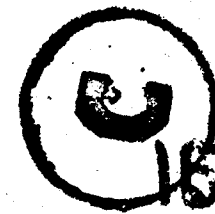


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NUMBER 5

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RENAL LITHIASIS

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PART III

URETERAL CALCULI

Though the term 'Ureteral Calculi' applies to all stones passing down the ureters, only those that are held up in the ureter, temporarily or for some time, will be discussed here.

AETIOLOGY

Ureteral calculi are mostly of renal origin. From the kidneys they pass down and get impacted in the ureter. Sometimes primary stones may form in the ureter either by encrustation round a foreign body such as a suture, or from stasis and decomposition of urine in a diverticulum of the ureter. This type is rare.

Owing to the rapidity of the urinary current in the ureter, crystals are rarely held up. The wall of a normal ureter is quite smooth, and stones with smooth surfaces such as uric acid and urate stones, are passed down without much difficulty. In the presence of strictures one or more calculi may be held up. In such cases it may be difficult to decide whether the calculi were formed in the kidney or in the ureter. But multiple calculi are usually from the kidney, the result of partial stasis from a pre-existing stricture. It is usual to get a history of renal colic and discomfort preceding the impaction of the calculus. But many cases give no such history. Some of the cases may have a stricture of the ureter, but a good number have none.

AGE.— It is rare to find ureteral calculi before the age of twenty and after the age of sixty, the highest incidence being in the fourth decade. Two-thirds of the cases occur in the age period of 20 to 50. Ureteral stones in children are often associated with congenital anomalies or strictures of the ureter.

SEX.— They are twice as common in men as in women.

They are equally common on both sides. Unilateral stones are more common than bilateral ones. Only in 3 to 4 per cent they are bilateral. Apart from calculous anuria, bilateral stones are uncommon.

PATHOLOGY

COMPOSITION OF STONES.— The composition of ureteral stones is practically the same as that of renal stones. Since smooth stones pass down easily, uric acid and urate stones are rare. Cystine stones are practically never held up. Fifty per cent of stones passed naturally are composed of uric acid. Impacted stones in the ureter are usually of calcium oxalate when aseptic, and phosphatic if infected. *B. coli* infection usually gives rise to calcium oxalate stones. Phosphatic stones may have a nucleus of calcium oxalate or uric acid, or be phosphatic throughout, depending on whether the primary stone was formed in sterile or infected urine. The presence of a primary nucleus shows that the infection was secondary. If the phosphatic coat is uniformly thick it indicates that the stone received the coat before leaving the renal pelvis and that infection was already present.

In the case of an aseptic stone impacted in the ureter for some time, the phosphatic deposit is greater and thicker at the upper pole than at the lower pole. Finally, the nucleus comes to lie at the junction of the middle and lower third. The upper end is often broad and the lower end pointed as in an orange pip or an almond.

SIZE.— The majority of ureteral calculi removed these days are not very large, as the patients come under observation earlier and the diagnosis is easily made. The average weight is about 1 gramme. Most of the smaller ones are usually delivered into the bladder by cystoscopic methods. But very large stones have been reported in the literature. Usually they are about 2 cm. long and 1 cm. wide.

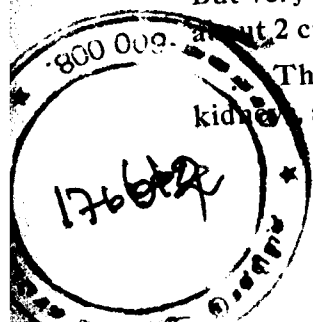
Though ureteric calculi are small they cause a lot of damage to the kidney, and sometimes, when bilateral, calculous anuria.

