G.	1012	(1) 1015+ (2) 1018	(1) 1015 (2) 1018
Sediment	clear	clear	clear
Urea	—	1%	.8%
Alb.	0	0	0
Sugar	—	.25%	.25%
Δ	—	—	—
Mx.	—	Epithelium	—
Culture	No growth	occasional r.b.c.	do

Both right and left urines were practically identical. Both kidneys are sound.

In the following example the values are very different. This was a case of tuberculosis, acute and rather extensive.

H. ♂ 17.09	Common	Right	Left
Amount	—	10 c.c. in 30'	6 c.c. in 30'
Reaction	Acid	Acid	Acid
Sp. G.	1016	1005	1020
Appearance	pale, turbid	pale, turbid	dark
Urea	—	0.1%	1.0%
Albumen	+	+	+
Sugar	—	0	2%
Mx.	pus	pus	epithelium
	T. bacilli	Many tubercle bacilli	r.b.c.

From this not only is the diagnosis clear, but we also know that the right kidney is doing but little to aid in the renal excretion of the body, as we have only to compare its work with that of the left, which shows no sign of disease.

This then is a tremendous aid, and when, as in the above example, we find no evidence of disease in the better kidney such as pus cells or blood,

where its specific gravity and urea content are within normal limits, we need not hesitate to conclude that such a kidney being sound we can do what we will with the sister organ.

There is still much to be desired, however, in the case of bilateral disease; where our examination shows both kidneys to be affected equally or unequally. Can we or can we not resort to surgical measures? Here we must reason somewhat as follows. First, if the discrepancy in secreting power is very great, if one kidney shows that it is secreting little else than water while the other is but slightly affected and doing most, if not all, the renal excretion of the body, then we can safely conclude that interference with, even removal of the worse kidney will have little effect. But, secondly, where we have two kidneys, both equally affected or nearly so, and especially when in addition the freezing point of the blood is lowered, we are forced to conclude that all the renal tissue is taxed to its utmost and any removal of the same will cause renal insufficiency and death. In such a case, therefore, if it be compulsory to operate we must content ourselves with simple incision and drainage, bilateral if necessary.

Separate urines can also be obtained by means of the segregator, and in certain instances we may be compelled to depend on this instrument, but in our opinion the danger of incomplete separation of the urines, to say nothing of contamination from the bladder, and in renal disease the bladder is always more or less affected, renders such urines too uncertain to permit of accurate conclusions.

This is perhaps the place to advance an answer to such questions as the following. Upon which test or tests do you place most reliance in estimating the functional power of the kidneys? KümmeI still holds by the freezing point, Casper by phlorizin, many by methylene blue, etc., Rousing to urea determination and specific gravity.

All these tests have given brilliant results, but such a statement as that just made is scarcely true. None of these men depend solely on one test. The most important diagnostic aid is a careful microscopical examination of the urine, then the other tests. It has been our custom to trust to no single test, but to draw our deductions from the *total ensemble*. The specific gravity and urea content are always estimated. Freezing point and sugar content in most instances, indigocarmine rarely, and then only when special reasons call for it. Response to the induction of fluids is used somewhat more often. By taking the evidence supplied by all these tests a more correct idea is possible, each test may fail us for one reason or another, but it is rare that the failure of one is not corrected by the result supplied by the others.

The following cases will illustrate my remarks better than more extended discussion. I have curtailed the clinical history, both because of lack of time and in order to emphasize the objective findings which of themselves are sufficient to permit of a diagnosis.

(1) Acute hemorrhage nephritis bilateral:

L. ♂. act. 30, 39.08. gave a history of persistent hæmaturia for one year. This varied in quantity. Albumen and casts were also present. Cystoscopy showed a normal bladder and ureteral catheterization the following:

	Common	Right	Left
Am't	—	10 c.c.	10 c.c.
Reaction	Acid	Acid	Acid
Sp. G.	1020	1024	1026
Sediment	bloody	turbid	turbid
Urea	—	2.1%	2.1%
Alb.	trace	+	+
Sugar	—	1%	1%
Mx.	r.b.c.	r.b.c.	r.b.c.
	hyaline & granular casts. no pus	blood casts Epithelial casts hyaline casts	blood casts hyaline casts with adherent r.b.c.
Culture	No growth		

Both kidneys were therefore equally diseased.

(2) Acute septic nephritis unilateral:

L. ♂. act. 30, 93.07. Complained of attacks of right-sided pain resembling renal colic and a cloudy condition of the urine, which came on subsequently to the attacks and had persisted.

	Common	Right	Left
Am't	25 c.c.	10 c.c. in 45'	10 c.c. in 45'
Reaction	Acid	Alk.	Alk.
Sp. G.	1017	1015	1022
Appearance	straw color	pale	pale
Urea	—	1.2%	1.5%
Alb.	trace	+	0
Sugar	—	.25%	.5%
△	—	—1.03°C	—1.65°C
Mx.	pus bacteria few r.b.c. no T. B.	pus bacteria r.b.c. no T.B.	no pus 1 cast

This led to a diagnosis of right-sided acute pyelonephritis, the kidney tissue being evidently damaged. The X-ray failed to show a stone. The patient refused operation, but subsequently returned, when a second examination showed a temporary blockage of the right ureter. Operation revealed many adhesions about the kidney, thrombosis of both renal artery and vein and multiple small abscesses throughout cortex and medulla. The kidney was removed and the patient made an uninterrupted recovery. That such acute septic infections of the kidney can be diagnosed and that they may remain one sided and permit of removal and recovery is due entirely to the newer methods.

M. W. ♀. 27, 85.07, was a very similar case. She was taken ill with nausea and vomiting ten days previous to examination. Blood and pus occurred in the urine. Temperature 102 degrees. Examination showed:

	Common	Right	Left
Reaction	Acid	Acid	Acid
Sp. G.	1012	1012	1022
Appearance	turbid	turbid	blood stained
Urea	—	1.8%	2.6%
Alb.	+	++	trace
Sugar	—	.5%	1.5%
△	—	— .61°	— 1.46°
Mx.	pus	much pus and bacilli	no pus or bacilli

Culture B. Coli in pure culture

The X-ray showed no stone.

A nephrotomy was performed and but little pathological was made out macroscopically. A snipping taken showed, however, acute septic inflammation though no actual breaking down had occurred. The patient did not do well and subsequent examination of the urines gave almost identical findings. Nephrectomy was therefore performed and the patient made a complete recovery. Pathological examination showed the whole kidney infiltrated with polymorphonuclear leucocytes, lymphoid and plasma cells forming small abscesses in places.

(3) Hydro- and pyo-nephrosis.

F. G. F. act. 25. ♂. 61.09, has suffered from attacks of pyuria and chills over a period of several years. Pain was frequently felt in right loin and radiated to left testicle. Examination showed the following:

	Common	Right	Left
Reaction	Acid	Acid	Acid
Sp. G.	1022	1028	1010
Sediment	flocculent	no sed.	pale with flocc. sed.
Alb.	?	0	tr.
Urea	—	3.6%	1%
Mx.	pus in small quantity	no pus	much pus & casts
		Flow normal in spirits	Flow steady drop by drop

Tubercle bacilli could not be found. The character of the flow from the left ureter indicated dilatation of ureter or pelvis about the end of catheter. Stone could only be partially excluded as an X-ray was impossible. There was evidently then a dilated pelvis with infection and considerable destruction of kidney tissue. Operation showed a large dilated pelvis and kidney with infection. The dilatation was caused by a malposition of the ureter and consequent kinking and obstruction. The patient recovered on nephrectomy.

T. ♀. act. 40, 81.09, had suffered from pyuria for twelve years, along with rather infrequent spasms of pain. X-ray was negative. Examination showed:

	Common	Right	Left
Reaction	Acid	Alk.	Alk.
Appearance	turbid	turbid	clear
Sp. G.	1017	1005	1022
Urea	—	.25%	1.8%
Alb.	+	++	0
Mx.	pus	pus in great quantity	no pus
Culture	staphylococcus and B coli.		

No tubercle bacilli could be found.

Diagnosis:—Right sided pyonephrosis. Operation confirmed this diagnosis, little or no secreting tissue remained. The cause was evidently a kinking and obstruction of the ureter about six inches from its origin, where a definite constriction had occurred. Recovery after nephrectomy.

(4) Perinephritic abscess.

The following two cases are interesting as showing how a perinephritic abscess may affect the function of the kidney. Inasmuch as a few pus cells can frequently be found in the urine in such cases, and as such urines may give a culture corresponding to the type found in the abscess, there is ground to believe in an infection by direct contagion to the renal tissues, which are thus influenced in their secreting powers.

G. K., 16 ♀. 34.09, suffered from right sided severe pain for one week previous to admission to the hospital. She was sent in as a case of acute appendicitis and had a temperature of 102° F. No tenderness was present over the appendix, but this was marked in the right loin. Examination revealed the following:

	Common	Right	Left
Reaction	Acid	Acid	Acid
Sp. G.	1020	(a) 1020 (b) 1025	(a) 1025 (b) 1030
Appearance	—	Slightly turbid	bloody
Urea	—	1.7%	1.9%
Alb.	0	+	0 (tr)
Sugar	—	.8%	.9%
Mx.	few r.b.c. pus cells	(r.b.c.)	(r.b.c.)

There was thus slight impairment of function without evidences of gross disease in the right kidney. This with the tenderness present suggested disease outside the kidney, but sufficient to influence its function. A diagnosis of perinephritic abscess was confirmed at operation and with drainage the patient completely recovered.

A somewhat similar case is the following:

T. W. G., 33 ♂. 2.09. Pain in the right loin had been present for one month. Tenderness was not marked at first, but later became more pronounced. Urine always showed some small amount of pus and occasionally hyaline casts. Catheterization of the ureters showed:

Reaction	Common Acid	Right Acid	Left Acid
Sp. G.	1027	1025	1028
Appearance	slightly turbid	clear?	clear
Urea	—	3.5%	3.8%
Alb.	—	0	0
Sugar	—	—	—
Mx.	pus	pus and hyaline	1 or 2 leukocytes
Culture	Staphylococcus	casts	

This led to a diagnosis of "small localized abscess or more likely perinephritic abscess." Tuberculin test and the X-ray did not help us. Operation showed a large perinephritic abscess from which a staphylococcus similar to that found in the urine was obtained. Drainage was followed by recovery.

(5) Nephrolithiasis.

In this class of case the stone is present as a cause or effect of the renal disease. Mrs. L., 35, 25th March, 1908, 41.08, had been treated for cystitis with lavage of the bladder for three or four months. She had occasionally had some right sided pain rather indefinite in character. On cystoscopic examination the bladder showed an intense cystitis, the left ureter voided clear urine, the right after a short time emitted some thick purulent urine. The right side was evidently the source of the disease, but could we remove the right kidney should this prove necessary and what was the nature of the disease? Ureteral catheterization showed:

Reaction	Common alkaline	Right alk.	Left alk.
Sp. G.	1018	1007	1036
Sediment	turbid	turbid	clear
Urea	—	1%	3.2%
Alb.	++	+++	+
Sugar	—	0	.5%
Mx.	pus	pus	no pus

It was therefore quite safe to remove the kidney should this be necessary. An X-ray was not taken owing to some changes in this department, but the diagnosis of calculous nephritis was made. Operation confirmed this, but while it showed the kidney very considerably damaged, it was not irretrievably so, and had not a persistent hemorrhage compelled us to do a nephrectomy we might well have left the kidney in situ. Knowing, however, that the other kidney was perfectly sound we had no hesitation in removing the kidney rather than run the risk of further hemorrhage. Recovery is complete.

R., 30 ♂ 18th March, 1909, 33.09, had had attacks simulating renal colic though not very definite in character. Ureteral catheterization and cystoscopy showed, a well marked cystitis and the following values for the various urines:

	Common	Right 10 c.c. (in 30)	Left 25 c.c. (in 30')
Am't	—	1013	1012
Sp. G.	1017	1013	1012
Reaction	alk.	neutral	alkaline
Sediment	thick flocculent	slight	thick
Urea	—	1.3%	1.1%
Alb.	0	0	trace
Sugar	—	—	—
Mx.	pus in quantity phosphates	epithelium	pus r.b.c.
Culture	large staphylococcus	no growth	Gram. neg. bacillus

X-ray gave a shadow.

Diagnosis: left-sided calculous nephritis. Operation confirmed the diagnosis. Nephrotomy, removal of calculus from the pelvis: drainage and recovery followed.

(6) The following case may serve as an example of renal tuberculosis which we have treated at greater length elsewhere. The chief points which demand attention are: (1) that the bladder is almost invariably affected, if not by actual disease, at least symptomatically, frequency, urgency and dysuria being extremely common if not constant; (2) that in the great majority of cases, tubercle bacilli can be demonstrated in the urine; (the failure to demonstrate T. B. after careful search has therefore a very definite value in renal diagnosis); (3) tuberculosis interferes very markedly with the renal function, even when not widespread.

E. McD., 27, 25th December, 1907, 112.07, had been ill for one year with frequency (every 1-2 hours during the day and 6 or 7 times at night), urgency, dysuria, hæmaturia, pyuria and loss of weight. The bladder was much inflamed, the left ureteral orifice slightly retracted and the ureter evidently tense as it caused a distinct ridge in its passage through the bladder wall. The urine values obtained by catheterization were:

	Common	Right	Left
Reaction	Acid	Acid	Alk.
Sp. G.	1012	1022	1001
Sediment	turbid	dark, clear	pale, turbid
Urea	—	2.4%	.5%
Alb.	trace	trace	+
Sugar	—	—	—
△	—	1.92.°	— .52
Mx.	pus few r.b.c.	no pus	much pus tubercle bacilli

Diagnosis: left sided tuberculosis. Operation. Nephrectomy showed a large kidney with tubercles everywhere throughout cortex and medulla. The patient made a very satisfactory recovery and has entirely lost his bladder and other symptoms.

(7) The next class of cases is that of new growths of the kidney, of which the hypernephroma is the only type I have yet met with from a functional point of view.

Mrs. G., 67, 20th March, 1908, 26.08, had had a tumor in left side of abdomen for a year or more. This had very evidently increased in size during the last month. Symptoms were not present. The urine showed a few pus and blood cells. The bladder was normal to cystoscopy and catheterization gave the following:

	Common	Right	Left
Reaction	Acid	Acid	
Sp. G.	1018	1026	no flow
Appearance	turbid	clear	
Urea	1.4%	1.4%	
Alb.	+	trace	
Sugar	0	.5%	
Mx.	few pus & r.b.c.	r.b.c.	

The tumor, complete suppression of urine on the affected side and the presence of blood with but little or no pus excluding pyonephrosis and tuberculosis enabled us to diagnose a Grawitz tumor, even apart from the rather indefinite history. Operation and removal confirmed the diagnosis. The patient recovered but eventually died from metastasis.

There is one other method which is of great importance in the diagnosis of certain renal diseases, viz., the X-rays, whose value may be seen in some of the above cases, but of which I only wish to say a few words. It is unnecessary to say that very considerable skill in the use of these rays is necessary to demonstrate calculus and even more to delineate the kidney in cases of hydro and pyonephrosis. It is not in my power at the present moment to quote figures of our own in this respect, but our experience is as follows. Where a stone has been present, as demonstrated by operation or autopsy, in most cases the X-rays have shown a shadow, but there are a few cases where the skiagram has lamentably failed to show a calculus. In no cases was a shadow shown which led to a diagnosis of stone without its being confirmed. A positive finding is therefore of great value, a negative finding is not. For a negative skiagram to be of value it must show not only the outlines of the muscles clearly, but also the outline of at least part of the kidney: in such a case a negative finding should have distinct weight.

To the ordinary skiagram must be added the skiagram taken when a metal bougie is in the ureter, and that taken when the renal pelvis and ureter have been filled with some non-penetrable solution such as collargol. The usefulness of the former is well demonstrated by Henry Fenwick in a volume which has just appeared and which is as yet the best book of its kind. The use of collargol in what has been termed pyelography was first advocated by Lichtenburg of Strassburg some two years ago with Prof. Voelcker. We have recently been working along these lines but our results are as yet too few to permit of generalizations.

These, however, as one can readily see, may be of exceptional value in certain cases, though up to the present the field of their usefulness has been limited. (Case XIV. is an example of ureteral stone pointed out by a bougie.)

If it is permitted one to repeat, we do not for one moment mean that our only reliance is in such methods. The older methods are as important to-day as ever they were. A careful history, a careful physical examination, careful palpation and inspection of the abdomen and external genitalia are, in the light of our present knowledge, even more important than formerly, and it must be confessed that occasionally all our diagnostic aids may fail us. (This, as far as it concerns the ureteral catheter, is usually the result of bladder or urethral disease.) Nevertheless we do feel that to-day it is unjustifiable that a patient should die from uræmia, renal insufficiency, following a surgical operation unless we have endeavoured to discover how much secreting tissue he has to carry him through.

It is perhaps unnecessary to add that since we have adhered to these methods we have not had to record a single instance of death from operation in kidney lesions.

EPIITOME OF SUCCESSFUL EXPERIMENTS.

Experiment	*Type of Infection	Weight		Date 1st treatment	Dose per kilo	Date recurrence	Dose	Remarks
		Initial	Final					
X	+++	58	156	May 10	.2			No recurrence Oct. 20, 1909
XIV	+	75	117	May 11	.3			No recurrence
				May 12	.2			
XXVI	++	72	96	June 10	.3			No recurrence
XXVII	++	122	134	June 10	.4			No recurrence
Giii	++++	80	105	June 10	.2	July 14	.4	Single recurrence, 34 days
XVI	++	78	115	May 10	.2	Aug. 5	.2	" " 85 "
XIII	+	71	146	May 7	.2	Aug. 13	.2	2 recurrences, 98 and 110 days
						Aug. 25		
XVII	++	91	148	May 10	.3	June 5	.3	4 recurrences
				May 12	.3	June 16	.3	No subsequent recurrence
						July 8	.3	Oct. 20, 1909
						July 20	.3	

*+Trypanosomes present. ++. Several in one field. +++ Many in one field. ++++ Crowded fields.

THE WASSERMANN REACTION IN SYPHILIS.

BY

WM. HUTCHINSON, M.D.

Syphilis, a disease which has been known since the days of Hippocrates, which has had its habitat in the most civilized countries of the world, which has been studied by scientific medical men for centuries, has, until recently, baffled all attempts to discover its cause or to reproduce it in the lower animals.

In the last few years, however, tremendous advances have been made in the work upon it. The first was the discovery of the *Spirochæta Pallida* which, although not fulfilling all of Koch's postulates, can be said to be the cause of the disease. The next was the discovery that a certain species of ape would react to the organism of syphilis in the same manner as does man, and thus enlarging enormously the boundaries of research work. Then came the clinical observation that the disease could be contracted more than once. And last of all has come the syphilitic serum reaction.

It is the object of this paper to point out the scientific and practical importance of this last discovery.