SHAPE.— Small ones are rounded or oval, if recent, and give in radiograms small round or oval shadows. When a stone remains in the ureter for some time it becomes elongated by further deposits, taking the shape of a date stone. When it has remained a very long time it is liable to become curved, taking the shape of the pelvic ureter, where most stones become impacted. A stone grows upwards against the urinary stream, and is tapering in a normal-sized ureter. Sometimes the upper end is blunt and thick, indicating a dilated ureter, and the stone resembles an almond in shape. A greatly elongated radiographic shadow in the line of the ureter indicates that the stone has been impacted for a long time. Such a stone is unlikely to be passed naturally, and, if tapering both ways, it indicates that the ureter is not dilated, that obstruction to urine is little or none, and that the kidney is not much damaged by back pressure. But the organ may be damaged by infection. Large rounded or oval stones occur only in dilated ureters; such stones are liable to slip up, and in such cases the kidney is poor in function.

Multiple calculi are usually faceted when they lie in contact with one another. But in a dilated ureter they may or may not be faceted. Their surfaces are usually smooth, being rubbed and washed by the current of urine, like pebbles in a stream. Calcium oxalate stones, when recent, would be covered by sharp crystals, but if impacted for some time become smoother by coats of albuminous material. Fresh oxalate stones are of fawn or light brown colour, but older ones are darker in colour and smoother by the deposit of pigmented colloid. Phosphatic calculi are white or greyish in colour, with a rough surface, like sand-stone. They become highly polished when multiple.

NUMBER.— The majority are single. Multiple stones are not so common in the ureter as in the renal pelvis, but rare (about six per cent), and found usually in dilated and infected ureters. Bilateral cases, apart from calculous anuria, are rare (about 5.6 per cent, i. e., a quarter of bilateral renal calculi). Bilateral ureteral calculi are always dangerous as they may cause anuria.

SITE OF IMPACTION.— The majority become impacted in the pelvic ureter. The calibre of the ureter is not uniform. There are definite constrictions separating three dilatations or spindles (see Diagram). There are also two sharp bends, one as it crosses the iliac vessels and a



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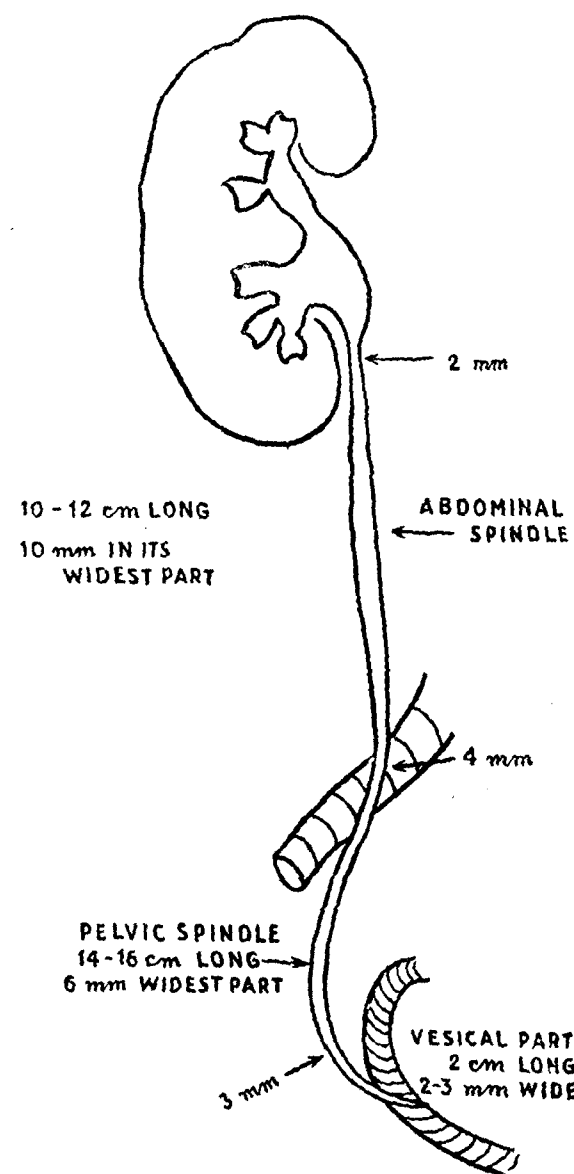


Diagram showing the spindles of ureter and the physiological constrictions where stone may become impacted.

second as it enters the bladder. The first is fixed, but the second moves with distension of the bladder. The sites of impaction, according to JEANBRAU, are lumbar ureter 22 per cent, iliac part 7 per cent, pelvic 51 per cent, intramural part 17 per cent. 70 per cent of impactions occur below the brim of the true pelvis.

CHANGES PRODUCED.— The ureter may get dilated by constant passage of stones for a long time without impaction, but this is not common. When a stone is impacted, an aseptic one grows proximally and in girth, assuming a date stone or almond shape. In the absence of obstruction to the passage of urine, the stone forms a 'nest' for itself. There is a localised swelling of the ureter at the site of impaction, but the calibre above and below may be normal. The localised dilatation is due to mechanical pressure by the growing stone. Such a stone does not move, and an incision into the ureter is necessary to remove it. The ureter at the site of impaction is not thinned out but firm and holds the sutures well. The mucosa, though congested, rarely shows any ulceration. The proximal part of the ureter may show some dilatation depending on the duration and the degree of obstruction. The dilatation is not marked in the absence of infection. The ureter below has a normal lumen. But if there be a stricture below the stone, the proximal ureter is found dilated and the stone is rarely 'nested'.

Infection.— There is a tendency for the pelvis and the proximal ureter to become dilated from an impacted stone that causes obstruction. If infection occurs the obstruction increases by congestion and oedema of the mucosa. At the site of impaction ulceration of mucosa occurs, and the wall of the ureter becomes thickened by inflammatory connective tissue. Peri-ureteritis follows, and the soft areolar tissue surrounding the part becomes sclerosed, thickened and increased in amount. The ureter becomes surrounded by dense hard fat binding it both to the peritoneum and to the posterior abdominal wall. Though suppuration is unusual, it may occasionally occur, and the abscess may spread along the retroperitoneal space and open into the bowel or externally. Below the impacted stone a stricture may form as the result of inflammation, and it should be looked for and corrected.

The ureter proximal to an impacted stone may be found dilated, sometimes to an enormous size, resembling the intestines. The ureter

not only dilates, but becomes tortuous and angulated. Hence, shadows of stones may be found some distance from the ureteral line. In these cases the kidney function is very poor or practically destroyed. In other cases, the ureter above the stone is only slightly dilated, and the walls thickened and moderately adherent to the peritoneum. The longer the stone is impacted the greater is the peri-ureteritis. The amount of dilatation is dependent on the presence of a pre-existing stricture and the amount of obstruction to the passage of urine.

When a stone is impacted in the intramural part and gets *nested*, it forms a prominence above and lateral to the ureteral opening as seen by cystoscopy. In infected cases, as the stone increases in size, ulceration results, and finally the stone escapes through a vesico-ureteral fistula. With stricture of the ureteral meatus cystic dilatation may occur by distention of the anterior wall, the tiny ureteral opening being displaced inwards and backwards on to its posterior aspect. I am reporting here a case of this type where a ureterocele was packed with stones. (Case 3).

When a ureteral stone has *nested* for a long time, the niche so formed dilates into a sacculus or diverticulum in which the axis of the stone may lie more or less at right angles to that of the ureter. The shadow of such a stone may lie some distance from the opaque bougie in the ureter. If some opaque material is injected the sacculus is seen to be filled.

CHANGES IN THE KIDNEY.—Stones that give rise to complete or almost complete obstruction cause serious damage to kidney function unless the obstruction is relieved. When bilateral, calculous anuria results. With partial obstruction there is at first a hypertrophy of the muscular wall of the renal pelvis and the ureter, but later dilatation results. First the calyces dilate, then the pelvis, and finally the ureter. A hydronephrosis with destruction of the kidney substance results. But if the stone is removed before the hydronephrosis has advanced, improvement occurs in kidney function by a certain amount of regeneration. Presence of pain in the kidney region always indicates a functioning kidney. With gradual destruction of the kidney pain decreases, and finally ceases when complete destruction has taken place. In uninfected cases severe destruction of the kidney is accompanied by marked dilatation of the ureter and pelvis.