In the year 1901 Bordet and Geugon (1, 2, 3) discovered that the combination of an extract made from the pure culture of a given bacillus with the serum of a patient suffering from the disease caused by this bacillus produced a third substance. This end product, they found, had the power of combining with the complement and thus preventing hæmolysis. Following this discovery many investigations were carried out along this line. Thus many of the infectious diseases were thoroughly investigated with very good results. The works of Moreschi, (4) Wassermann and Leuch (5) are the most interesting in this department. It was while working along these lines that Wassermann conceived the idea of applying it to syphilis. He was, however, at the very outset confronted with a difficulty. Up to the present day a method of growing the *Spirochæta Pallida* has not been discovered. Therefore he had to look about for some other means of obtaining the extract. This he found in the liver of a syphilitic foetus. As is known, the liver of such a foetus contains large numbers of spirochætæ, and it was reasonable to suppose that this body (toxin or antigene) would be present in that organ. He therefore made an extract from such a liver and was rewarded by obtaining results just as satisfactory as in the case of the other bacteria. Naturally the first question which presents itself is: What is the antigen? Is it the product of the bodies of the spirochætæ? Is it a chemi-

cal substance produced by the action of the spirochætæ on the tissues? Is it merely a chemical substance found alike in normal and syphilitic organs?

Many investigations have been carried out in an attempt to answer these questions, but up to the present day no satisfactory conclusion has been arrived at. Some investigators used normal organs and found that if large quantities were used the reaction was obtained (Bruch and M. Stein). (6) Others dissolved a portion of this extract in alcohol and separated the soluble from the insoluble portion. They discovered that when they used the insoluble part without the alcohol-soluble one the reaction did not take place. On the other hand, when they used the alcohol-soluble portion they obtained the reaction. Therefore the conclusion they came to was that, whatever this substance might be, it was an alcohol-soluble one. (Porges and Neisser, (8) Landsteiner, Müller and Pötzel.) (7)

A substance which was found in considerable quantities in these organs was Lecithin, and being soluble in alcohol it was suggested that this might be the one. It was and is still being tried in many places, but the results are not unanimous. Some report favourable results from it whilst others are not at all optimistic. Besides lecithin, many other substances have been suggested, such as the bile-acid salts (Levaditi), (9) Vaseline, Taurocholate and Glycocholate of sodium and sodium oleate (Levaditi and Yamarchi). (9) All these substances have their advocates, but none of them have been found to be perfectly reliable. If some such substance could be found to be absolutely reliable it would overcome one great difficulty, that of obtaining syphilitic livers. However, we must admit, that whether this substance is a chemical compound or some body in the liver, it is undoubtedly increased by the action of the spirochætæ on the tissues. This being so, it is reasonable to suppose that it would be present also in syphilitic lesions. Neisser, Bruch and Schucht (11) examined a number of lesions and obtained the following results:—Five primary sores gave five positive reactions; nine condylomata lata gave eight positive; five tertiary lesions gave five positive; seven brains of paralytics gave seven positive; fourteen nonsyphilitic tissues gave fourteen negative reactions. Thus it is quite clear that the tissues affected by this virus contain a large quantity of the antigene.

A rather interesting experiment was performed along these lines. A scraping, containing a number of spirochætæ, was placed in a collodion sac. This was then closed and put into the peritoneal cavity of a rabbit. In two days a specific antigene was obtained from the blood of this rabbit.

Taking all these facts into consideration we must conclude that the antigene is not found in the body of the *Spirochætæ Pallida*, but is present in small quantities in normal organs. On the other hand, we are not able to state what this antigene really is, but can only say that it is some substance which is present in small quantities in normal organs and is increased by the action of the *Spirochætæ Pallida*. We must, however, admit that it can be simulated, to a certain extent, by lecithin and the soaps.

Leaving the antigene we turn to the consideration of the other substance which enters into the reaction, namely, the syphilitic antibody. In considering this body there are two questions which require an answer: the first is that which concerns its nature and the second is its right to be designated syphilitic antibody. In attempting to answer the first question we are as much at sea as in the case of the antigene. There is only one thing which can, with any probability of accuracy, be stated. This is that the antibody is allied to the antitoxin produced in the body in order to combat the toxins thrown out by bacteria. To put it in a simple form, the bacteria during their life-cycle produce a substance which is injurious to the organism, and this causes the organism to react in order to protect itself against the effects of this toxin. The result is the production of the antibody or antitoxin in the organism.

In the second place if we call this substance the "syphilitic antibody," that implies that it is found in syphilis, and in syphilis to the exclusion of all other diseases. That it is found in syphilis has certainly been proven, but not that it is present in every case of syphilis. When the test was first applied only 45 to 50 per cent. of the cases gave a positive reaction, but as the technique became improved 80 to 100 per cent. reacted. Lately Wassermann (12) has examined 1,000 cases and found it positive in 90 per cent. One must, however, remember that many things have to be taken into consideration. The stage of the disease plays a very important part; the second stage gives 80 to 100 per cent. of positive reactions whilst the percentage is smaller in both the primary and tertiary stages. Then again the condition of the patient has some bearing on the matter. This is quite apparent when we consider the reason for the production of this antibody. If the dose of the toxin be very powerful the body may not be able to react at first; or again if the patient be in a very debilitated condition he would be unable to react sufficiently. The next question to be answered is: Do we obtain a reaction in any other disease than syphilis?

In order to answer this question workers upon the serum reaction examined numerous cases of all classes of "bacillary infections." Schulze

(13) in his early work found two cases which gave a positive reaction but in which no trace of syphilis could be found. These, however, were put down to faulty technique. Wassermann examined 1,000 cases made up of many classes of diseases, and found that everyone turned out negative. The same results have been obtained by many others. In discussing the question I used the term "bacillary infections." This was done purposely on account of the work done by Fraenkel and Much (14) on the reaction in "sleeping sickness" and also that done by Much and Eichelberg (15) in "scarlet fever." These men obtained a very fair percentage of positives in scarlet fever by using the syphilitic antigene.

Let us now turn to the consideration of the clinical side of the reaction and see what all these investigations have led to. For after all, any work done by the bacteriologist, no matter how interesting from a scientific point of view, must have a practical side to it in order to appeal to the practitioner. In the case of the serum reaction in syphilis we feel that we have a method of diagnosis which is intensely practical. By that I do not mean one which every practitioner can do in his office, but one which gives him valuable assistance both in the diagnosis and the treatment of syphilis.

That the diagnosis may very frequently be difficult, and sometimes impossible, to make is a fact too well known to need mention. This uncertainty commences in the very earliest stage of the disease and follows one to the last stage both of the disease and of the patient, and may even be found beyond that in the autopsy room.

Let us take up first the early diagnosis of syphilis, for here, probably, the greatest difficulty is encountered. How often are practitioners confronted with a lesion of the genitals concerning which they could say nothing definite, as to whether it was or was not syphilis? Here, at once, is one of the greatest problems which has to be faced. What is to be done for the patient and what are we to tell him? Are we to place him on antisyphilitic treatment and condemn him to a prolonged course of mercury and the iodides and a life of suspense? Or must we admit that we do not know what the condition is and wait for secondaries to develop? What then have the modern methods to offer as a solution to this problem?

The *spirochæta pallida*, if it be discovered in a lesion, possesses, as we now believe, a diagnostic value equal to that of the tubercle bacillus in tuberculosis. This has been made quite simple by an invention of Reichert's, whereby the spirochætae are examined in a dark field in a living condition. In the next place we have the serum reaction to tell us whether the disease is local or general. Noguchi in his latest work

obtained seven positive reactions in seven cases of primary syphilis. However, other men have not obtained such a large percentage, but it may be that the technique as improved by Noguchi would bring their percentages higher. I think we can justly say that the newer methods have done a great deal to solve these problems. I do not say that all cases will be satisfactorily cleared up, but certainly a very large percentage will be. When we come to the secondary stage the difficulties are not so great. There are, however, some lesions which are not easy of diagnosis. It is in this stage that the greatest percentage of positive reactions is to be found. This ranges anywhere from 80 to 100 per cent.

In the tertiary stage there are many obscure lesions which can be rapidly cleared up by means of this method. The percentage of positive reactions is not so high as in the secondary stage, nevertheless with improvements in technique the percentage, in this stage also, is increasing.

Having dealt with the three stages of syphilis we must now consider a class of diseases which has been termed "Parasyphilis." This comprises two diseases of the nervous system, namely, *tabes dorsalis* and *general paresis*. Long before Wassermann discovered the serum reaction, clinicians came to look upon these as having some connection with syphilis. For they found that a large percentage of cases gave evidence, either in the anamnesis or in the examination of pre-existing syphilis. There were, however, a number of cases in which this could not be detected. Since the advent of the modern methods of investigation many of these have been cleared up. Out of 233 cases collected from the literature 194 gave a positive reaction and 39 gave a negative one. Later Noguchi (16) reported 11 cases of *tabes dorsalis*, all of which gave a positive reaction. These statistics are interesting in that they include a number of cases which gave no evidence of syphilis and therefore would have passed into the literature as cases of *tabes dorsalis* without lues. Of course, this only proves that an antibody to syphilis exists in the patient and not that these diseases are caused by it directly. Have we then any means of determining whether there exists an active syphilis in the central nervous system? It was suggested that if an organ contained a strong antibody that that organ must be the seat of an active lues. An attempt was therefore made to prove that the antibody was stronger in the cerebrospinal fluid than in the blood serum. The experiments did not bear out this theory as in most cases the reaction was quite as good with the use of the serum as with the cerebrospinal fluid. As the attempt to solve the problem by means of the antibody failed, some other method had to be looked for. This was found in the proof of the existence of the antigene in the brain and spinal cord of paretics and tabetics.

Neisser (17) obtained the antigene from the brains of seven general paresics. If, now, the antigene cannot be obtained from the normal brains, we must conclude that there is an active syphilis in the central nervous system. There is not sufficient material yet to draw any definite conclusions, but we hope in the near future to be able to make some statement along this line.

As syphilis is a disease which does not confine itself to any one organ or produce merely general symptoms, but may affect every organ in the body, it has therefore a particular interest for each specialist as well as for the general practitioner. The ophthalmological department has been greatly aided by the serum reaction. There are cases which interest the ophthalmologist on account of direct involvement of the eye and there are those which affect it indirectly. These are the ocular manifestations of brain lesions.

In the first group are classed the cases of luetic iritis and keratitis (parenchymatous); in the second such as show optic neuritis, disturbances in the field of vision, and paralysis of the eye muscles. Cohen's (18) article is of particular interest in pointing out the benefit of the reaction in such diseases. He found 23 cases giving a positive reaction, but of these, eight were definitely of syphilitic origin, and therefore not of particular interest. In the other fifteen, however, no clinical evidence of syphilis was present. These cases show the great benefit to be derived from the reaction, not only in arriving at a diagnosis, but in pointing out the line of treatment to be followed. Then in the cases of optic neuritis from brain tumors it must be apparent to all that the sooner a diagnosis is arrived at and the proper line of treatment carried out, the better for the patient. In this way a loss of vision may be avoided.

Although in those cases in which a negative reaction is obtained, we are not able to say definitely that the lesion is non-syphilitic, yet it, at least, is of value in suggesting further investigation along other lines. For instance the tuberculin test would be in order or an exploratory operation which would at the same time be a decompressive one.

Next let us mention a few of the other diseases which look to the serum reaction for aid. These are tumors of the tongue and pharynx, enlargements of the liver, glandular enlargements, orchitis fibrosa, stricture of the rectum, aortic aneurysm and mediastinal tumors. The papers written by Citron, (19) Fritz Lesser, (20) Fränchel and Much (21) are of particular interest along this line.

We come now to consider the reaction in relation to prognosis. The two questions that require an answer in the prognosis of a disease such as syphilis are: first as to the severity of the particular case, and sec-

only as to whether a cure has been effected. If, therefore, the reaction can be said to have any value in the prognosis of syphilis it must give an answer to these questions. In the case of the first of these the results are not very satisfactory. If the case is being seen for the first time, and no treatment has been given, then the results are not of much value. The explanation is found in the way that the antibody is formed. Let us take, for example, a man who is very weak, that is, whose body is unable to react properly and form antibodies; this man will probably give a weak reaction and yet run a very severe course of syphilis. On the other hand, we see cases in which a strong reaction is obtained, but the symptoms are very mild. However, there is a definite field in which the serum reaction is of considerable prognostic value, that is, in estimating the effect of treatment. Most observers have found that mercurial treatment affects the reaction. Those cases which were strongly positive before treatment became weaker and weaker after each treatment and finally became negative. The articles of Citron (22) and Schulze (23) are the most interesting on this subject. The last named author found 25 cases positive out of 27 not treated; 8 positive out of 12 cases having had one treatment; 1 positive out of 5 cases having had more than one treatment. Citron, along with the majority of others, considers the prognosis as very bad in those cases that do not show a decided weakening in the reaction under treatment.

In answering the second question we must divide it, at least at the present day, into two sections. The first includes the ordinary three stages and the second the parasyphilitic stage.

When a patient comes to the physician stating that he has had syphilis but that he has not had any symptoms for some time, and when in such a case the reaction is found positive, what is to be said? Is the patient still the subject of an active syphilis which is lying dormant, or is this merely the result of the antibodies thrown out to counteract the old attack which has not yet died away? In order to answer this question one must decide how long the antibodies remain in the serum after a cure has taken place. Citron places the time at three months and believes that a positive reaction means that the patient either has an active syphilis or has had one within the last three months.

On the other hand, what are we to say concerning a negative reaction? In other words does a negative reaction prove that a cure has taken place? Unfortunately a few cases which gave a negative reaction showed tertiary symptoms later. However, I think that when two or three tests turn out negative one is justified in saying that a cure has been effected.

In respect to the parasyphilitic stage we are obliged to admit that it is too early to state anything definite, but only to recommend that cases giving a negative reaction should be kept track of in order to see whether they develop general paresis or tabes dorsalis. We will now briefly consider the relation of the serum reaction to the treatment of syphilis. In the primary stage a positive reaction will indicate the commencement of the treatment and therefore time is not lost in waiting for secondaries to develop. Then there are those who have gone through the ordinary treatment and wish to know whether another course of treatment is necessary. If a positive reaction is obtained then another one is certainly indicated, but if, after a lapse of three months from the time of the last course, a negative reaction is found they might be allowed to go as cured.

In conclusion I might say that a positive reaction is proof either of an existing active syphilis or one which has been active within the last three months. On the other hand, a negative reaction cannot be said to be an absolute proof of the non-existence of syphilis. If, however, a patient has had no symptoms for some time, and if two or three tests give a negative reaction, one is justified in concluding that a cure has been effected.

Technique.—As there are five factors which enter into the reaction, it is important not only to know how they combine with one another, but also how each is obtained.

1. *Serum.*—This is obtained by inserting an ordinary exploratory needle into one of the superficial veins of the forearm. In this manner 10 c.c. of blood is withdrawn and immediately centrifugalized. The serum is then drawn off and inactivated in a water-bath at a temperature of 56° C. for $\frac{1}{2}$ hour. By inactivation is meant the destroying of the complement for the reason that the human complement varies in different individuals, as to quantity, and therefore a known quantity must be added each time.

2. *Extract.* a. *Alcoholic.*—The liver of a syphilitic foetus is cut up and ten volumes of absolute alcohol is added and the whole shaken for 24 hours. When the tests are to be made it is shaken up and a small quantity drawn off and centrifugalized. To the clear fluid 4 volumes of normal saline is added and then it is ready for use.

b. *Watery.*—The liver is cut up as before and four volumes of a $\frac{1}{2}$ per cent. solution of carbolic acid in normal saline is added. This is then shaken 24 hours and when needed a small quantity is withdrawn and centrifugalized.

Both these extracts should be kept in the ice-box, but should not be frozen.

3. *Complement*.—As a complement the serum of a guinea-pig is used for the reason that it has been found by experiment that all guinea-pigs' serum contains the same strength of complement.

4. *Amboceptor*.—This is obtained by injecting 5 c.c. of washed sheep blood-cells either intravenously or intraperitoneally into a rabbit. At the end of 10 days some of the blood is withdrawn and centrifugalized. The serum is then drawn off and inactivated in the same manner as was previously described. The amboceptor must be tested as to its strength.

5. *Blood-cells*.—If the amboceptor has been prepared for sheep's blood, then the blood-cells of the sheep must be used for the test. This is collected, defibrinated and washed. Then a five per cent. solution of these washed cells is used.

Having prepared and tested these various factors one proceeds as follows:—

	Serum	Extract	Complement		Amboceptor	Sheep's blood 5%	Result
1	0.2	0.1	0.1	1 hour at 37° c.	0.025	1 c.c.	No hæmolysis
2	0.2	0.05	0.1		0.025	1 c.c.	Partial hæmolysis
3	0.4	—	0.1		0.025	1 c.c.	Complete hæmolysis
4	0.2	—	0.1		0.025	1 c.c.	Complete hæmolysis
5	—	0.2	0.1		0.025	1 c.c.	Complete hæmolysis
6	—	0.1	0.1		0.025	1 c.c.	Complete hæmolysis
7	—	0.05	0.1		0.025	1 c.c.	Complete hæmolysis
8	—	—	()		0.025	1 c.c.	Complete hæmolysis
9	—	—	—		0.025	1 c.c.	No hæmolysis

The volume is made up to 5 c.c. with normal saline.

Nos. 1 and 2 are the tests. Nos. 3 and 4 are controls for the serum. Nos. 5, 6 and 7 are controls for the extract. No. 8 is usual hæmolytic test. No. 9 controls the amboceptor.

When a number of tests are done on the same day Nos. 5, 6, 7, 8 and 9 need only be done once.

Noguchi has modified the reaction in the following manner:—

He used an amboceptor to human blood-cells instead of one for sheep's blood. He found that some human sera contained an amboceptor to sheep's blood whereas others did not. In this way there would be more amboceptor in one test than in another. Thus by using human blood-

cells he did away with that fallacy, for certainly human serum does not contain an amboceptor to human blood-cells. He employs six test-tubes. Into the first two he puts one drop of the patient's serum; in the second two, one drop of a serum which is known to contain the syphilitic antibody; in the third two, one drop of normal serum. Into each tube he then runs 1 c.c. of a suspension of human blood-cells in normal saline (one drop of blood to four c.c. of normal saline). Then he puts 0.04 c.c. of complement into each one and into the first of each pair one drop of the extract. The rack containing the test-tubes is placed in the incubator at 37° C. and left there for one hour. At the end of that time two units of amboceptor are added to each tube and they are put back into the incubator for two hours longer. They are then placed in the ice-chest for 12 hours. The method of reading off the reaction is the same as in the Wassermann reaction.

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THE ANATOMICAL ASPECT OF FRACTURES.

BY

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The study of fractures seems at first to be exceedingly complex and difficult. We see an elderly woman at the hospital, whose hip is much swollen and very painful. That her leg is everted, shortened perhaps and cannot be raised, has no particular and distinctive significance to us, and we marvel at the house surgeon's skill in diagnosis when we learn that she has sustained an intracapsular fracture of the neck of the femur. We do not realize that her age, sex, mode of injury, the eversion of the foot and shortening of the leg, all point to the above-mentioned lesion. And yet the study of fractures depends largely on the acquisition of signs or symptoms, analogous to the "tips" we learnt in the dissecting room, by which we are able to tell at what point a bone has been broken, where the fragments are and how to reduce the deformity. To show that these signs or symptoms are not present by chance, but depend very largely on the anatomical relations of the bone in question, is the object of my paper to-night.

To begin with, it must be admitted that the continuance of the force producing the fracture plays a part in some cases, as for instance in causing an impacted fracture at the wrist, and even the effect of gravity must not be overlooked in studying the signs in any given case.

A direct fracture is where the bone breaks at the spot where the force was applied. When the fracture takes place remote from the seat of violence, the term indirect fracture is employed. The latter is well exemplified by a child who fell on its outstretched hand and broke its clavicle.

When violence is applied to a bone it generally searches out the weak places, and in one or more of these the fracture occurs. In a long bone there are two weak points, one being the cartilaginous junction between epiphysis and diaphysis, and the other being the spot where the dense bone of the shaft meets the soft cancellous expanded extremity. Epiphyseal separations, as fractures through the epiphyseal cartilage are termed, occur somewhat infrequently. We should see them much oftener were it not that the epiphyseal cartilage is so close to the end of the bone that it is not only protected to a greater or less extent by the ligaments, but does not give the breaking force much chance to act upon it. If this same cartilaginous junction were toward the middle of the shaft, practically all fractures of long bones would be epiphyseal separations.

The second weak spot mentioned, the junction of the hard bony shaft with its softer cancellous extremity, furnishes the greater number of our typical fractures. We see examples of it in the Colles' fracture just above the wrist joint, and in fracture of the surgical neck of the humerus. Such fractures are often associated with impaction, the hard shaft being driven by the force of the accident into the softer extremity of the bone.

Fractures are naturally most frequent during the period of active life, and some forms are commoner in old age than in youth, owing to the loss of the organic constituents of bone in the process of senile atrophy. Bones that are well padded are not often seen fractured, unless, like the femur and radius, they are so situated as to be continually receiving violence from below.

We learn in physiology that muscles are in a constant state of tonus or tension, and nowhere, I think, do we see this more clearly exemplified than in fractures. Let a man knock his elbow, breaking off the olecranon process, and immediately the triceps pulls and pulls upwards, until that separated piece of bone, into which this muscle is inserted, has been displaced upwards to a considerable degree. We must conceive of a bone, especially a long one, as constantly holding its own against the opposing pull of muscles or groups of muscles, the flexors pulling against extensors, the abductors against adductors, and so on. When a fracture occurs each fragment is at the mercy of the strongest muscle or set of muscles attached to it, and that fragment, like the olecranon mentioned above, will act accordingly.

By this we see how much importance is attached to a knowledge of the insertion and action of the muscles attached to a bone. The study of osteology certainly is not limited to an acquaintance with its ridges, grooves, and depressions alone. In addition, the bony landmarks need attention, and while in a dissecting room grind one may fail to see the value of Nélaton's line, in fractures and dislocations around the hip it is of great service. Many other points might be mentioned as being of value from a surgical standpoint, as for instance what important structures lie near the bone at favorite seats of fracture, the manner in which a bone grows old, and so on. As regards the first, a good example is found in the musculospiral nerve, which following fractures of the shaft of the humerus is frequently involved in the callus thrown out, thus producing paralysis. A knowledge of these anatomical points will give us valuable information as to the probable seat of fracture, and, as Helferich puts it, "Speed and accuracy of reduction depend on a knowledge of the typical displacement."

The clavicle is a slender bone, exposed along its whole length. It acts normally as a brace, keeping the shoulder off at a proper distance from the body. The pectorals tend to draw the shoulder inwards, as does the trapezius. Imagine a boy falling and landing on the point of his shoulder. The force is at once transmitted to the clavicle, and as the sternal end is tightly held and is not easily dislocated, the bone will probably break near its middle at the junction of its two curves, the weakest point. The bracing action is immediately destroyed, and the shoulder is pulled inwards by the pectorals, at the same time drooping by its own weight. The axillary space seems lost. The sternomastoid usually manages to displace the inner fragment somewhat upwards. Almost immediately underneath the seat of fracture run the axillary vessels and the cords of the brachial plexus, but fortunately these are well protected by the subclavius muscle. In setting the fracture we endeavor, as far as possible, to correct the deformity by pulling the shoulder backward and upward, fixing it there, and keeping it away from the side by the use of an axillary pad.

The scapula is well padded, front and back, and is, in addition, freely movable. Fractures of it are accordingly rare, and when they occur are generally due to direct violence.

Fractures of the lower jaw behave in a very typical manner. When the horizontal ramus is broken (and this is not uncommon), the posterior fragment is held tightly against the upper jaw by the masseter, temporals and pterygoids. The anterior part, with the point of the chin, is pulled downwards by its own weight, aided by the digastric, mylohyoid, and other muscles attached to the chin. The condition is thus an easy one to recognize. The dressing we apply must, of course, aim at pulling the anterior fragment upwards to its place alongside the posterior part.

The fractures most commonly met with in the humerus are those of the surgical neck, of the shaft, and a transverse fracture of the lower end above the condyles. Fracture of the surgical neck is quite a common form of injury around the shoulder. In people under 20 it may take the form of separation of the epiphysis, for, as above, the cartilage uniting the head with the shaft is a weak point. The bone is broken just below the tuberosities, and hence the three external rotators (supraspinatus, infraspinatus and teres minor) attached to the greater tuberosity will twist the head outwards. The shaft of the bone is drawn upwards by the powerful muscles of the arm, and somewhat inwards by the pectoralis major and its group inserted into and beside the bicipital groove. In consequence the upper end of the lower fragment is often

displaced into the axilla, or can be seen under the coracoid process, the deformity resembling subcoracoid dislocation of the head of the humerus.

In fractures of the shaft of the humerus the important factors are the strong biceps, triceps, etc., which tend to produce overriding by their tension, the pectoralis and teres major with the latissimus dorsi, attached just below the tuberosities, and the deltoid, inserted on the outside, about half-way down the shaft. When the fracture occurs just below the insertion of the adductors around the bicipital groove, the upper fragment is, of course, adducted, while the lower one is dragged upwards outside this by the deltoid, producing considerable shortening. If, on the other hand, the fracture is below the middle of the shaft, the deltoid overpowers the pectoralis major and its confrères, raising the upper fragment outwards, while the biceps and triceps drag up the lower part, with the elbow. As before, the callus sometimes involves the musculospiral nerve as it hugs the bone, paralysing the extensors of the wrist and fingers, which produces the well-known "wrist drop."

In transverse fractures at the lower end of the humerus above the condyles, the deformity is simple. The lower fragment, carrying the condyles and the elbow joint, is dragged upwards and backwards by the triceps, while the lower end of the upper fragment projects in front of the joint. The deformity resembles somewhat a dislocation of the radius and ulna backwards, but on examination it will be found that the condyles of the humerus are, with the arm extended, still in a straight line with the tip of the olecranon, in flexion forming a triangle. These normal relations are, of course, disturbed in a dislocation at the elbow.

Although the ulna is exposed along its posterior border, it is not often fractured alone. When this does happen it is generally the olecranon process that is knocked off, or else the shaft is broken in warding off a blow with the arm.

The radius is frequently fractured, the explanation being that it receives all violence applied to the hand in an upward direction, as a fall on the outstretched palm. This is the commonest cause of an accident, and may produce a Colles' fracture, called by the Germans a typical fracture of the radius. In this, a fracture of the lower end of the bone from half an inch to an inch above the wrist joint, the deformity is considerable, and in this fracture is largely produced by the fall which caused it. The seat of fracture marks the point where the hard shaft joins the softer cancellous end of the bone, and in many cases the former is driven into the latter, producing impaction. The shortening of the radius, aided by the pull of the supinator longus, helps to evert the hand, the strong extensor tendons drag the small lower fragment (to which the

hand is attached) upward and backward, and the pronator quadratus approximates the lower end of the upper fragment to the ulna.

When the shaft of the radius is broken the actions of the supinator longus and brevis and of the pronator teres must be noted. If the fracture takes place above the middle of the bone, that is above the insertion of the pronator teres, the upper fragment will certainly be rotated outwards by the biceps and the supinator brevis, for these muscles are unopposed by any pronator. Now it is a law in surgery that when you cannot make one fragment assume the position you want, you do the next best thing by placing the other fragment, which presumably is under control, in line with the first. Since, therefore, we cannot pronate the upper end of the radius, as it lies deeply buried in muscles, we supinate the arm and so put up the fracture.

When the bone is broken below the insertion of the pronator teres, the above mentioned supinators are balanced by it, though the pronator tends to draw the upper fragment of the radius toward the ulna. The pronator quadratus is doing the same thing with the lower fragment, so that we must be on our guard against callus formation from radius to ulna across the interosseous membrane. As the upper fragment lies presumably between pro- and supination, and in this position of the hand the radius and ulna are most widely separated, we dress the fracture thus, with the thumb up, being careful not to bandage the bones tightly together.

In advancing years bones undergo senile atrophy. This takes the form of loss of the organic substance of the bone, increase in the fat, so that the bone has a greasy look, and increase in the size of the medullary cavity. All this tends to make them weaker and more brittle. The femur shows this senile change more than most bones, and in women an additional point is to be noted, that the angle of the neck of the femur with the shaft more nearly approaches 90 degrees. The weakest point in the bone is where the compact tissue of the neck joins the softer expanded and globular head. In old people this is quite weak, and in old ladies especially, for the reason given above, a misstep is often the cause of a fractured neck of the femur, quite near the head and generally inside the capsule of the hip joint. This is accordingly termed an intra-capsular fracture of the neck of the femur.

When this has happened, at once everything tends to produce eversion of the leg, which simply rolls over, principally by its own weight, but aided by the external rotators, the obturators, quadratus, pyriformis, etc. The only blood supply now left the head is that which enters by the ligamentum teres. This is quite insufficient for bone formation, and

so we generally get union by fibrous tissue, and the formation of a new joint where the fracture occurred.

The shaft of the femur is, with children especially, a favorite site of fracture. The deformity produced by a break in the upper third of the shaft, somewhat below the trochanters, is very characteristic. The chief part is played by the ilio-psoas, which is the principal flexor of the thigh on the abdomen, acting on the lesser trochanter and below it. This muscle strongly flexes the upper fragment, so that as a rule the end of the bone causes a projection in front of the thigh that can be seen and felt. The glutei at the same time abduct it to some extent, while the main portion of the bone is drawn powerfully upwards and inwards by the hamstrings, quadriceps femoris, and adductors. As the upper fragment cannot usually be brought down, we are forced to follow the rule and make the lower fragment assume a flexed position also.

In fracture of the lower end of the femur, the powerful calf muscles (gastrocnemii) attached to the condyles flex the lower fragment backwards into the popliteal space. This is of necessity in dangerous proximity to the popliteal vessels and nerves. To avoid trouble with these important structures, as we are not able to extend the lower fragment, we put the leg up with the knee flexed. In this way the deformity is overcome and the two fragments assume the same straight line.

When the patella is fractured in a stellate or vertical manner there is little displacement, for almost all the force exerted upon this large sesamoid bone is in a vertical direction. At first sight it would seem that the patella would only have to be broken transversely for the fragments to separate widely. But this is not the case, the amount of separation depending very largely upon the degree of laceration of the capsule of the knee joint. When this has been extensive there is usually much separation of the patellar fragments and not often are these able to be closely approximated short of wiring. Unless this approximation is close one does not get bony, but fibrous union.

Fractures of the leg do not present anything particularly novel in their anatomical relations. What has, however imperfectly, been given will, I think, serve to show the important rôle that anatomy plays in the study of fractures.

SOME MUSEUM METHODS OBSERVED IN THE PRINCIPAL PATHOLOGICAL MUSEUMS OF LONDON.

BY

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While looking through the principal Medical Museums of London, I was greatly impressed by the various methods at the disposal of the laboratory directors for mounting and preserving moist and dry specimens, preserving colours in fresh post-mortem material, and various other proceedings of considerable interest to museum workers.

Most of my information comes from the Museum of the Royal College of Surgeons, where under the kind supervision of Professor Arthur Keith, Curator of the Museum, I was enabled to spend two very profitable days. I devoted one afternoon to the preparation laboratories of the Museum with the chief laboratory man, observing how the work was being carried on, paying special attention to mica mounting of delicate moist specimens, to some corrosion methods, and to a method for softening bones so that they may be cut with a knife.

I spent some time at the Museum of St. Bartholomew's Hospital with Drs. Branson and Thursfield, observing especially their results with the Paraffin-Glycerine method of preserving moist specimens, a method for preserving gouty deposits in tissues, and a method for showing extension of a new growth in thin sections and the sharp definition between cartilage and bone adjoining each other; at the Museum of the London Hospital with Dr. Russell Howard, observing their method of gelatine mounting of specimens and sealing of museum jars; and at the Museum of Charing Cross Hospital with Dr. Forsyth, especially noting their method of numbering and preserving specimens and also their general system of cataloguing.

I also spent some time observing the specimens and the work in the beautifully kept and equipped Museums of Guys and St. Thomas Hospital Medical Schools.

The following is an abstract of notes made at the time:—

Preserving Fluids:—Ten per cent. formalin is the most commonly used hardening and fixing solution. The colours are brought back with 50-75 per cent. alcohol and the specimens are finally kept in 50 per cent. glycerine. For the prevention of moulds a small quantity of formalin or a small piece of thymol is added to the 50 per cent. glycerine; both are very efficient, but the latter tends to render the fluid somewhat turbid and is therefore not being used very widely where an absolutely

clear fluid is required. Kaiserling's method of fixing and preserving specimens is very little used.

Gelatine is very little used as a preserving medium; where it is used there is a great deal of shrinkage and the gelatine has a distinctly yellow colour. Brain sections and eyes are the specimens most commonly seen mounted in gelatine.

The Paraffin-Glycerine method of mounting and preserving moist specimens as advocated by Dr. Cecil Rowntree in the Archives of the Middlesex Hospital, Vol. IX, May, 1907:—Natural colours are most excellently preserved by this method and it is very advantageous as regards photography, as the final fluid has the same refraction as glass and the specimen need not be removed from the fluid to be photographed. The method has also several disadvantages: 1st, the final fluid in which the specimen is kept, and which is Liquid Paraffin of the British Pharmacopœia, cannot be obtained perfectly clear; 2nd, the method is very expensive; 3rd, it is difficult to get the jars perfectly clear without boiling them after the liquid paraffin has once been put into them; 4th, a special method of sealing the jars is necessary. The following is a brief outline of the method:—

The fresh specimen when removed at the autopsy should not be washed, as much of the blood being kept in as possible. The specimen is placed immediately, or as soon as possible, into solution No. 1, consisting of

Sodium Sulphate...	gms. xx.
Sodium Chloride...	gms. x.
Magnesium Sulphate...	gms. xx.
Formalin...	c.c. L.
Water up to...	c.c. 1000

The specimen is left in this solution for 48 hours, or more, depending on its size and consistence. On removing from this the specimen is put through solution No. 2, which is 50 per cent. naphtha-free methylated spirits; this solution brings back the natural colour of the specimen, careful watching being necessary as long as the specimen is in this fluid, until all the colour is brought back. Now put the specimen into solution No. 3, which consists of

Sodium Acetate ...	gms. xx.
Glycerine...	c.c. 500.
Water...	c.c. 500.

Leave in this solution 2-3 days. The specimen at first floats in this fluid and it has to be weighted down. These fluids may be used over and over again.

Specimen is now put into Solution No. IV, which is pure Glycerine, or may start with 50 per cent., and gradually work up to pure glycerine, leaving it in this for 3-4 days. The specimen is finally kept in Solution No. V, which is Liquid Paraffin (B.P.); this solution may have to be changed 2-3 times before the specimen can be set aside as finished, because the glycerine of Solution No. IV sinks to the bottom of No. V. and separates as a turbid layer of glycerine at the bottom of the jar.

Mounting Specimens:—Mounting dry specimens in museum jars:—Place a thin piece of wood on the under-surface of the jar-cover and fit it on tightly. Now firmly support the specimen from the piece of wood and arrange it at the bottom of the jar as required, seal the jar and paint the cover and the rim of the jar for about three-quarters of an inch down. The support for the specimen cannot be seen, and the arrangement looks very well and rather odd.

To mount very thin slices of tissues, flies, spiders, flukes, worms and other parasites without the background on which they are mounted being seen, the specimens appearing to float in the preserving fluid:—Take a thin sheet of fine mica and carefully, without scratching the edges, cut a piece to fit (not too tightly) the jar in which you want to mount the specimen. Now arrange the specimen on the mica and with a sharp needle make two to four holes behind it and sew on the specimen with fibres of fine silk, white or dark as may be required. Support the mica slab from the corners to the cover, imbedding the silk in the cement. In some of the specimens I have seen mounted in this way, it was almost impossible to tell even at close range how they were mounted. Some specimens look well on a white background, these may be mounted on white opal slabs. Small holes are drilled in the opal as required and the specimen is sewn on to it in the same way as to the mica.

To mount very fine and soft specimens that cannot be handled without destroying the natural outlines, e.g. jelly-fish, human ovum to show villi, etc., make a small mica box by folding up a cross-shaped piece of mica, ruling fine sharp lines where the folding is necessary and fine silk stay sutures to hold the walls together. The specimen is now dropped into the box, which is supported from the corners or the lid by china bead silk, which may be attached to the under-surface of the cover or held in place between the cover and the rim of the jar by embedding the silk in the sealing cement.

To suspend specimens:—Untwisted china bead silk is used for suspending light specimens and dentist's twist silk is used for the heavy specimens.

Petri dishes containing gelatine mounted specimens are covered with lids which extend beyond the edge of the Petri dish little more than an

eighth of an inch, and when these are sealed they are mounted in square black wood frames, being kept in position in these frames by brass catches; the contrast makes the specimen look very pretty, the jelly does not look so yellow as it is, and a shadow of the specimen may be thrown on to a screen and be of service for teaching purposes. If the lid is of ground glass or covered with white paper, the contrast is still greater and adds beauty to the specimen.

Methods of sealing Petri dishes and Museum jars:—Covers are sealed on the Petri dishes by either balsam alone or by a paste of moderate thickness composed of balsam and agar, the latter substance being supplied in quantities sufficient to make a good paste.

Jars are sealed with a paste made of a patent glue called Secotine (any fish glue may be used, e.g. LePage's glue) and plaster of Paris, made moderately pasty; apply the paste to the rim of the jar, put on the cover and apply pressure. The cover and the cement are next painted with white enamel paint to make everything look uniform and to hide the deficiency of fluid in the jar, the fluid not coming in contact with the cover or cement. This is the cement most commonly used at the London Hospital Medical Museum. To remove the covers from these jars all that is necessary is to immerse the jar in water for twelve or fourteen hours.

The cement most commonly used at the Museum of the Royal College of Surgeons is composed of old gutta serena 5 parts, asphalt 4 parts, melt and mix thoroughly, do not burn as it will not stick. Heat the top of the jar, apply the hot cement, smooth the inside of the rim of the jar and apply a hot cover. The outer edge of the cement is usually varnished.

To seal museum jars where the Paraffin-glycerine method of preservation is used, liquid paraffin being the final fluid:—Take a thin sheet of celluloid, one to two mm. thick, cut a piece the size of the jar lid, moisten this sheet with a solution composed of equal parts of acetone, amyloacetate and acetic acid, place in position, put the lid on and apply firm pressure for several hours. The label may be put in between the celluloid sheet and the cover. The specimen may also be suspended from this celluloid sheet.

Special Methods:—To show extension of a new growth in thin sections, the specimen being translucent and the tumour opaque, also a sharp definition between cartilage and bone adjoining each other:—Harden the specimen in formalin, dehydrate with alcohol or preferably acetone, clear in Xylol and mount in liquid paraffin. The specimen has to be watched in the various steps until the necessary points are brought

out. The definition between bone and adjoining cartilage is very sharp, while the lines of extension of tumour-growth show up as thin opaque radiations.