Infection is always a serious complication in obstruction by a calculus in the ureter, as it causes rapid destruction of kidney function. During operative exposure, such a kidney may appear to have considerable thickness of renal tissue, but microscopic examination would show that the glomeruli and secreting tubules are severely damaged by inflammation or strangled by inflammatory fibrous tissue. The only hope in such cases is removal of the stone and treatment of the infection. Prognosis is better with *B. coli* infection than with infections due to staphylococci or urea-splitting organisms. The former may subside after removal of the stones, but the latter is liable to persist. A unilateral infection, if left long, is liable to become bilateral, and when this happens it is practically incurable. The final stage of infected cases is the conversion of the kidney into a pyonephrotic sac, with or without secondary stone formation. In such cases symptoms of acute septic intoxication indicate a nephrectomy rather than the removal of the stone from the ureter. The latter may be dealt with later on, or left alone if silent. In such a case, if the stone from the ureter is removed the kidney will drain and become small and atrophied, but will still discharge pus into the bladder and act as a chronic septic focus that never heals for the rest of the patient's life, and be always a danger to the remaining kidney.

In some cases without obstruction, though the stone may be large, there is no back pressure on the pelvis, and so no dilatation results. If infection is absent the kidney gradually becomes fibrotic and resembles that of chronic interstitial nephritis. But infection in such cases is more common than not. Where infection is mild, the kidney shows the typical appearances of chronic pyelo-nephritis. In its terminal stages it appears small, deeply lobulated, hard and deep purplish-red in colour. The capsule is thickened and does not strip easily. Section shows considerable thickness of renal tissue, but the kidney substance is pale and hard, and the distinction between cortex and medulla is practically lost. These changes are less marked at the poles where the medullary rays may still be faintly seen. These kidneys are often surrounded by thick fibrotic fat.

Acute infection in the presence of impacted stone usually causes marked obstruction due to inflammatory oedema of the ureteral mucosa narrowing the lumen further. Hence, dilatation of the ureter and pelvis results. The infection gives rise to pyelo-nephritis. The kidney is somewhat larger than usual, but is hollowed out. Section shows yellow streaks along the course of the collecting tubules, or miliary cortical abscesses, or

both. Constitutional symptoms are acute and severe, and it may require nephrectomy to save life, the kidney being badly damaged.

Hence, a stone impacted in the ureter is a real danger just as an obstructed appendix is, and every attempt should be made to remove the stone by treatment.

Affects on the opposite kidney.—Compensatory hypertrophy of the opposite kidney takes place, and is most marked in the absence of infection and less so when infection is strictly unilateral and not excessive. It is absent in severe toxæmia and bilateral infections. In severe toxæmia degenerative changes may occur in the opposite kidney. This compensatory hypertrophy of the healthy kidney occurs when its fellow is extensively damaged, and most marked in aseptic destruction as after nephrectomy for injury, growth, in hydronephrosis, or destruction by complete and sudden obstruction of the ureter. Infection, even though entirely restricted to the damaged kidney, prevents such a hypertrophy to a greater or less extent. Hence, it is not marked or is not evident so rapidly after removal of tuberculous kidney, pyonephrosis, etc. The hypertrophied kidney may be 50 to 60 per cent above the normal weight. Such a kidney gives a good response to excretion tests by indigo-carmin, urea and phenolphthalein. In urea concentration test a ureteral specimen giving a concentration above 3.5 per cent is indicative of hypertrophy. Such a hypertrophy indicates that the affected side is destroyed to a greater or less extent and would remain atrophic even if the stone in the ureter be removed. In such cases the proximal ureter and pelvis are found markedly dilated. But if infection be present, as shown by presence of pus in the urine, fever, etc., the healthy kidney shows no evidence of hypertrophy, but might do so after nephrectomy.