How to preserve gouty deposits in tissues while retaining as much as possible the natural colour of the specimen:—

1. Dehydrate the organ or tissue in absolute alcohol, several changes (about 3 or 4).
2. Put specimen into acetone and leave it for 3-4 weeks, depending, of course, on its thickness and consistence.
3. Put the specimen into Xylol and leave it for 6-8 weeks.
4. The specimen is ultimately kept in liquid paraffin.

The method is a long one but very efficacious, and the specimens prepared in this way are very beautiful.

To make cross sections of head bones, or other bones, skin remaining intact and no freezing necessary:—Drop the specimen into sulphurous acid and leave it in according to the size of the bones, from 15-25 days. (A dog's head, 15 days; test if bones are soft enough by sticking a pin into them from time to time.) The bones when softened may be cut with a knife and when carefully done the inside tissues (e.g. brain) are not in the least destroyed. I saw several specimens in the Museum of the Royal College of Surgeons prepared in this way, they were most interesting and very instructive, e.g. sections through the sinuses of the head, through the nose and through bony tumours, etc.

A method for corroding tissues, leaving nothing but a cast of vessels of an organ:—For this process a substance known as Fusible Metal is used. This metal has a low melting point and when cool is very hard; it comes in sticks like solder and is rather expensive, costing about \$2.00 a pound, and is melted like lead. The substance when melted is injected into the vessels with a syringe, or allowed to drop in through a funnel from a height; when cool one may either put the injected organ into spirits and gradually pick away the redundant tissue till the injected vessels (one may inject bronchi) are reached, or one may put the specimen away in macerating fluid for some time and allow it to macerate slowly and not completely, observing from time to time how the process is progressing.

Injection of vessels:—Plaster of Paris is used widely as an injection for vessels, the superfine plaster being mostly used. To inject arteries colour the plaster with vermilion; to inject veins colour the plaster with Prussian blue; inject as much as possible in the direction of the blood current. Work with the plaster must be done quickly and everything must be ready before the plaster is mixed. This method of injection may be advantageously used in the corrosion method where the tissue is picked

away in spirits. In the Royal College of Surgeons I saw several specimens of lungs prepared by both the fusible metal and the coloured plaster of Paris methods; they make a very instructive picture.

Gelatine may be used as an injection material to show anatomical relations, the injection being done in a hot bath.

Most of the fine dissections in all the museums have black backgrounds.

General Observations:—The jars in all the museums are sealed, preventing specimens from being handled. Screw-top jars are not used, an undoubted disadvantage as regards teaching. Oval and round jars are the commonest used, while the square jar so commonly used on this side hardly has a place in any museum, excepting the Royal College of Surgeons. To see specimens mounted on glass frames is a luxury in the London museums, although very common at McGill.

Nearly all the museums have a common method of putting their catalogue numbers on jars, i.e. the jar is painted with two coats of white enamel paint, this is allowed to dry and on it are marked the required numbers in India ink, the label is now trimmed and finished by a coat of varnish over all.

None of the museums have as yet adopted the decimal system of classification of specimens. Classification is done numerically, the numbers going up in most museums to five numbers.

Book cataloguing of specimens is the commonest seen, although within the last few months the card system of cataloguing has been adopted by the Museum of the Royal College of Surgeons and that of St. Thomas Hospital Medical School. The advantages claimed for the method are that, (1) in large museums a specimen may be thrown away if desired, without disordering the book catalogue; (2) new specimens may be added without necessitating numerous appendices. At present there are twenty appendices to the general catalogue in the Royal College of Surgeons. The cards are arranged in duplicates, a complete set is kept outside and another set divided into lots is distributed in small boxes among the various departments of the museum. At the Royal College of Surgeons there is also a cross index for Diseases and Tissues.

RENAL CALCULUS.—CASE REPORT.

BY

J. M. ELDER, M.D.

Surgeon to the Montreal General Hospital.

E. L. . . . , aged 22, of New Brunswick. Sent up to us by Dr. Macnaughton, of Moncton, N.B., with probable diagnosis of renal calculus or tuberculosis of right kidney.

Complaint:—Pain in right side.

Present Illness:—Ever since childhood, patient has been more or less troubled with attacks of abdominal pain at varying intervals.

About seven years ago pain began to be more in right side of abdomen—this pain varied in character—at times a dull ache in right lumbar region, and at other times a sharp shooting pain, radiating from region of right kidney down into right groin and testicle.

Nearly always vomits when he has these attacks of colicky pain—pain is so severe as to cause him to writhe.

Had no urinary disturbance accompanying these sharp attacks.

Has had, on an average, about two of these attacks each month for the past seven years.

Between these attacks of colic, he would have a persistent dull aching pain in right lumbar region, present almost constantly, more in the morning and disappearing somewhat towards night. Pain was not aggravated by motion.

Seven years ago, was operated on in Massachusetts General Hospital, and had appendix and Meckel's diverticulum removed. (Neither of these organs appeared to be diseased.) Pain was no better after this.

About two months ago, for one day only, had frequency of micturition—about every 15 minutes—and pain and burning on micturition. Apart from this, has never had any frequency of micturition or pain. Has never noticed blood in the urine.

Operation:—September 23, 1909. Nephro-lithotomy.

Clinical diagnosis:—Renal calculus.

Anæsthetic:—Ether.

Renal preparation and position.

Oblique incision about 4" long made over right kidney below last rib. Muscles separated and kidney capsule exposed.

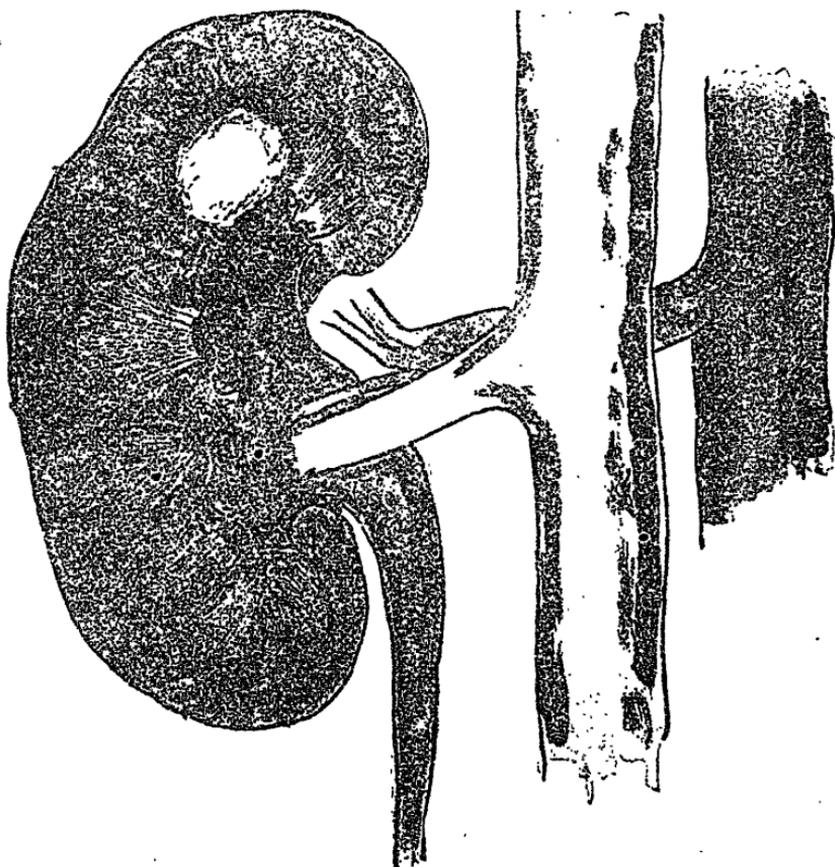
Numerous adhesions found and some difficulty experienced in delivering kidney.

Kidney delivered with special forceps, resembling small obstetric forceps.

Calculus readily felt at upper pole.

Pedicle held tightly by assistant's hands, and small incision made in kidney at upper pole. Calculus found and removed with a calculus scoop, such as commonly used for gall-bladder work.

Stone found to be about the size of a pigeon's egg—with rough exterior, apparently an oxalate stone.



Drawing made for Dr. Elder's case of stone in right kidney, by Dr. McCordick, of the Montreal General Hospital house staff.

Mattress suture of heavy cat-gut passed to control hæmorrhage in kidney cortex—capsule closed with interrupted sutures of finer cat-gut and kidney returned within wound.

Muscles brought together with finer cat-gut suture.

Skin closed with s.w. gut suture, leaving small cigarette drain down to kidney for 24 hours.

No vessels required ligation in whole operation.

Patient made uninterrupted recovery.

Has never had any night sweats. Has not lost noticeably in weight.

Has no cough or expectoration.

Present condition:—Patient is a well-developed, well-nourished man.

Skin moist. Mucous membrane, good color.

Respiration and circulatory systems:—Normal.

Abdomen:—Symmetrical, moves with respiration.

Has long scar in mid-line below umbilicus from old operation.

Walls soft on palpation—no tenderness or rigidity—no organs palpably enlarged.

Abdomen tympanitic throughout on percussion.

Behind, in lumbar region there is marked tenderness in region of right kidney and rather more resistance in right costo-vertebral angle than in left, but there is no special fulness about right kidney to be felt.

September 20, 1909.

Patient examined by cystoscope and catheterization of ureters by Dr. R. P. Campbell. Bladder found to be normal.

Catheter left in right ureter and X-ray taken.

X-ray showed quite distinctly a small stone, apparently about the size of a pigeon's egg in upper half of right kidney.

The shadow was so definite that Dr. Wilkins, the radiographer, was of opinion that the calculus was composed of oxalate of lime salts.

Date	Sp. Gr.	React.	Colour Sedim't	Urea	Alb.	Sugar	Microscopic								
							Xtls.	Blood.	Pus.	Epi- thelium.	Casts.	Bacteria.			
Sept. 20, 1909															
Common ..	1025	ac	slight	-	tr	-									Pus cells in moderate Nos.
Rt.	1018	ac	slight	1.8	tr	0									Few pus cells and rbc.
Left	1030	ac	slight	2.5	tr	½%									Rbc traumatic—some shadow cells.

Bougie introduced in right as high as pelvis of kidney and sent to X-ray. Culture for common urine—no growth.

Diagnosis: Inhibited functions right kidney without infection and with pyelitis—most probably stone.

(Sgd.) R. P. CAMPBELL.

COMPLICATING MICRO-ORGANISMS AND THEIR RELATION TO HÆMOPTYSIS IN PULMONARY TUBERCULOSIS.

BY

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Discussions and publications regarding hæmoptysis have usually assumed the extension of the tubercle in a vessel wall plus the blood pressure to be the causative factors of the hemorrhage. Jansen,(1) Minns and others have statically shown probable relationship between the atmospheric conditions and the occurrence of hemorrhage. Flick (2) has called attention to the increase of diplococci and streptococci in hemorrhage sputum.

As a result of these conceptions, the administration of drugs designed to permanently reduce the intrapulmonary blood pressure and increase the coagulability (together with such aids as morphine and chloroform (3) at the critical moments) have constituted the usual routine treatment.

The purpose of this paper is to present some observations and incomplete investigations that led us to the conclusion that hæmoptysis in Pulmonary Tuberculosis frequently results from the lesion caused by certain complicating micro-organisms rather than the tubercle bacillus itself. The solid tissue make up of a pure tubercular lesion in contrast to the condition obtained in other infections seems at the outset to favor this possibility.(4)

Blood pressure must always be a general factor, but as it is usually low in tuberculosis, it probably is not of direct significance. The therapeutic results by attempting to lower the pressure do not seem to suggest it is more.

In the cases where the hæmoptysis is a very early or initial symptom it has usually pathologico-anatomically been explained as due to a tubercle located in the vessel wall.(5) The further explanation is that with such a situation, local blood pressure changes may be produced and the chances of a hemorrhage facilitated. If such is usually the case, one might expect this symptom to be more frequent during miliary extension. (6) In involvement of the wall of the middle cerebral artery hemorrhage at the base of the brain might be expected. Neither of these results are obtained.

Practically we believe that in the hemorrhage lesion a complicating micro-organism could usually be demonstrated; and that this organism

has more to do with the solution of tissue necessary for the production of hemorrhage than the tubercle bacillus. Either the solution of tissue itself opens the vessel wall or causes first a small aneurysm by weakening the wall and its tissue support.

If such is the case the administration of suitable vaccines is the rational therapeutic procedure. This conception also admits of the likelihood of a complicating organism very early in the disease—while the lesion is still small. The time for vaccine therapy must then be advanced before the occurrence of the so-called open condition. The mode of infection would probably be by the blood stream, which is not at variance with accepted conceptions.

This field of effect is then a special activity on the part of certain complicating micro-organisms, although we recognize that men working in tuberculosis do not agree upon the part played by the so-called secondary or mixed infections even in open cases.

Thirteen cases have been investigated—some more, some less. The procedure has chiefly been the washing of suitable particles of hemorrhagic sputum. (One positive blood culture was obtained.) Before collecting the sputum the patient washes his mouth with carbolic saline. An attempt is made to get coughed up hemorrhagic particles. Immediate smears are made from the washed sputum and preserved for controls.

A large capillary pipette was found to be the most efficient method of thoroughly washing the particles. This readily allows smears to be made at different washings.

When a small particle has been sufficiently washed it is rubbed over serum agar and blood serum surfaces. (Particles showing intimate relation with the blood cells, and the presence of phagocytosed organisms by cells evidently not from the mouth should be chosen).

As is shown in the following list two organisms (rarely three) have been recovered. Repeats often confirmed exactly the original results:

1. E.P. Gram pos. diplococci.
2. W.J.S Gram pos. diplococci, Gram neg. diplococcus (Catarrhalis?).
3. G.T. bacillus Friedlander, Gram neg. diplococcus (Catarrhalis?).
4. R.F.L. Gram pos. diplo., B. Colon, also streptococcus.
5. R.T.V. Gram pos. diplo., Gram neg. diplococcus (dry adherent and color).
6. J.R. Gram pos. diplo. (Also obtained by blood culture).
7. H.K. Gram pos. diplo., gram neg. diplo. (dry adherent color), also streptococcus.
8. E.H. Gram pos. diplo., Gram neg. diplo. (dry adherent color).

9. H.P.W. Gram pos. diplo., Gram neg. diplo. (moist).
10. C.W.A. Gram pos. diplo., Gram neg. diplo. (moist).
11. P.O.F. Gram pos. diplo., Gram neg. diplo. (dry adherent).
12. A.H.W. Gram pos. diplo., Gram neg. diplo. (moist).
13. A.B. Gram pos. diplo., Gram neg. diplo. (Catarrhalis).

It will be seen from the list that out of the thirteen cases investigated twelve gave Gram positive and ten gave Gram negative diplococci. A brief and incomplete description of some of the characteristics we have worked out is as follows:—

Gram Positive Variety:—Sufficient investigation has not been done in this organism to satisfy us that any of the organisms found in the different cases are identical. Microscopically many of them appear to be so.

Morphology:—Diplococci occurring in paired hemispheres, separated by a well marked unstained interval and showing considerable variation in size cultures. Frequently the organisms show a tendency to occur in chains of from four to six elements. Single cocci are seldom found. The organism when stained by Gram's method retains its stain, though occasionally evidence of loss of stain can be seen (as noted in Chart).

Blood serum: Cultures after twenty-four hours' incubation appear as fine, round, whitish, shining, slightly raised colonies, which on further incubation may become confluent.

Serum gelatine agar: more copious growths, colonies more confluent and semitranslucent.

Frequent subculturing is necessary to maintain viability. A number of these cocci have seemed to show marked variation during their cultivation toward the Gram stain.

Gram Negative Variety:—Out of thirteen cases investigated ten gave Gram negative cocci. Of these three were distinctly of the micrococcus catarrhalis type: four of a more easily grown moist type and four of a dryer crinkled type. A short description of the last two is as follows:—

Moist Type: Morphology.—A diplococcus of medium size showing a tendency of grouping in fours or tetrads completely decolorized by Gram's method. Grows rapidly on all media, presenting on serum gelatine agar a confluent whitish or greyish, moist semitranslucent heaped up growth which collapses with peripheral extension. Blood serum shows marked tendency to digestion of the media.

The second type of Gram negative diplococcus is one which grows only on blood serum and serum agar, and owing to its intimate association with the Gram positive diplococcus is with difficulty obtained in pure culture.

Morphology.—Diplococci small in size, appearing in pairs and masses and occasionally singly.

Serum Agar: Colonies present two types of growth. One large (1-3 mm.) round or oval sharply defined, heaped up colonies surrounded by small fine round discrete colonies. Both are very viscid and eat into the media. Only with difficulty can the colonies be removed or broken up.

Blood serum: Here the growth appears as small round heaped up colonies. Sub-cultures may or may not show a slight greenish meta-chromosis.

Viability is quickly lost, being most easily maintained by frequent sub-culturing on alternate media.

In cultures incubated for more than twenty-four hours there is a moderate degree of irregularity in the size and staining quality of the organism. Degeneration of the elements becomes well marked with age.

The two types of Gram negative cocci in contrast to the typical micrococcus catarrhalis seem on the one hand to have increased ability for moist growth with media digestion, and on the other a tendency to a dry and crinkled colony formation with occasional chromogenesis.

The various sugar reactions for these organisms are now being worked out and will be reported at a later date.

As to the pathogenicity, three of the organisms have been shown to be both pathogenic and toxic to rabbits and guinea-pigs although recovery has been the rule.

Investigation to show relationship between organisms recovered and the patient: Out of six cases inoculated with their recovered organisms four showed hypersensitiveness by giving a local reaction. The dose used has been small,—from 5-15 M. for the first inoculation.

Agglutination estimations and the reaction of fixation have not yet been sufficiently applied to give us either positive or negative results.

The opsonic index and especially the index obtained from diluted serum and activated serums has given us the most conclusive results.

Thus case K. gave three organisms:—

- (1) Gram pos. diplococcus.
- (2) Gram neg. diplococcus.
- (3) Gram pos. streptococcus.

H.K. serum diluted in contrast to normal serum gave the following results: In this particular experiment the results for the Gram negative coccus could not be estimated.

Gram Positive Diplococcus.				Streptococcus.				
Phagocytic Indices.		Phagocytin Polynuclears.		Phagocytic Indices.		Phagocytin Polynuclears.		
Dilutions	K.	N.	K.	N.	K.	N.	K.	N.
1-2	5.60	5.38	—	—	3.32	3.84	—	—
1-4	6.16	3.96	74	44	1.28	1.50	28	31
1-8	3.82	.97	47	18	.13	.30	7	10
1-16	1.85	1.21	34	22	—	—	—	—
1-32	1.50	.74	—	10	.30	.31	5	9
1-64	1.44	.37	30	11	.23	.13	6	6
Salt	.23.....		8		17.....		7	

One post-mortem was obtained on a case which had shown considerable hemorrhage (J.R.) for some days before death. The left lung showed a reddish grey hepatization of the lower half of the upper lobe and the greater part of the lower lobe. Smears taken at different parts of this showed only the bacilli tuberculosis. The remaining part of the upper lobe showed two small cavities towards the apex and irregularly (bronchially?) arranged tuberculous masses. One area (the centre of which was possibly a small cavity) was blood stained and contained small clots. Immediate smears showed besides the bacillus tuberculosis both Gram positive and negative cocci. Both cocci were not confined, however, to this stained area in the upper part of this lobe.

Because of the irregular course that hemorrhage cases pursue, the fact that vaccine treated cases have had but slight reoccurrence while at the Institute and under treatment, cannot be taken for clinical evidence of efficiency. Amongst this number, however, there have been three which now present histories of more certain clinical value than the others:—

1. G.T., male, age 23; Cl. ii, moderately advanced; duration, two and a half years; gave a history of frequent hemorrhages and coloring. He was in the Institute for three months before he was taken on the laboratory clinic. During this time he had almost daily coloring and frequent small hemorrhages. On the 4th May he was inoculated with his own vaccine. On the 6th the coloring began to lessen; on the 8th it had disappeared. The last inoculation was on the 15th June. During this time coloring occurred twice for short durations. He left, making arrangements to take vaccine with his own physician to whom we supplied the organisms. This is the only case where other than a Gram positive and Gram negative coccus was used. In this instance the patient received Friedlander's bacillus as well. This case was running slight temperature which disappeared with the loss of color.

2. W.G.S., male, age 48; Cl. ii, moderately advanced; history of persistent coloring and hemorrhages. On the 21st May patient received 14 M. of his vaccine made from two organisms secured from his sputum, —a Gram positive and Gram negative diplococcus. He received four inoculations, leaving the Institution on the 11th June. During this time

the color was markedly lessened though he had one small hemorrhage. Vaccine was supplied to his physician and he wrote to say the color gradually ceased.

3. E.P., female, age 47; Incipient, Class i; suspicious apical signs only. Positive von Pirquet, positive subcutaneous reaction with .5 mg. O.T. negative Wolff-Eisner Calmette ophthalmic reaction. Symptoms chiefly frequent expectoration and hemorrhages which had persisted over a year. Eventually clinical signs pointed to a small bronchiectasis. A Gram positive diplococcus was recovered and the vaccine given. Under this treatment marked improvement took place with cessation of hemorrhages and colouring. This case is peculiar because on consideration of the laboratory investigations and the clinical findings at first and subsequently, it would be impossible to state that the tubercle bacillus was present in the active lesion or itself at the time active.

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1. Jansen Beitr. w Kl. Tub. Bd. 8. 1907.
2. Allbutt's System, Vol. 5, p. 379.
3. Fish. J.A.M.A., June 12, 1909.
5. Ronney, p. 97.
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An urgent appeal is now being made to the English-speaking community of Montreal to subscribe the necessary funds to enable the Alexandra Hospital for Contagious Diseases to liquidate its debt to its bankers, which amounts approximately to \$100,000. If this debt were obliterated it is confidently believed the hospital would, with its annual subscriptions and payments by the city, be self-sustaining. A number of friends, who have already been generous subscribers, are again coming to the rescue. The Alexandra Hospital is doing most important work, and it is unfortunate that the executive should be hampered, as they are now, by lack of funds. Subscriptions should be sent to Mr. James Crathern, treasurer, Room, 112, Bell Telephone Building, Montreal.

THE

Montreal Medical Journal.

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EDITED BY

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THE TEACHING OF PATHOLOGY.

This is an admirable work. It is not written for the advanced student: it names few authorities and gives fewer references, even to the more recent literature: it does not enter into the pros and cons of matters of present debate: it either steers clear of such or by means of a note of interrogation indicates that the view which is mentioned, while favoured by the writer, is debatable. The object of the editor and his collaborators has been to afford in terse yet eminently readable language, an authoritative conspectus of the present state of pathological anatomy.

Inevitably we are led to compare this product of the Professor of Pathology at Freiburg with that of his predecessor, the well-known Ziegler. As the production of a single worker that was a masterpiece. No one in our day and generation had so wide and intimate a knowledge of the many departments of General and Special Pathology, and with the judicious selection of matter and admirable bibliographies at the end of each section, the volumes of Ziegler were indispensable to the worker. By the sheer force of these virtues it became the acknowledged text-book of Europe and indeed of America. We must, however, admit that for the ordinary student it was painful reading, only a few degrees removed in its literary style from that possessed by a dictionary. As with succes-

Pathologische Anatomie. Ein Lehrbuch für Studierende und Ärzte. Vol. I. Allgemeine Aetiologie. Allgemeine Pathologische Anatomie, with 364 illustrations mostly colored. Vol. II. Spezielle Pathologische Anatomie, with 552 illustrations mostly colored, and 1 lithographic plate. Edited by L. Aschoff, Professor of Pathology in the University of Freiburg, with the co-operation of numerous workers. Jena: Gustav Fischer, 1909.

sive editions new matter was added to keep it up to date and recognize each advance in our knowledge, the condensation became extreme. In this work there is no attempt to emulate Ziegler along these lines. Each section has been placed in the hands of one recognized as an authority upon that particular branch of pathology, and evidently he has been asked not to detail all that is known, but to put forward simply and clearly what is the present status of assured knowledge in that branch. The fact that he is an acknowledged authority renders it unnecessary for him to quote chapter and verse in support of his statements. As a result turgidity is noticeably absent: the work is what a text-book for the ordinary student ought to be.

As all know who have consulted systems of medicine or surgery there are defects to which all works constructed upon the co-operative principle are inherently liable, defects that only editorship of the first order can overcome: namely, uneven treatment of the different sections, irregularities in style, and contradictory teaching. Here the editorship has clearly been of that first order. The evenness of the workmanship is remarkable: it is rare to encounter a section that is not magisterial. Still more striking is the absence of extreme personal views and of contradictory teaching.

There is only one criticism of a broad nature which we would venture to make, a criticism which, when the volumes are so frankly labelled General Pathological Anatomy and Special Pathological Anatomy, may seem uncalled for. It is this, that works of such excellent quality tend to divorce still further the study of anatomical and of functional pathology. The publisher in his announcement of the work lays stress upon this divorce as inevitable. So huge is the accumulation of material in these two main divisions of the subject that it is impossible to treat both within the limits of a single text-book. He regards it as necessary that the pathologist of the future must be an anatomist pure and simple, and that functional pathology or "pathological physiology" must be taught by clinicians or become the subject of a special chair, suggesting that pharmacology with its more modern developments seems predestined to take this for its own. Judged from the work pouring out from the various pathological laboratories in Germany the divorce is already accomplished. We cannot but hold that this is in the highest degree harmful to the student to whom as a future practitioner pathological anatomy uncorrelated with the study of disturbed function is largely valueless, and to the professor, who, becoming a pure anatomist, voluntarily estranges himself from the great problems of modern medicine and their elucidation. For this is certain that those problems are to be solved by

any one but the anatomist. He at most can be an auxiliary after the event. It is by the pathological chemist and the pathological physiologist that these problems are to be solved, and if pathological anatomy is to be regarded as the subject to which the official teaching of pathology in our universities is to be restricted, then will pathology become as much a closed science as is anatomy in too many of our medical schools.

We are led to make this somewhat long criticism because there are but two leaders of German pathology of to-day who to us, outside, stand as examples of what the pathologist ought to be, men whose writings show them to be deeply versed in both divisions of pathology, who investigate and write with equal authority upon the anatomical, bacteriological, embryological and physiological aspects of our science, and one of these two is Professor Aschoff. As a matter of fact, it has to be pointed out that he has found it impossible to keep within the narrower limits. There are long and interesting chapters in the first volume upon what are strictly physiological pathology: such, for example, is the late Professor E. Albrecht's article upon internal causes of disease and heredity, Professor Askanazy's admirable chapters upon the exogenous causes of disease, while both Gierke in the discussion of fever, and Kretz in that upon immunity have to admit that to treat these from an anatomical point of view is to make bricks without straw, and they supply the straw accordingly.

We cannot leave these volumes without a word of hearty commendation for the good printing and the exquisite coloured illustrations. The latter are far ahead of anything known to us thus far in a pathological text-book.

THE TEACHING OF PHYSIOLOGY.

Reviewing the instruction in physiology given to medical students in England and the States,—and medical students form ninety-nine per cent. of those coming under professors of physiology—not a few of us have felt that the teaching in this subject has during this generation become increasingly estranged from the needs of the would-be practitioner. The physiologists have tended to become specialists, each cultivating a narrow field, and teaching has suffered in consequence. It may be that the muscle-nerve preparation affords the simplest means of introducing to that student the methods of exact measurement of vital phenomena. But after all muscle is the tissue which least troubles the

A Text-Book of Experimental Physiology for Students of Medicine. By N. H. Alcock, M.D., D.Sc., and F. O'B. Ellison, M.D., St. Mary's Hospital Medical School, London. With a preface by E. H. Starling, M.D., F.R.C.P., F.R.S., London. J. and A. Churchill, 1909.

physician by its morbid states,—and nervous disorders are so complex that their study almost inevitably has become the life work of the neurologist. There are other systems which lend themselves to study, and while it is right that the student should have a general knowledge of muscular and nervous phenomena, it is vastly more important for him to be familiar by direct study with the main facts regarding the circulatory, the respiratory, digestive and urinary systems, and the ductless glands. Wherefore, we have been indignant when reading the syllabuses of certain schools to discover that half or even more of the practical work has been given over to muscle-nerve experiments. Evidently these objections have gathered strength and, as we learn from Professor Starling's preface to the work under review, the University of London in the process of clearing its house and adapting itself to new conditions has determined to put an end to this state of affairs, and has, we think most wisely, put out a syllabus indicating the ground to be covered by the students who present themselves for examination. And as these students hail from the many medical schools of London and indeed of England, this action on their part means a most important reform in the teaching of Physiology in England generally. This book by Dr. Alcock, Physiologist at St. Mary's Hospital, and his Associate, Dr. Ellison, is intended to cover the practical work demanded by the new syllabus, and as such well deserves study.

The treatment is brief without sacrifice of clearness: the instructions for the performance of thirty-seven lessons (or periods of two hours' practical work) are given in 135 pages. After a few pages upon the dissection of the freshly killed rabbit for physiological purposes, nineteen pages are given to four lessons upon muscle-nerve work; twenty-six pages (four lessons) to the heart and circulation; ten pages to the digestive system, saliva and pancreatic juice, movements of the alimentary viscera; thirteen pages (four lessons) to respiration; two lessons to the blood; two to urine and urinary secretion; one to temperature; four lessons (1.0 pages) to the nervous system, including tendon phenomena and reaction time; and six lessons to the special senses, including studies upon the ophthalmoscope, ophthalmometer, and the perimeter.

Dr. Alcock has already made a reputation for himself as first editor of that most admirable quarterly "Science Progress." The same breadth of knowledge and of interest shown in that journal manifests itself here in his treatment of his particular "Fach."

The appointment of Dr. Daniel J. Healy to the Medical Superintendency of the Institute for the Feeble-Minded at Frankfort, Kentucky,

is mentioned editorially in the "*Lexington Herald*" in terms of the highest commendation. Dr. Healy is described as a Canadian who came to Kentucky, and who has, without local ties or family influence, attained to this post by virtue solely of his high professional reputation and his known probity of character. Dr. Healy graduated in Medicine in 1896. He held the post of Anatomist at the Army Medical Museum from 1904 to 1907, and it was during his term of office there that the large donations of specimens to the McGill Medical Museum, lately wrecked by fire, were made. While Dr. Healy's post as Anatomist in the Army Medical Museum was a subordinate one and he was therefore not directly responsible for the generous donations made, we have reason to know that he did his part in attracting the attention of those in authority to the needs of the McGill Museum at that critical time. This announcement of his success in the specialty of his choice is therefore particularly gratifying to the Alma Mater of which he has shown himself so loyal a son.

A graduate of McGill University, 1907, who has had a Hospital experience and is willing to replace a doctor or act as assistant to such from November 1st, 1909, to July 15th, 1910, can be communicated with by addressing this JOURNAL, P. O. Box 273, Montreal.

Wanted to purchase by M.D. (Edin.), M.R.C.S. (Eng.), share in a practice in Province of Quebec, Montreal or suburbs preferred. Personal interview at Montreal after 7th November. For further particulars write "Navy," care of MONTREAL MEDICAL JOURNAL.

February 1st, 1910, has been set as the time limit for submitting papers for the annual meeting of the Canadian Medical Association to be held in Toronto on June 1st. Abstracts of all papers are to be in the hands of the General Secretary by April 1st, so as to provide for printing and posting.

The President of the American Gynæcological Society has appointed a Committee to report at the next annual meeting in Washington, on the present status of obstetrical teaching in Europe and America, and to recommend improvements in the scope and character of the teaching of obstetrics in America. The Committee consists of the Professors of Obstetrics in Columbia University, University of Pennsylvania, Harvard, Jefferson Medical College, Johns Hopkins University, Cornell University, and the University of Chicago. Communications from any one interested in the subject will be gladly received by the Chairman of the Committee, Dr. B. C. Hirst, 1821 Spruce St., Philadelphia.

On the invitation of the Department of State of the United States Government, the XVth International Congress on Hygiene and Demography will convene for the first time on the American continent in Washington, D.C., from September 26th to October 1st, 1910. Section III of this Congress deals with the subjects of the Hygiene of Infancy and Childhood: School Hygiene. It is believed that this will be a meeting of the utmost importance.

Reviews and Notices of Books.

MEDICAL DIET CHARTS. Prepared by H. D. ARNOLD, M.D., Professor of Clinical Medicine at Tufts Medical College, Boston. Philadelphia and London: W. B. Saunders Company, 1909. Single Charts, five cents; 50 Charts, \$2.00; 500 Charts, \$18.00; 1,000 Charts, \$30.00. Canadian Agents: The J. F. Hartz Co., Ltd., Toronto.

These diet charts are excellent, and the general practitioner will find them essential in regulating scientifically the diet of his patients. They give on one sheet all the data necessary for arranging and calculating the nutritive value of a diet and furnish a convenient means of recording the results. Chart A has space for recording the diet for five successive days or for five changes of diet for any interval of time. Chart B fulfils the same functions for a single day. There is one feature that makes these charts extremely practical, namely, the information they give as to the nutritive value of food in measures such as are used in everyday life.

THE MEDICAL RECORD VISITING LIST. William Wood and Company, New York. For 60 patients a week, with or without dates, handsomely selected red or black morocco binding, \$1.50; for 30 patients a week, with or without dates, same style, \$1.25.

This is the seventh occasion on which the present reviewer has commented upon this book, and for as many years it has been a daily companion. Nothing more complete and convenient could be imagined for recording the results of one's daily rounds.

THE BLOOD IN HEALTH AND DISEASE. By R. J. M. BUCHANAN, M.D., F.R.C.P., University of Liverpool. Oxford Medical Publications, 318 pages, illustrated. Canadian Representatives: D. T. McAinsh & Co., Toronto.

This book makes its way into an already crowded field, but it has a good chance of making its place if a general all-round excellence will suffice. It is written for the use of students and practitioners, and, this

being so, it confines itself strictly to the part of the subject that concerns these classes. There is a minimum of theory, and there is no excursion into the field of those much-vexed questions of hæmatology with which so much literature has lately concerned itself. Dr. Buchanan contents himself with a brief statement of the derivation of leucocytes which favors a combination of the views of Ehrlich and Uskoff: the debatable leucoblast he considers as a precursor of the myelocyte, and that "mixed" leukæmias have no double origin but that the various cells mark progression of the disease. However, of subject for controversy there is little in the book, and its usefulness is enhanced thereby.

Everything necessary for the ordinary clinical examination of the blood is here, briefly described and well illustrated. Following the description of the armamentarium is a detail of the morphology of all the blood cells, after which comes a consideration of anæmias, leukæmias and the effect of various diseases upon the blood.

The colored illustrations are made by the author, are good and are well reproduced. The book is printed and bound in good style, and we commend it.

DRUGS AND THE DRUG HABIT. By HARRINGTON SAINSBURY, M.D., F.R.C.P., Fellow of the Physiological Society, Senior Physician to the Royal Free Hospital, Consulting Physician to the City of London Hospital for Diseases of the Chest. With eleven illustrations. Methuen & Co., 36 Essex Street, Strand, W.C., London, 1909. Price, 7s. 6d. net.

Dr. Sainsbury has written a book that is far from conventional; the author will scarcely feel hurt if the reviewer says that for the first fifty pages he wonders just what kind of a book it is. However, he soon discovers that he is dealing with an abstract statement of the subjects of therapeutics and drug habits by one who has brought the book out of his head, who has included in it scarcely a single statement which requires a bibliographical reference. The wealth of classical allusion, particularly in the part historical, may be thought to demand of the author an occasional peep into a classical dictionary of history, but the author's Latinity suggests that this is scarcely necessary. When Latin phrases are employed, it is comfortable to find them correct.

It might be thought, from the foregoing, that Dr. Sainsbury's good style and classical allusions mark his book as literary rather than scientific, but it is not so: the physiology is that of to-day, and no reviewer will find anything to object to in the numerous pages that deal with the most modern of research. Far be it from us to say that modernity im-

plies truthfulness, but if one teaches, it is right that he should know the last word.

The author points out the parallel that exists fundamentally between serum therapy, as an example of modern therapeutics, and the use of drugs, as typifying the old methods. While he has a strong regard for "drugs," to use his own term, it is refreshing to find that his illustrations never mention drugs that are not universally admitted to be effective: of the "lumber" of the materia medica there is no word.

The physiology of habit, especially drug-habit, is set forth in a clear way, and may be understood by any intelligent layman; the explanation offered, while probably not the real one, serves, and the author claims nothing more for it. In the matter of the cure of drug habits, the responsibility is laid where it belongs: the restoration of the patient's impaired will-power the essential thing, and without it nothing can be permanently accomplished. "There are some pregnant pages upon the "drink problem."

Dr. Sainsbury's book is in no sense a specific guide for the practitioner who is interested in the treatment of drug habits, nor is it intended to be: any one who reads it will be the better able to appreciate the meaning of the disease, its nature and therefore its treatment. We have found much pleasure in reading it.

J. McC.

"MODERN PROBLEMS IN PSYCHIATRY." By ERNESTO LUGARO, Professor Extraordinary of Neuropathology and Psychiatry in the University of Modena. Translated by DAVID ORR, M.D., Assistant Medical Officer and Pathologist in the Lancashire County Asylum, Prestwich, and R. G. ROWS, M.D., Assistant Medical Officer and Pathologist in the Lancashire County Asylum, Lancaster, with a foreword by T. S. CLOUSTON, M.D., LL.D. 320 pages. Demy 8-vo. 8 Plates. Price, 7s. 6d. net, postage 6d. Sherratt & Hughes, Publishers to the Victoria University of Manchester. Manchester, 34 Cross St.; London, 33 Soho Sq. W.

After a careful reading of this book, we can heartily echo Dr. T. S. Clouston's opinion expressed in the "foreword" to the translator's work. "Lugaro is one of the master spirits of biological science who, while knowing and using the details and facts of his subject, is not content with a narrow and technical view of it, but presses into its elucidation all the correlated sciences of anatomy, physiology, biology, and psychology," and shows their exact bearing on the subject of the mental disturbances and defects of the human brain.

With a keen insight into his subject he points out the lines future research should take. He is always practical, combining caution with scientific enthusiasm.