Degenerative changes may occur in the fellow kidney from long-continued infection above a stone on the affected side. The changes seen are usually of toxic nephritis from actual infection from the primarily infected one. But such a kidney rapidly improves after removal of the affected one, as shown by functional tests before and after nephrectomy.

In most cases of bilateral infection, the second kidney is infected from the first one. There is a steady diminution of renal function and the patient dies of uræmia. In such cases removal of stone should be accom-

panied by drainage of the kidney. Pyonephrosis, however, is an indication for nephrectomy as there is no kidney tissue left in such an one.

Intravenous pyelograms give a fair indication whether the primarily affected side is able to secrete the dye or not.

SYMPTOMS AND SIGNS

These may be classified as (1) *those due to a migrating stone*, (2) *those due to an impacted stone*, and (3) *those due to renal back pressure*.

Symptoms due to a stone passing down the ureter.—Smooth and small stones may pass down giving rise to mild transitory pains, often over-looked as in children. A stone passing down rapidly gives rise to typical renal colic which may last for a couple of days. When it has reached the vesical end it may give rise to some frequency of micturition and tenesmus of bladder. A stone travelling down slowly gives rise to intermittent attacks of renal colic which recur every day, every week, or at longer intervals. The recurrent attacks are milder and of shorter duration. There is a gradual shift of the point of maximum pain and tenderness. At first it is in the renal angle, then it shifts to a point half an inch below and medial to the tip of the 9th costal cartilage, and then it travels along the other border of the rectus muscle to the external abdominal ring. When the stone is in the upper spindle, there is more pain in the renal area, and during colic nausea and vomiting are more evident. The pain always radiates downwards from the maximum point. Pain and tenderness of testis may be noticed when the stone is below the brim of the pelvis. A mild attack is more localised to the site of impaction. When the stone is projecting into the bladder at the tip of the ureter, pain may be referred to the fraenum at the end of micturition.

Symptoms due to impacted stones.—About 60 per cent of cases give a history of previous renal colic, short repeated attacks replaced later by fixed pain. This pain is increased by exercise, jolting, and relieved by rest. The site of pain indicates the site of impaction. There may be some dull pain in the renal angle from back pressure, especially after diuretics or drinking large amounts of fluids. The fixed pain is a dull and heavy ache, but may be severe occasionally and become worse by jolting. Stones that cause no obstruction may be silent, but changes in the urine are always present. The pain is usually referred to a point a little above the actual site of impaction.

Referred symptoms.—In the majority of cases these are absent. When impacted just above the intramural part of the ureter, painful nocturnal emissions, pain on coitus at the time of ejaculation, blood-stained semen, and pain in the testis and along the vas due to irritation of seminal vesicles (Young) may be complained of. Pain in the rectum increased by defaecation may occur. When the stone is in the intramural part, increased frequency of micturition, both diurnal and nocturnal, with vesical tenesmus and pain at the tip of the penis after micturition, may be complained of.

Changes in the urine.—In aseptic cases, haematuria, variable in quantity of blood, is present. The urine may be quite clear and show a few red blood cells in the centrifugised deposit. Sometimes it is smoky and sometimes frankly blood red. GUYON pointed out that persistence of haematuria for more than a few days after cessation of renal colic strongly suggested impaction of stone in the ureter. Presence of red blood cells in the centrifugised part of the urine is as constant in ureteral stones as in renal stones. It is more evident in cases with pain than without. White blood cells are found only in small numbers in aseptic cases, but greater than red blood cells. Presence of ureteral epithelial cells is of diagnostic importance. Exercise does not increase the amount of blood to the same extent as in renal stones.

In infected cases the deposit is greater and consists chiefly of leucocytes, and erythrocytes are either absent or very few. A deposit of a fair amount of erythrocytes with a large amount of leucocytes is more suggestive of tuberculosis than of stone.

Casts are occasionally present, hyaline more often than granular. Blood casts indicate pyelonephritis.