It is impossible in the short space of this review to discuss the various chapters individually. But we can sincerely recommend this book not only to every psychiatrist but to every student of the science of medicine.

C. K. R.

A TEXT-BOOK OF OBSTETRICS. By BARTON COOKE HIRST, M.D. Sixth Edition Revised and Enlarged. Philadelphia and London: W. B. Saunders Co., 1909. Canadian agents: The J. F. Hartz Co., Ltd., Toronto.

This well-known and popular text-book has undergone thorough revision, and a good deal of new matter has been added. The feature of the new edition is that the author describes and illustrates many operations which are generally regarded as belonging to the domain of gynaecology. He maintains, quite rightly I think, that the general practitioner as well as the obstetric specialist should be prepared to operate for retroversion of the uterus following delivery, and for ectopic gestation, that he should be able to do a Porro or a supravaginal hysterectomy, and that he should be familiar with the best methods of doing a plastic repair when the genital tract has been injured during labor. A number of very good cuts illustrate the technique of these operations, and should prove helpful to those who do not have access to the service of a good hospital clinic.

The tone of the book is judicial, and on the whole conservative, a matter for which, at the present day, we should feel devoutly thankful. Dr. Hirst's book can be recommended to practitioner as well as to student, as being up to date, thorough, and practical.

A SYSTEM OF OPHTHALMIC THERAPEUTICS. By CASEY A. WOOD, M.D., C.M., D.C.L. The Cleveland Press, Chicago, 1909.

This system of ophthalmic therapeutics of which Dr. Casey A. Wood is the editor and chief contributor is the first work of any significance which has appeared in English, and may truly be said to be the last word that has been written on this comprehensive and most interesting subject in any language. The tremendous experience and guiding influence of the editor is recognized throughout all the departments of the work, and the various sections have been treated in a most conscientious manner.

Some of the more recent methods at present in vogue in ophthalmic therapeutics, as the use of tuberculin, the employment of subconjunctival

injections and phototherapy, and to which a reference to rather exhaustive monographs has been necessary, are welcomed as much on account of their reasonable brevity as well as on account of the intelligent manner in which the subject matter is laid before the reader. Dr. Wood's close observation of detail is particularly valuable and interesting in the section devoted to local anæsthetics, the action of the various mydriatics, as well as that in which he deals with silver and its salts.

The system is distinctly original in one respect in that in addition to the author's deep store of knowledge of the subject, besides the valuable information which has been gathered from a most careful reference to the literature, particular forms of treatment, prescriptions, and appliances have been added which the editor has been supplied with by a large number of his professional friends, a great many of these treatises not having as yet found their way into medical works.

The history of ophthalmic therapeutics from the earliest times is dealt with by Dr. Alfred Murray. Electricity in ophthalmic practice and electro-therapy in diseases of the ocular apparatus receive a most intelligent treatment by Dr. W. Franklin Coleman. The importance of bacterial therapy and serum and bacterial reactions in diagnosis is emphasized by Dr. Ernest E. Irons. Dr. Frank Allport has written a chapter on the important subject of the systematic examination of school children, while Dr. N. M. Black has contributed one on the examination of corporation employees.

Dr. Alfred C. Croftan has written three chapters of particular value and interest on the treatment of certain systemic diseases that involve the ocular apparatus, as diabetes, rheumatism, gout, pernicious anæmia, chlorosis, leukaemia, scurvy, hæmophilia, purpura, Schönlein's disease, Bright's disease, arterio-sclerosis, valvular disease of the heart, malaria, diphtheria, and acute articular rheumatism. The treatment of the more important nervous diseases that affect the eye has been carefully dwelt upon by Dr. D'Orsay Hecht. Dr. Frank Brawley supplies an interesting as well as an original chapter on the non-surgical treatment of those diseases of the nose and its neighbouring cavities that affect the ocular apparatus, while Dr. H. H. Peterson has carefully considered the question of general anæsthesia in ophthalmic operations.

Two points of by no means the least importance and interest are the complete bibliography, and a very carefully prepared index of the work. The system consists of upwards of nine hundred pages and the way in which the book has been presented to the public is a distinct credit to the publishers. All who have seen this work and who are particularly interested in the treatment of ocular disorders must be only too willing to

agree that a most valuable contribution has been added to ophthalmic literature and that Dr. Wood deserves the united congratulations and thanks of English speaking ophthalmologists for having brought to such a successful issue the task which he has undertaken.

F. T. T.

LECTURES ON THE PATHOLOGY OF CANCER. By CHARLES POWELL WHITE, M.A., M.D., F.R.C.S. University Press, Manchester, 1908.

The book comprises a series of lectures delivered in the University of Manchester in connection with the Pilkington Cancer Research Fund. The author explains that his lectures do not cover the whole subject of cancer, but that a general outline is given dealing with certain so-called neglected points.

The subject matter is divided into four parts dealing with tumors in general, cancer, causation, and the bearings of pathology on treatment. The author makes an explanatory note that by cancer he refers to all forms of malignant diseases, and not alone to malignant epithelial tumors. Moreover, the author feels himself compelled to propose a new classification for tumors.

A tumor is defined as "a mass of cells, tissues or organs resembling those normally present in the body, but arranged atypically, which grows at the expense of the organism, without at the same time subserving any useful function therein." In this the author places a new meaning to 'atypical' to that generally adopted. He denounces the classification of tumors based on embryology as unscientific and useless, and as far as we can see, he relies entirely on the microscopic picture for his classification. In support of this he says, "Who, for instance, would classify metal goods according to the mine from which metallic ore was obtained?" We fail to see the analogy.

The new classification is based upon the nature and arrangement of the component parts. Thus, (1) Organomata are tumors composed of more or less definite organs, arranged atypically, as dermoids; (2) Histiomata are non-malignant growths, composed of tissues arranged atypically, and, (3) Cystomata are cancers in which the cells are arranged atypically. Under this new nomenclature we find epitheliomata classed among the benign histiomata, and tumors of endothelial origin are associated with carcinomata.

At the present time when so much work is concentrated on the study of tumors to determine cause, their nature, and their origin, we feel that new classifications are uncalled for. Whatever the final classification of tumors may be, we believe that this will be determined only after we are

agreed upon their origin, both as regards the tumor cells and the stimulus leading to their atypical growth.

In other parts of the book the author discusses the relation of tumors to metabolic changes in other organs.

The author has great confidence in the microscope in making a diagnosis between a benign and malignant growth. He believes that in practically all the cases an extended examination of the margins of a tumor will determine its character. We assume from this that the author believes in the malignant nature of tumor cells from their beginning.

A good description is given of the extension of cancerous growth. Under the causation of cancer the author discusses the question under two heads, the intrinsic and the extrinsic factors. The theory of the intrinsic factors is very similar to that propounded by Ribbert some years ago. The author gives no support to the parasitic theory of cancer.

Some excellent micro-photographs are given of the various types of tumors.

“TEXT-BOOK OF DISEASES OF THE NOSE, THROAT AND EAR.” For the use of Students and General Practitioners. By FRANCIS R. PACKARD, M.D. Philadelphia and London: J. B. Lippincott Company.

In this work, an endeavor has been made to present the essentials of diseases of the nose, throat and ear in a form suitable to the needs of students and general practitioners. It is based upon the author's many years of experience as a teacher in a large post-graduate school, and attention has been chiefly paid to the practical aspects of the subject and to their bearing on the every-day work of the general practitioner. The subject matter is well written and up to date, and the only exception which we take to its thoroughness is the chapter relating to disease of the internal ear, where there is an entire absence of any reference to a most important disease, viz.: Suppurative labyrinthitis. It is to be hoped that in the next edition this will receive the attention it deserves.

“CLINICAL MANUAL FOR THE STUDY OF DISEASES OF THE THROAT.” By JAMES WALKER DOWNE, M.B., F.F.P.S.G. Glasgow: James Maclehose & Sons, Publishers to the University, 1909.

This is a second edition in name only, for its predecessor has been remodelled, it has been almost wholly rewritten and brought up to date. A considerable amount of new matter has been added, chiefly as the result of the many important advances in methods of diagnosis and treatment which have been made since the appearance of the first edition.

The book has evidently been prepared for the use of students and practitioners of medicine and surgery who desire to gain some knowledge of the diseases of the Fauces, Pharynx and Larynx, as well as of the means employed in their treatment, and in this respect the author has been eminently successful. The subject matter has been arranged under numerous headings, which facilitate reference to the various diseases. The value of the book would have been enhanced by more extensive explanations of the use of the bronchoscope in its application to the removal of foreign bodies and for the purpose of a better diagnosis of the more obscure diseases of the trachea and bronchii. The addition of several new and original illustrations in black and white, as well as coloured plates, makes the work more than ordinarily attractive.

The author is indeed to be congratulated upon the results of his labour, and the work can be confidently recommended to the general practitioner seeking information regarding diseases of the nose and throat.

PROTOZOOLOGY. By GARY N. CALKINS, Ph.D., Professor of Protozoology in Columbia University, New York. 350 pages, 125 engravings and 4 coloured plates. New York and Philadelphia: Lea & Febiger, 1909.

This volume is a worthy successor to "The Protozoa," by the same author (Macmillan Co., 1901). From Introduction to Index the book is admirable. There are some minor points on which some protozoologists will disagree with the views expressed by the author, but the book certainly does express a well-balanced and safe appreciation of the position of the protozoa as producers of disease. The student of medicine, whether graduate or undergraduate, who wishes to realize the important position occupied at the present day by the Pathogenic Protozoa cannot do better than read this book.

In the preface is summed up the purpose of the whole volume. The importance of the protozoa to the student of physiology, as well as to the student of pathology, is insisted upon; the protozoa—minute animals—have exactly the same functions as the larger metazoa. In them can be studied, in their simplest form, the many processes occurring in the larger organisms, "digestion and assimilation, respiration, excretion and secretion, irritability and fatigue, reproduction, all occur in these simple animals."

Because of his authority, Dr. Calkins, by the position he has taken in this book, will do much to prevent the irrational naming and classification of incompletely identified protozoa. He insists that the morphology

of an individual parasite presents absolutely no ground for classification and that a parasite can only be certainly named and classified when its life cycle is completely known.

The chapters have been arranged so that the reader easily acquires a grasp of the whole subject. The general morphology of the protozoa is considered in the first chapter. The next three chapters are devoted to a consideration of the physiological activities and of the lives of the protozoa. The next chapter—Chapter V—is devoted to broad consideration of parasitism and the modification it entails both upon parasite and host. The remaining five chapters are taken up by a description of the known parasitic protozoa and, shortly, of the ways in which they affect the tissues of their hosts.

Appearances seen in cancer have been described by some observers as protozoa; these, as well as many bodies accepted by some as being the cause of trachoma, smallpox, scarlet fever, hydrophobia and the Montana tick fever, are described and carefully considered.

In one particular this book is especially acceptable to one who has read much of the recent work on the pathogenic protozoa, and that is, in the courtesy with which Dr. Calkins has considered the description of the developmental cycle of *Trypanosoma noctuæ* given by Schaudinn; unlike many others, Dr. Calkins has treated it with the frank criticism deserved by any statement seriously made by a competent observer.

ORGANIC AND FUNCTIONAL NERVOUS DISEASES. A Text-Book of Neurology. By M. ALLEN STARR, M.D., Ph.D., Sc.D., Professor of Neurology, College of Physicians and Surgeons, New York; ex-president of the New York Neurological Society. Third edition, thoroughly revised. Octavo, 904 pages, with 300 engravings and 29 plates in colors or monochrome. Cloth, \$6.00 net; leather, \$7.00 net. Lea & Febiger, Philadelphia and New York, 1909.

This new edition of this work is a marked improvement on former editions, both in the arrangement of the subjects and in the many additions which have been made. In all, about one hundred pages have been added to the work, chiefly on the subject of the various functional diseases of the nervous system, including a new chapter on the vasomotor and trophic disorders with a few pages on the physiology of the vasomotor system. Our knowledge of this subject is yet too limited to make this last chapter very satisfactory.

In the first part he takes up methods of examination and diagnosis, with the necessary anatomy and physiology, and with this basis laid, he proceeds in the second part to cover the great division of organic dis-

eases. In part third the functional diseases are presented, the space allotted having been more than doubled. Part four considers diseases of the sympathetic nervous system, closing the subject.

The book is well illustrated, and the plates are excellent.

The article on Localisation of Cerebellar tumors one feels might still be strengthened considerably. On the whole the style is clear and the book is well adapted for the use of students and practitioners.

C. K. R.

Retrospect of Current Literature.

MEDICINE.

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

E. C. DICKSON, Toronto. "Experimental Chronic Nephritis." *Archives of Internal Medicine*, June, 1909.

It has long been a matter of supposition that an acute parenchymatous nephritis could go on to a chronic nephritis, with all the indurative features that are so marked a characteristic of the interstitial form of the disease: and the former has been counted one of the etiologic factors in the production of the latter. This paper indicates the fact that the missing links have been supplied. It must not be supposed that this is necessarily a constant occurrence, but it is at last clear that the gradual progression of one to the other does exist. When chemicals such as potass. bichromate were used, an acute parenchymatous nephritis was produced, and a subsequent definite shrinkage of the kidney occurred in surviving animals: but no definite proliferation of connective tissue could be found. Uranium nitrate, however, appeared in the author's hands to give better results: it has, of course, been extensively used as an irritant to set up acute nephritis and the consequent oedema, but its effects as an excitant of chronic changes have merely been stated previous to this.

In acute nephritis, excited by small frequent doses, over long times, or larger less frequent but long-continued doses, the convoluted tubules and the ascending loops of Henle are most affected, the latter, strange to say, first. Scarcely any glomerular change is observed. But in cases where these doses were continued for a long time, it was found that interstitial changes began to creep in, the glomerular capsules and the tubules began to be dilated, and early puckering of the surface was observable.

In a series, in which 2.5 milligrams were given every 10 to 30 days, each dose may be said to have excited an acute attack, with albuminuria, and chloride and phosphate retention. Here the fibrosis was quite gen-

eral, and the glomerular change, contrary to what was observed in the acute cases, was very noticeable.

The evidence seems to be complete, that one can excite in animals, by the use of uranium nitrate, the lesions which characterize a chronic interstitial nephritis in man: and that this is due to an acute nephritis passing into a chronic one: sometimes this goes on to the familiar atrophic granular kidneys (and it is at times associated with polyuria).

DR. HORST OERTEL. "Epithelial Proliferation and Epithelial Giant-cells in Nephritis." *Publications of the Russell Sage Institute of Pathology*. New York City Hospital, No. 1, 1909.

This paper is interesting because it deals with the question of regeneration of renal tissue, not only as a reparative process, but also as a process of defence against invasion.

It has long been known that epithelium in a renal tubule was able to proliferate. As long ago as 1859 Beer gave this as a factor in the production of the increased size of some diseased kidneys. Mitosis of the cells has often been observed, especially in the vicinity of healing infarcts and scars of the kidney. Prutz many years ago described giant-cells in the regenerating tubular epithelium. The repair was always best observed in the vicinity of the infarcts and rarely in the infarcts themselves, though even this is said to occur. If one dare sum up, it seems as if there were no doubt of epithelium multiplying, even to the filling of tubules, but that actual new tubules arise is probably not true. Observations are thus mostly confined to operative cases: regeneration from nephritis in man is necessarily a rare observation, and Oertel's case is therefore an interesting one. The case need not be detailed: the man, aged 50, had kidneys which appeared to be the seat of a "productive nephritis," that is, evidently an interstitial nephritis in a kidney as yet unshrunk. Oertel found numerous new formed cells in the convoluted tubules, often massed together in a kind of syncytium: often cells show irregular outline, and a dozen nuclei. No clue as to their ultimate fate exists. They are clearly atypical, and from their occurring only in certain cases, and not occurring in many regenerations, some authors think they are the result of the reaction against irritation, viz.: that they are for the purpose of combat and protection, and are analogous to the proliferated endothelial cell of ordinary inflammation. The author thinks these cells phagocytic, although he was not able to demonstrate bacteria in them.

From a standpoint of criticism, it does not seem to me to be inconsistent that both of these sides of the question may be right: it is very

probable, however, that these cells proliferated for a protective purpose, and as a result of stimulation, in many cases do not fulfil any function after this; an additional argument in favor of Oertel's view, which he does not appear to make use of is this: that not yet has the giant-cell ever proved itself to be of use—it is a cell that has passed the zenith and is on the downhill path.

DITMAN AND WELKER. "Deficient Oxidation in Relation to Nephritis."
New York Medical Journal, May and June, 1909.

The authors have done a large amount of experimental work upon nephritics, estimating the creatinine excretion, and showing how deficient oxidation tends to increase the amount of retention of half-oxidised products of metabolism, which products are well known to be extremely toxic to the body. Seven or eight purin bases have been determined in the urine, mostly xanthine compounds, and the guanines, very toxic substances, are transformed into xanthines by pancreatic action, and by enzymes from the adrenal and thymus. All these more or less toxic purin bodies can be converted into uric acid. But this may not happen by reason of deficient oxidation. Take for example the metabolism of creatine: with good oxidation this passes through methyl hydantoine to methyl urea to urea: with poor oxidation, it passes to creatinine to methyl guanidine (a deadly poison to animals) to guanidine. In nephritics (not for the first time) the authors find that there is a retention of these toxic substances of the second group. They fed a nephritic creatinine, and found very little recoverable, and more than that, found that direct toxæmic symptoms were the outcome. They remark that this experiment does not lend itself to repetition.

Next, they bring forward considerable evidence to show that the members of the "partially oxidized creatinine products" group are actually capable of producing lesions in the kidney. They found, too, that guanidine was quickly and extensively hæmolytic. Most of the products of decomposition early in the process, i.e. the first-produced substances, tend to excite inflammation, while the later products (i.e. products nearer the *end*) tend to excite purely toxic manifestations, that is, parenchymatous change.

The authors ask themselves what are the every-day influences that affect oxidation and tend to cause or to increase nephritis: they place the injurious influences as follows: alcohol, sudden falls of temperature (not constant cold), lack of exercise, excess of protein foods, and all things which increase intestinal putrefaction. Their deductions as to treatment need not greatly concern us here as they are the logical se-

quence of what has just been said. They do not favor the strict milk diet, logically enough, and detail some findings in the cases of milk-fed cats: whereas fatty degeneration to a very great extent, of the liver, was produced, one cat showed a kidney which for fatty infiltration surpassed anything ever seen by the writer: he says he cannot imagine that such an organ could functionate. This is a weak spot in his reasoning. The real reasons against milk diet over very long periods rest on more valid grounds, namely, that the patient's nutrition cannot be kept up.

J. McC.

SURGERY.

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

PROFESSOR DOCTOR HANS KEHR. "Diseases of the Pancreas with Special Reference to Pancreatitis Chronica in Connection with Cholelithiasis." *Mittel. a. d. Grenzgeb. d. Med. u. Chir.*, Bd. 20, Heft 1.

During the past five years Kehr has performed five hundred and twenty laparotomies for the relief of cholelithiasis and other affections of the hepatopancreatic system associated with chronic icterus, and has met with disease of the pancreas in one hundred and twenty-nine instances (twenty-four per cent.) classified as follows:—Carcinoma, 21; Necrosis, 5; Cyst, 1; Pancreatitis chronica, 102. Kehr attributes this large percentage to the fact that his clinic is especially devoted to surgical affections associated with jaundice, and further to the fact that he has included in these figures the slight forms of pancreatic inflammation.

The accompanying diagrams are intended to support the contention of the author that pancreatitis must necessarily be a frequent complication of biliary lithiasis, and that the intimate proximity of the opening of the pancreatic duct to the intestinal tract invites infection through the latter.

Kehr is in accord with the opinion formerly expressed by Mayo Robson, that that form of jaundice generally termed "catarrhal" is in most cases attributable to a mild pancreatitis, secondary to duodenal infection, and it is evidently the author's hope that this view will be borne out by the more extended application of the Cammidge test.

During the last two years, in two hundred and twenty operations upon the biliary system, Kehr has met with pancreatic carcinoma four times, necrosis twice, and chronic pancreatitis sixty-nine times. These seventy-five cases are discussed by the author in detail.

In seventeen cases of carcinoma of the pancreas observed by Kehr and Liebold all, with one exception, were intensely jaundiced: this constant

jaundice, rather than a jaundice of varying intensity, being suggestive of obstruction by tumor and not by stone. In only one case was sugar observed. In five cases latent gall stones were found. In ten instances the gall bladder was distended,—the most common finding in obstruction by tumor. In one instance only was there diffuse thickening of the pancreas. In two cases multiple nodules were made out.

Of the last four cases of carcinoma observed by Kehr two were fully investigated at autopsy, one giving the Cammidge test A + B —. Of the other two cases one, giving a positive Cammidge test, made uninterrupted recovery after cystogastrostomy; the second, in which the Cam-

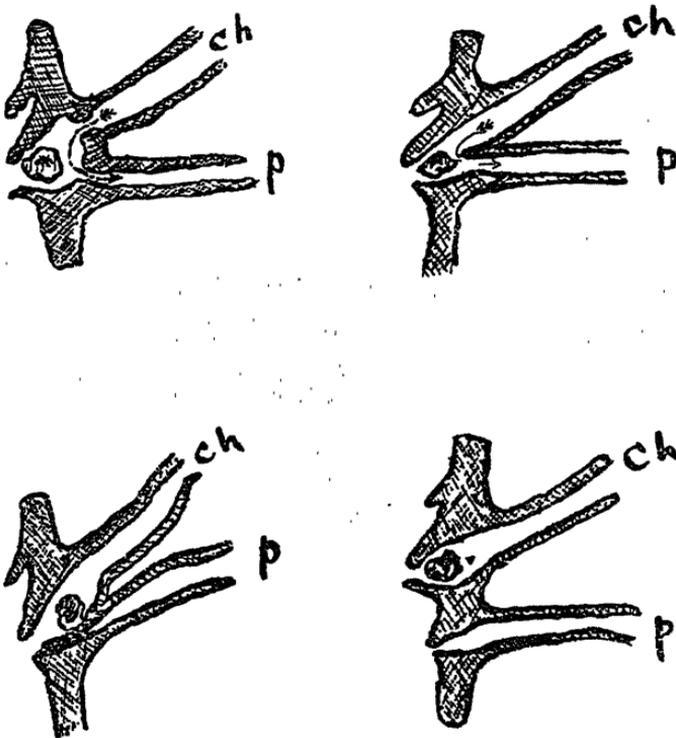


Diagram illustrating the relation of stone in the ampulla to the pancreatic duct.

midge test was absent, died after operation but did not come to autopsy.

In carcinoma of the pancreas attempts have been made to obtain radical cures by partial or total extirpation of the gland. Where the disease is confined to the tail, permanent recovery is possible. In sixteen cases of partial excision for malignant disease Mayo Robson reports eight recoveries. In seventy-one cases in all of pancreatic carcinoma observed by Kehr, thirty seemed favorable for the performance of cystogastrostomy: in the remainder the abdomen was closed without interference.

Ten of the cases subjected to this palliative measure lived more than two years. The gain in weight after operation was frequently remarkable—in some cases as much as forty pounds—so that at the end of the first year Kehr was led to hope that only a chronic pancreatitis had been present: and he very rightly urges that where palliative measures will give relief and prolong life for two years, such measures meet a most important requirement, especially in view of the fact that a patient suffering from pancreatic carcinoma develops an intense icterus early and generally succumbs within six months.

It is Kehr's experience that pancreatic carcinoma runs a painless course in the majority of cases. Where the disease remains localized in the tail or body of the gland, jaundice is absent, the symptoms of wasting and loss of appetite alone being met with.

In necrotic inflammations of the pancreas the onset is so sudden and the symptoms so severe that there is not sufficient time for the application of the present methods of investigation (urine-fæces): it is rather a question of how early and energetically action can be taken. In one of the two cases reported by Kehr there was found free bloody fluid in the abdomen, fat necrosis of the omentum, and an enlarged, firm, hemorrhagic pancreas; and when dressing forceps were thrust into the gland, turbid, bloody fluid escaped. In the second case a large cystic tumor lying behind the pylorus was encountered, which on incision evacuated at first serous fluid and later creamy pus. An area of necrotic tissue the size of a walnut was removed. Both cases ended fatally and illustrate in the author's opinion the necessity for early operation. It has been contended by Körte and Gulecke that if one, before the beginning of necrosis, improves the gland circulation by splitting the capsule, destruction of the gland may be prevented.

The diagnosis of acute pancreatitis presents numerous difficulties. Owing to extreme distention one may be unable to make out the swollen pancreas. The severity of the pain should suggest this condition. The clinical picture may closely simulate that of ileus. If in the course of an attack of biliary colic there is a sudden and severe exacerbation of all symptoms, pancreatitis should be thought of. As an aid in distinguishing such symptoms from gall bladder perforation, it should be borne in mind that in the former the tenderness is more in the middle line and in the left hypochondrium.

Both of the cases referred to had had repeated attacks of severe colic. Case II. was sent to the hospital as one of intestinal obstruction. Necrosis had begun in the first case probably four days before admission to the clinic, and in Case II. at an even earlier period.

Chronic pancreatitis is either a sequence of an acute attack or it comes on gradually. Pancreatitis as the result of biliary lithiasis is observed most frequently in association with stone in the common duct. In Kehr's last series of two hundred and twenty cases chronic pancreatitis was met with sixty-nine times. The author finds that since the establishment of the Cammidge test as a part of the routine in connection with the pre-operative investigation of cases, more attention has been paid to the condition of the pancreas in biliary disease.

In chronic pancreatitis unassociated with stone Mayo Robson has effected a cure in ninety-seven per cent. by the establishment of a connection—preferably a cystogastrostomy—between the gall bladder and the intestinal tract.

Chronic pancreatitis secondary to stone formation is of course more frequently met with where a stone obstructs the common duct, as in such cases co-existing cholangitis is generally present. Of seventy-six cases of gall-duct stone operated upon by Kehr during the past two years, pancreatitis was present in fifty per cent., whereas in seventy-six cases of simple cholecystitis calculosa the pancreas was found chronically inflamed in only fourteen per cent. The co-existence of pancreatitis undoubtedly has an important bearing upon the prognosis in operative procedures upon the gall passages.

In cases of chronic pancreatitis Kehr has avoided any operative measures directed against the gland itself, relying solely upon the drainage established after the removal of the common or cystic duct stones. Reference is made, however, to the method devised by Czerny whereby the duct in its anatomical relation to the pancreas may be dilated with forceps; as well as to that of Martini, who advises the splitting of the capsule of the pancreas if such can be carried out without the danger of hemorrhage.

Kehr in his former work advised abstention from operation upon the gall passages where sugar was present in the urine. Recently, however, he finds himself in a position to alter somewhat his attitude in this respect. It is his belief that in the earlier stages of pancreatitis the destruction of the islands of Langerhans and the progress of the diabetic symptoms may be arrested. He therefore makes it a rule to operate upon cases where sugar is present if at the same time the Cammidge test points to the presence of pancreatitis. Where, however, the diabetic symptoms are severe and the Cammidge test negative, he refrains from operative procedure.

Finally Kehr deals with his personal experience with the Cammidge test, carried out according to the method described by its author

(*British Medical Journal*, May 19, 1906). While Hallion, Ham, Willcox and others deny the value of this test, Mayo Robson, Duval and Quenu are enthusiastic partisans. The fact that it is sometimes positive in arteriosclerosis, pneumonia and appendicitis detracts somewhat from its worth as a specific test. Maass in twenty reactions which were checked by autopsy got a positive result in fourteen and a negative in six. Of these twenty, fifteen agreed with the histological finding, that is to say, the test proved reliable in seventy-five per cent. According to Maass this test is a material addition to our methods of clinical investigation.

In the thirty cases investigated by Kehr, the test failed in only four instances: that is, it was positive in eighty-two per cent. To parallel these observations control tests were carried out on thirty cases, including patients suffering from cœcum tuberculosis, appendicitis, etc., as well as healthy individuals. The test was positive in one case only, and that in an individual whose urine was investigated after a generous amount of alcohol had been taken the evening previous. Kehr concludes that in disease of the pancreas, especially in the chronic and inflammatory forms, the Cammidge test seems to be of definite worth.

To differentiate, however, between pancreatic carcinoma and pancreatitis is especially difficult owing to the fact that not infrequently an area of chronic inflammation surrounds the cancerous growth.

Kehr admits that his findings in these thirty cases have greatly altered his views on the indications for operative interference. Up to the present time operation was undertaken only in cases of acute or chronic empyema or chronic obstruction of the common duct, or on a relative indication in cases where chronic invalidism developed. Kehr now recommends operation in the latent stage if the Cammidge test is positive, —in other words if the pancreas is diseased— with the following qualification: that the Cammidge test prove positive a second time after a lapse of four weeks, during which time the patient has been submitted to a course of rest, dieting, etc.

In those cases in which chronic pancreatitis is diagnosed and confirmed by the Cammidge test, but in which no symptoms of lithiasis have been manifest, Kehr recommends rest in bed and the application of hot fomentations, dietetic measures and the internal administration of gland extract and hydrochloric acid. Schmieden prescribes iodide of potassium: Mayo Robson, calomel. One should not, however, prolong this form of therapy in view of the favorable results of operative interference.

Society Proceedings.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

The first regular meeting of the Society was held Friday evening, October 1st, 1909. The President, Dr. W. Grant Stewart, occupied the Chair.

LIVING CASES.

DR. A. MACKENZIE FORBES presented a case of deformity of the hip joint upon which a transtrochanteric osteotomy had been done with remarkable improvement.

HANFORD MCKEE, M.D., showed a case of Spring Catarrh.

SPRING CATARRH.

HANFORD MCKEE, M.D.—Spring Catarrh is the name given to a conjunctival disease, because of the exacerbation of the symptoms during the warm weather of the spring and summer. The clinical appearance is a very definite one. The palpebral or bulbar conjunctiva may be affected, rarely both. The palpebral form is not rare and somewhat resembles trachoma. Spring catarrh involving the bulbar conjunctiva is not common and is especially rare in this district. The case being shown here is most typical in history and clinical picture.

This young man, a Swiss, came to me the other day, complaining of severe itchiness of the eyes, which became inflamed during the recent warm weather. He has had the condition for twelve years, the symptoms subsiding during the winter, only to begin anew in the spring. If you examine him you will see on each side of the cornea, raised masses which extend over the edge of the cornea. These growths are hard and have the whitish colour so characteristic of spring catarrh. There has been very little secretion. The history in this case makes the diagnosis easy. A snipping, however, was examined, to exclude tuberculosis, and the histological picture was typical.

The etiology is as yet unknown, search for a bacteriological cause has so far given negative results. The treatment consists in ameliorating the symptoms, astringents do very well. It has been treated in a great many ways, lastly by radium.

REPLY.

HANFORD MCKEE, M.D.—With regard to the acute inflammation of the conjunctiva present in this case, I would not like to have any one think that this acute condition is spring catarrh. The inflamed conjunctiva is due to the patient having had his eye irrigated with bichloride solution this afternoon, instead of boracic solution. I quite under-

stand that in spring catarrh there is very little secretion, although it is quite possible to have spring catarrh associated with a definite conjunctivitis as that which Morax-Axenfeld describes.

What I wished to call the attention of the meeting to, was the growth on the bulbar conjunctiva, on each side of the cornea.

PATHOLOGICAL SPECIMENS.

OSKAR KLOTZ, M.D.—The two specimens that I wish to show this evening are of the same class, adenomatous or papillomatous conditions of the bowel in which also malignant disease was present.

ADENOMATA OF THE BOWEL AND MALIGNANT DISEASE.

I wish to bring before you this evening two specimens which have recently come under my notice, which illustrate very well the association between the so-called adenomata or papillomata of the bowel and cancers in the same organ. This has not infrequently been commented upon by Ribbert.

The first case was that of a young girl, aged twenty-three, who had been operated upon for malignant disease in both ovaries. The condition found in these organs was that of a malignant ovarian cyst-adenoma. Six months later the growth recurred in the pelvis, and many metastases developed. At autopsy a rather remarkable condition was found in the large bowel. The mucosa from the cæcum onwards was studded with numerous papillomatous masses, having tumor-like heads, and constricted pedicles. These masses varied in size from a small shot to a hazel-nut, and were covered with a rather spongy mucosa, which in many of them showed a superficial ulceration with a necrotic slough. The pedicle, on the other hand, was narrow, and seemed to be of thin mucous membrane. As the descending colon was reached, the general mucosal surface was reddened and showed extensive necrosis encircling the bowel.

In the sigmoid there was a narrowing of the lumen, with an extensive overgrowth of the tissues from the mesenteric border. In this area a huge nodule was formed, circular in outline and heaped up along the border, the mass measuring 2.5 cm. When open, one was reminded of a gastric cancer with a flattened border. The mass measured 8 x 5 cm. Along the lower border the mass took a polypoid character, with a superficial necrosis. Just below its lower border was a soft pedunculated polyp, with a ragged and necrotic surface. A second and rather cancerous mass was found at a distance of 3 cm. below the one above described. This mass formed a rather elastic polyp, with a depressed centre and superficial necrosis. It measured 3 cm. in diameter. On section, the new developing tissue appeared to originate from the bowel wall itself. The small intestine and rectum were without definite change.

The microscopical sections of several papillomata in the colon presented a structure with a nodular outgrowth from the mucosa of the large bowel, in the centre of which was a core of fibrous tissue and blood vessels. The mucosa lying over the out-growth was quite regular and showed no tendency to infiltrate into the submucosa. There was a considerable leucocytic infiltration between the tubules of the mucosa, while on one side of the nodule there was some necrosis of the superficial tubules. In no case was there evidence of malignancy in the epithelial structures.

Sections taken from the base of the tumor mass in the sigmoid showed a tissue with a dense fibrous framework, in which were embedded strands and alveolar masses of epithelial cells. In some places these alveoli closely resembled epithelial ingrowths, such as developed from the mucosa of the large bowel. In places again this epithelial ingrowth showed a colloid degeneration. The epithelial cells showed solid strands of cells which invaded in the deepest part of the bowel wall, and also into the mesentery. The whole picture strongly resembled a cancerous tumor from the large bowel.

The second case was that of a man, *æt.* sixty-two, who gave a history of some rectal trouble ten years previously. Five years ago, he was operated upon, and a papillomatous mass removed from the rectum. This mass was only removed superficially and the microscopic examination of this tissue showed it to be of a papillomatous nature. Recently he again came to the hospital, with a papillomatous tumor in the rectum. Snippings from the superficial processes of this tumor again showed characteristics of a benign papillomatous growth. However, when the lower portion of the rectum, including the deep tissues, was removed, it was found that there were epithelial infiltrations into the outer walls of the bowel, and also into some of the tissues about the rectum. These epithelial new growths consisted of strands of atypical characters of epithelial cells, which in many cases showed colloid change. Inflammatory reaction was lacking about these epithelial growths.

We have, therefore, two very interesting pathological specimens before us. Both of these specimens present superficial new growths, which when considered alone are benign in character. In each case, too, there is the presence of malignant infiltration into the structures of the bowel.

In the discussion of both of these cases it is necessary to consider cause and effect, and determine which of the two processes was primary. In the second case the evidence seems fairly clear for the patient had a papillomatous growth removed five years previously, and this growth had recurred along with a cancerous development. It would appear then that

the papilloma, which histologically could not be recognized from the benign type, had a malignant tendency.

In the first case, the matter is a little more difficult, since we have no evidence at hand indicating which type of tumor at first developed. It is possible that the papillomatous condition of the large bowel was the result of a chronic irritation brought about by the slight constriction and necessarily slight obstruction by the annular cancerous condition in the sigmoid. We are familiar with the development of such conditions, colitis polyposa following chronic dysenteries. In these, too, the papillomatous outgrowths may become malignant.

I believe that there is a type of tumor which, although the microscopical features speak otherwise, has a malignant tendency, and it is quite possible that these two cases illustrate this type, that is, that we have to do with an adenomatous condition which at any time may become malignant.

E. W. ARCHIBALD, M.D.—What Dr. Klotz has said deserves close attention. The fact has been often, I think, overlooked in the past and has sometimes not only been overlooked but considered in an entirely opposite sense. For instance, some years ago I operated on a papilloma of the bladder wall, taking it out bluntly, but apparently thoroughly with the finger. Clinically the growth seemed to be benign; and the pathological sections seemed to show it to be entirely papillomatous, that is, benign. The condition recurred after over two years, and a second operation, similar to the first, was done at the end of the third year. A third time, after some months, the patient came under observation; but no further operation was considered, as its malignancy was recognised. These benign epithelial tumours are certainly in their beginnings papillomatous or adenomatous; but, as Dr. Klotz says, they may very likely be even in the early stages also malignant though unrecognisable as such clinically, and though pathological sections frequently fail to discover malignancy, owing to the fact that the surgeon does not often remove the bladder wall with the growth.

A. LAPHORN SMITH, M.D.—I think a very important observation is that, although these tumours may be benign at the beginning, before long they become malignant and therefore the sooner they are removed the better.

A. E. GARROW, M.D.—The patient from whom the colloid cancer of the rectum was obtained, and which has just been shown to this Society, came under observation about five years ago, stating that a large mass had presented at the anus at each act of defecation during the last four or five years.

Histological examination of a small portion made by Dr. Keenan revealed a benign growth.

Removal was readily effected by cutting through the mucosa and around the cauliflower-like mass one-half inch from the pedicle, and then loosening the part from the subjacent connective tissue. There was no clinical evidence of infiltration at the base.

When he came under observation for the second time, a few weeks ago, a much larger cauliflower-like mass presented at the anus on straining. This had been increasing in size for the last two or three years, giving rise to daily hemorrhages which though not profuse had led to a profoundly anæmic condition.

A small part removed for examination was again declared to be benign by Dr. Keenan.

The growth on this occasion almost encircled the bowel and extended upwards for some distance. To remove it, a modified Whitehead's operation was attempted, but it was seen that the separating of the mucosa from the muscular coat was impracticable, not so much on account of infiltration but from difficulty in recognizing the anatomical structures. As the dissection proceeded the friability of the tissues disappeared, and separation through the submucous layer was carried out. The mucous membrane after removal of the growth was readily drawn down and stitched to the cut skin.

Since the operation, in spite of forced feeding and suitable medication, the patient remains very anæmic. Several examinations place the hæmoglobin estimate at 15 per cent. to 18 per cent.

To-day transfusion of blood by Crile's method, from the radial artery of his son, proceeded for one hour and a quarter, with apparently much improvement in his subjective and objective condition. Examination immediately after operation showed 25 per cent. hæmoglobin.

Note.—Since recording the above notes it may be of interest to add that this patient has returned home. A day or two following the transfusion he insisted upon being allowed out of bed and seemed to gain in strength and appearance quite markedly.

HAEMATOPORPHY TINURIA.

H. B. CUSHING, M.D., read the report of this case.

A. LAPHORN SMITH, M.D.—There are many important points which I think might come up for discussion in this connection and one is the serious evil of repeating prescriptions. The case reported to-night is not the first nor the one hundredth case I have heard of where life was impaired, if not lost, by patients repeating prescriptions for themselves and many of their friends with totally different diseases. I was very

pleased to see on a prescription written by one of our members, a stamped notice to the effect that "this prescription must not be repeated without an order in writing." This is a very good plan and one which our friend has probably come to use by having had some severe lessons, as in the case just cited. With regard to the examination of specimens of urine by Dr. A. A. Bruère, of the Royal Victoria Hospital, I can also testify to the very great help he has been to me in my difficult cases; he is marvellously accurate.

I have not heard an expression of opinion by the members of the Society for a long time with regard to Sulphonal, and I think some of them ought to give us their experience of this and similar coal tar drugs. At one time I had hoped that we had at last found the harmless hypnotic, but after using it for three or four years, I came to the conclusion that it was extremely depressing. I hope some evening some member who knows all about these hypnotics will give us a scientific and correct opinion on them.

RENAL CALCULUS.

J. M. ELDER, M.D., read the report of this case which appears in this number of the JOURNAL.

F. J. SHEPHERD, M.D.—I think this case of Dr. Elder's as reported by him to-night illustrates very well the methods of modern diagnosis and how much easier it is now to make a diagnosis of a kidney condition than it was 25 years ago. I did the first operation in Montreal for the removal of stone and we had no such methods then for diagnosis as we have now. We used our powers of observation. My experience is that there is a great deal of hæmorrhage of the kidney in some of these cases and when this occurs it means extensive disease. I would like to ask Dr. Elder when he delivered the kidney whether he could detect the stone by feel with the fingers. I remember a case Dr. Finley sent me, a young woman, a niece of a doctor who thought her symptoms were hysterical. We both concluded that there was a stone of the right kidney, but on delivering the kidney I could not feel any stone at all. I opened the lower half and felt all the infundibula and was just giving up when the patient suddenly gave a lurch and my finger in the kidney tore up a space in the upper zone and came against a large rough stone. I sewed up the kidney and she made an uninterrupted recovery. This shows that even when you have the kidney before you and with careful palpation the stone may be overlooked. The present case illustrates very well the modern methods of diagnosis.

A. E. GARROW, M.D.—There are several points in connection with the diagnosis of renal and ureteral calculus that are well worth considering.

Dr. Elder in his paper has emphasized the importance of modern methods in diagnosing renal stone, but as a matter of fact there is no one pathognomonic sign of renal or ureteral stone.

Examination of the separated urines only shows that one kidney is the seat of some inflammatory lesion,—a shadow in the kidney region or along the course of the ureter may be due to some condition quite foreign to either structure,—a stone may be present and a perfect skiagraph interpreted by an expert may show no evidence of its existence.

Attacks of renal colic frequently occur in the absence of stone.

For these reasons the presumptive evidence of stone can only be established by a careful consideration of all the facts obtainable, while the diagnosis is only complete when the stone is exposed at operation.

It is well known that stone in the upper half of the ureter may very closely simulate stone in the kidney, when in the lower half symptoms suggesting vesical calculus are frequently present.

I would like also to emphasize the importance of employing carefully placed mattress sutures in closing exploratory wounds in the kidney, to prevent the post-operative hæmaturia referred to by Dr. Elder.

J. M. ELDER, M.D.—Dr. Shepherd has asked if the stone could be felt. I stated that the stone could be felt perfectly well and I just had to make a stab wound and take it out. We have all seen cases where kidneys have been explored and nothing found, and also kidneys that have been explored with serious result, that is hæmorrhage so great that it had to be removed. At the same time, we all remember the advice of our old teacher in surgery; viz.: “in operating for stone of the kidney before a class, be sure and have a stone in your pocket.” In answer to Dr. Garrow, my own feeling is that the more one reads X-ray plates the fewer mistakes will there be. It is a difficult thing to read a skiagram properly. There is, of course, nothing absolute about any skiagram, but in the hands of an expert it is an undeniable help. With regard to the sutures, in this case I used the mattress suture of heavy catgut for the kidney substance. I feel very strongly that non-absorbable sutures should not be left in the kidney. As Morris has repeatedly demonstrated, they predispose to stone formation. The moral I specially wished to point by this communication is now, surgically, well known: Never operate upon any kidney until you are sure of the other one.

CONTROL OF HEMORRHAGE WITH THE MOMBERG TUBE.

H. M. LITTLE, M.D., read a report of two cases in which this tube had been employed in post-partum hæmorrhage with excellent results.

WESLEY MILLS, M.D.—I was interested from a physiological point of view in the case which Dr. Little has related to us to-night, particularly

as to the question of possible paralysis or paresis, for in the lower animals extensive degeneration of the spinal column can be produced in rabbits by the occlusion of the abdominal aorta for a very short time. I repeated these experiments on rabbits and cats and found that the cat reacted entirely differently from the rabbit. Nevertheless there seems to be so little reported on this that I think it would be worth while if attention were directed towards the possible evil results from this constriction of the aorta in the human subject.

DR. W. W. CHIPMAN.—I should greatly like to thank Dr. Little for giving us any means for combating what we all know to be one of the most serious things which can happen to the practitioner, namely:—post-partum hæmorrhage. The use of this tube really means the use of the Esmarch, only in these cases the Esmarch is applied in rather an unusual situation. I would like to ask Dr. Little one question and that is, whether or not the girth of the patient would or would not deter the efficacy of this tourniquet. In a thin patient it doubtless could be easily, and I have no doubt efficaciously applied, but it seems to me that if the patient were stout that it would only be with great difficulty that pressure could be brought to bear upon the deeply lying abdominal vessels. However, the experience of those who have used it, including Dr. Little himself, is certainly very favorable. The tube itself is a very simple affair and quickly applied, and the wonder almost is that such a means of controlling post-partum hæmorrhage has not been conceived before.

J. C. CAMERON, M.D.—Just one word of warning regarding the use of the tube for the control of hæmorrhage in puerperal cases. Recently several cases have been reported of injury to the viscera (spleen, liver, etc.) after the application of the tube. The injury was attributed to the fact either of the tube being applied too high or of the intestine being full of undigested food. The tube seems to be safe enough when the bowel is fairly empty, but may be dangerous after a full meal. If we are to recommend this method of treating hæmorrhage, it should be with the warning that the tube must not be applied high up, nor after a full meal.

H. M. LITTLE, M.D.—With regard to the stoutness of our patients I would say that one of our patients was very thin and the other very stout and that the method was efficacious in both.

PRESIDENT'S ANNUAL REPORT BY J. ALEX. HUTCHISON, M.D.

Members:—With this meeting it is my duty to turn over to my successor the responsibilities of the high office to which, in your generosity, you elected me to fill twelve months ago. I well recognize my shortcomings in my effort to maintain the high standards which have been

set by the many eminent members of our profession who have occupied this position. I desire now to express my appreciation and can only say that my year as President of this Society will ever remain a memorable one in my professional life.

There have been during the past year 18 regular meetings. There has been an average attendance of 44 members. The largest number present at one meeting was 86. The smallest number present was 20.

I am glad to report that the smallest number was the result of a very pleasant incident connected with the marriage of one of our distinguished younger members, showing that the associations of love are still in the hearts of medical men as against the purely scientific aspect of their lives.

There were at the beginning of the year 188 regular members of this Society. During the year 8 new members were taken in. We lost by resignation 5 members and there was removed by death 1, Dr. A. Brodeur, leaving at the present time a total membership of 191.

I regret that among the resignations two were of members who had long been associated with the work of this Society. One of them had been a member since 1873, the other since 1890.

The Society was privileged during the year in having addresses from two eminent foreigners—one a distinguished member of the German, the other of the United States profession. These addresses were most interesting and were well attended. Both the visitors expressed their great pleasure at being present.

The practice of inviting distinguished members of the profession to give addresses from time to time is an excellent one, and one which I trust will be continued. There is always much to learn from a new point of view. I would like to throw out the hint that, from time to time, members of the profession from other Canadian cities be invited to address this Society. Although most of the older members of this Society, through attendance at meetings of the Dominion and Provincial Medical Associations, have come to know many members of the profession in other parts of Canada, there are younger members of this Society who have not the opportunity to attend the larger Associations and who, I am sure, will have great pleasure in making the acquaintance of their brethren from other parts of the country.

One notable event during the year has been the meeting of the Tuberculosis League which had present at its meetings many eminent authorities on this important disease. The exhibition associated with the meeting must have been of great value in bringing to the attention of the public the preventive measures now so well recognized. This Society

was kindly invited to associate itself with the work, and the Committee of Arrangements was good enough to ask your President to occupy the chair during one of the meetings.

A Committee on a very important subject—that of the Montreal water supply—went to much trouble in preparing a report which was recently submitted for your consideration. I regret that the full work of this Committee was not completed during the year. Owing to many difficulties and the fact that the Committee was associated with the representatives of the Société Médicale Française and the Canadian Society of Civil Engineers, some difficulty was met in arranging meetings. A report, however, will be presented to the Municipal Authorities at an early date. It is hoped that this report will bring to the attention of the public the urgent necessity for an improved water supply for this great city.

I have been somewhat discouraged from time to time at the small number of members present at our meetings and the lateness of the hour at which many members, who do attend, arrive. Were it not that this year has been no exception to preceding years, I should have felt that your President was in some way responsible for it. It has been stated that the presence in the city of other Medical Societies, formed largely of members of this Society, and associated with the work of the hospitals and colleges, is in a measure responsible for the small attendance. I find, however, that the members of these smaller Societies are among our most regular attendants and that the blame cannot be laid entirely at the door of these organizations. I am very strongly of the opinion that this Society will be the stronger if, by any chance, it were considered desirable to absorb other associations. In union there is always strength.

During the past few years there has been a marked change in the attendance—a very noticeable falling off of the senior members of this Society has been apparent. The contribution to the work of the Society has been largely from the younger members. While it is desirable that the younger members contribute to the work, this should not mean that the older members are not expected also to add their more experienced views on the many topics which are constantly before us. One or two original articles of research from younger members were of a notable character, showing that much time and original investigation had been expended and final conclusions suggested only after long-continued research. These papers would have done credit to the mature judgment of much older and better known men.

There are in the city a considerable number of younger members of our profession who have not, so far, seen fit to ask for the privilege of

membership, and I would suggest that a Committee be appointed to consider the possibilities of membership, as there can be no doubt that this Society must be of great advantage to every member of our profession who attends these meetings. The individual members must gain both in a professional and social sense, and a better "esprit de corps" be established.

It has been stated that the annual fee is a burden and one of the causes of preventing these men from joining this Society. It might be well to consider the possibility of charging a nominal fee for the first two or three years of membership.

I am glad to report that we have been promised portraits of the late Sir William Hingston and the late Dr. George E. Fenwick, the only deceased past Presidents of this Society whose portraits are not now hanging on the wall.

I desire to express our thanks to those of our members who showed living cases and who presented pathological specimens. The presentation of living cases and pathological specimens adds much to the interest of our meetings, and those members who present the cases are put to some trouble and expense. From time to time it has been thought by some members that if our rooms and meetings could be associated in some way with some social attractions, it would add to the usefulness of this Society. Personally I believe the Society should continue to fulfil its purely scientific character; at the same time, I would favor any reasonable social attraction which would stimulate and maintain interest in the organization. From personal observation I am prepared to say that these expensive and handsomely furnished rooms offer little attraction during the day time to any member. It is quite true that the medical journals and other literature to be found on the tables are not used sufficiently to warrant their expense. The explanation of this is that at the college and at two of the larger hospitals small journal societies exist, and all current medical literature is kept on file in the reading rooms of these institutions, and these are much used by our members, not only those who have appointments in these institutions but by many members of the profession who from time to time have occasion to visit these places. It has always seemed to me that the rental paid for these rooms might be avoided if it were possible to provide the use of the rooms for other organizations. It has been suggested that in the course of time the University Club may develop a hall with subsidiary rooms and that these smaller rooms could be kept permanently for the use of a particular organisation, whilst the large hall could be used as a common meeting place of a number of Societies. Should such a development

occur I am of the opinion that it would be to the benefit of this Society to take advantage of the same.

In closing I have again to thank you for the honour you have done me, and for the consideration you have shown me during my term of office, and I ask for my successor, who I am sure will more worthily fill the position than I have done, the same kind treatment and consideration.

ADDRESS OF THE INCOMING PRESIDENT. DR. GRANT STEWART.

To be President of the Montreal Medico-Chirurgical Society is an honour indeed, and worthy the ambition of every member of this Society. Two decades have come and gone since I joined the ranks of this Society, and as I stand at this point and look back, what changes have taken place!—changes in the membership; changes in the science of medicine. The facts of those days are the fallacies of these days.

In those days none of these pictures hung upon our walls. Full of life and energy and enthusiasm the originals were with us and moved in our midst. They have left us, in body; although gone they are ever “cherished in the amber of memory.”

They were great men, all of them. To know them was to love them. It behoves us to maintain the traditions of these by-gone days and live up to the standards they set us, and to pray that their mantle may fall upon us.

Who can forget the dignity with which R. Palmer Howard filled this chair? Can we who were his students ever forget his magnetic enthusiasm, his cultured eloquence, his courtly presence? Who of us did not feel that we sat at the feet of a master?

I heard Dr. Osler refer to him at the British Medical Association in Belfast this summer as the busiest practitioner he ever knew. And yet notwithstanding this, he read every book, magazine and monograph on his subject, and did a great deal of his reading driving from one patient to another. This many of us can verify.

Who of us who had the honour of knowing George Ross can forget his cheery manner, his universal kindness to rich and poor alike. His kindness, his honesty, his dogmatism were well known. As a diagnostician he was a marvel. An epitaph I saw in Glasgow Cathedral would suit him well:

“And when his physics force oft failed,
His pleasant purpose then prevailed.
Heaven has his soul—His corpse this stone.
Sigh passenger and so begone.”

In George Campbell we had the highest type of the earnest, painstaking, skillful, forceful Scottish surgeon.

I cannot refer to James Stewart without a feeling of filial affection. Few there are who do not miss him. Perhaps it was not his genius which made him great, but his largeness of heart, his genuine honesty, and his quiet, shrewd, Scotch commonsense. He was intensely human.

Buller was a true type of a genius—he stood in a class by himself. Brusque of manner yet within there beat a true heart open as day for melting charity.

Dr. Reddy, the busy physician, full of genuine Irish wit, F. W. Campbell, Dr. Craik, Sir William Hingston—most of them have just left us;—we cannot forget them. We would not if we could, nor could we if we would. To them the words of Robert Louis Stevenson are appropriate:

“The physician is the flower (such as it is) of our civilization: and when that stage of man is done with, and only to be remembered to be marvelled at in history, he will be thought to have shared as little as any in the defects of the period and most notably exhibited the virtues of the race.”

These were master minds in medicine, who, in their day and generation, shed lustre upon our noble art and maintained in apostolic succession the high reputation of the Montreal Medico-Chirurgical Society.

Many changes have taken place in the history of medicine in these 20 years. We live in a fast age and much is compressed in these years. These changes have been discussed before this Society,—the wonderful developments in bacteriology, in surgery, in medicine, antitoxin, the X-ray, and many other subjects. Things now are done that were not even dreamed of in previous years, and medicine has been built upon a more scientific foundation.

We have seen the advent and growth of specialism—in many ways a great advantage, perhaps, in some ways carried to extremes. Will the next 20 years see the extinction of the family doctor? I hope not. Osler puts it well when he said: “The Family Doctor, the private in our great army, the essential factor in the battle, should be carefully nourished by the schools and carefully guarded by the public. Humanly speaking, with him are the issues of life and death, since upon him falls the grievous responsibilities in those terrible emergencies which bring darkness and despair to so many households.”

Much has been learned from the pathological specimens presented; much from the papers and discussions thereon; and much from the many interesting reports of cases which, from time to time, have been brought

before the notice of this Society. I have been at many conventions and congresses, and I am free to say that here in our own Society papers have been read and discussed which would grace any congress.

One of the great advantages of an association of this kind is the good fellowship it encourages. The men are thus brought together. And I think, in such an arduous profession as ours, this feature should be cultivated still more.

As I look back I have found that the men who are at the forefront of medicine in Montreal are amongst the most regular attendants at the meetings of the Society; they are our leaders. To quote Osler again:

“The well-conducted Medical Society should represent a clearing-house in which every physician of the district would secure his intellectual rating, and in which he could find out his professional assets and liabilities. We doctors do not take stock often enough, and are apt to carry on our shelves stale and out-of-date goods. The Society helps to keep him on up-to-date lines and enables him to refurnish his mental shop with the latest wares. Rightly used, it may be a touchstone to which he can bring his experience to the test and save him from falling into the rut.”

One of the hopeful features of this Society is the number of young men amongst its members. I congratulate them and I would urge upon the hospital housemen not to neglect such an opportunity as now presents itself to them, and which may never occur again. Now is their accepted time. Now is their day of salvation. And while on this point I would urge that as opportunity offers the young man should attend not only his local Society, but when he can, the Provincial, the Dominion and Imperial Conventions, and thus keep in touch with the men and advances of the times. One may learn much from the reading of a paper, but much more from hearing the man behind the gun. And I would recommend them, in addition, to drink from time to time at the fountain-head of the great medical centres abroad. In this way Chauvinism is averted and perennial youth maintained and arteriosclerosis of medical enthusiasm prevented.

Gentlemen, we have entered upon another year's work, and while in some ways the success may partially depend upon its officers, its real success depends on the enthusiasm and energy of its rank and file. An interesting series of papers will be presented. Case reports and pathological specimens are to be brought before us, and now, with all our hospitals, our universities, our specialists, and the great wealth of material at our disposal, we should have no difficulty in having an interesting and instructive winter.

As usual, we will have some addresses from outsiders, I think very likely we may have an address from Dr. Philp, who comes here to open the Royal Edward Sanatorium. So, on the whole, we expect to be able to present you with a good bill-of-fare, and we hope that "good digestion may wait on appetite and health on both."

It has been one of my dreams to see us—some day—settled in a home of our own, on the principle of the Medical Institute in Belfast. Some suggestions have been made which may possibly take more definite shape. All things come to him who waits.

I could not close without congratulating the Society on its past President. He is a man worthy of the position. I have always admired Dr. Hutchison, his courtesy, his honesty of purpose, his *suaviter in modo* and *fortiter in re*. To associate with such men is one of the delights and privileges of our profession. And it is the life and practice of such men which raise Medicine above what Osler calls the dead level of a business.

We thank him for what he has done for the Society. We wish him God-speed in his work, and we hope that for many sessions to come he may still stimulate us with his enthusiasm.

Gentlemen, allow me to thank you for the great honour you have done me, and I can assure you I deeply appreciate it. And as far as in me lies I shall do my best to further the interests of this Association, and so maintain the traditions of the past.