Presence of crystals is not of much diagnostic value.

A distinct polyuria is occasionally seen due to hypersecretion from the affected side. Oliguria is more usual, but this is variable. Anuria is a danger signal and calls for prompt intervention.

Increased frequency of micturition is evident only in intramural impaction of stone. It is both diurnal and nocturnal. Vesical tenesmus is present during an attack of renal colic and for some time after it.

Symptoms of back pressure.—Impaction of a stone generally tends to damage the kidney above, the rapidity of the damage being dependent on

the amount of obstruction and the presence or absence of infection. The process is slow in aseptic cases and rapid after onset of infection. Ureteral obstruction predisposes the kidney on the side of obstruction to haematogenous infection. Infection, once established, persists till the obstruction is removed, and sometimes even afterwards. Persistent renal pain with tenderness on palpation is the most significant sign of back pressure. A dull pain in the renal angle with tenderness on palpation is the commonest. The kidney may or may not be palpable, depending on the distension and tenseness of the renal pelvis. Large hydronephroses are not common and even these are flaccid except during an acute attack when the rigidity of the abdominal muscles makes it difficult to be appreciated.

One meets with large swellings in infected cases, and on palpation a tender swelling can be made out. With this swelling, intermittent fever, pain in the back, and pyuria are present. The temperature is high in the evenings and near the normal in the mornings. Sometimes high fever with slight remissions is seen, with pyuria and rigors, indicating pyelo-nephritis. A sharp rise of temperature with shivering may occur after an attack of renal colic.

EXAMINATION

Physical examination of the kidney has been described before. It is practically impossible to make out a ureteric calculus by palpation. In some cases one may be able to make out a lump by vaginal or rectal examination when the stone lies near the bladder end of the ureter. Points of tenderness give more information as already mentioned. A point two inches lateral to the umbilicus corresponding to the lumbar ureter may be more appreciated, as the ureter here lies in front of the psoas and is palpable.

Examination of the urine is more important and the changes to be noted have been already described.

Radiological examination.—Roentgenograms should be taken after preparing the patient properly to exclude gas and foreign bodies in the intestines. These should be studied carefully. Then intravenous pyelograms should be done. These would give information about the function of the kidney, the presence of dilatation of the ureter and the renal pelvis, and the relationship of the upper urinary tract to suspected shadows. If still doubtful the retrograde method of visualisation should be undertaken.

Cystoscopy. — It is better not to do this during an acute attack of renal colic. In acute stages the ureteric orifice is seen to contract violently, but the efflux is poor and not blood-stained. In these a catheter could be passed up. It may dislodge the stone or pass upwards by its side and give relief from pain. When examined a few days after an attack of colic, small rounded or flame-shaped haemorrhages may be seen a couple of millimeters from the orifice and surrounding it. The orifice may be slightly injected and pouting. The efflux may be normal in some, and forcible but clear in others.

When the stone is impacted in the upper part of the ureter nothing abnormal may be evident, or the efflux may be cloudy in infected cases.

When the stone is in the pelvic part just above bladder, the efflux may be clear, or cloudy if infected, and the opening slightly oedematous and everted.

When impacted in the intramural part, the opening is gaping and more or less fixed. The orifice is congested and round. If the stone be high up, a swelling may be noted above and lateral to the orifice in the line of the ureter. The opening is surrounded by oedema which may be bullous in some. The oedema is more severe in infected cases.

When the stone is at the orifice, it may be seen as a brownish mass surrounded by congestion and bullous oedema of a dusky hue. If an infected stone, it looks white and surrounded by purplish bullous oedema.

Occasionally, cystic dilatation may be seen as in Case 3. An opaque catheter should now be passed up. It may be arrested by the stone, or it may slip up by its side when a free flow of urine will be seen. A stereoscopic radiogram is now taken. Next, opaque fluid is injected and another radiogram taken. After this the catheter may be withdrawn and another radiogram taken two hours later.

Interpretation of the radiograms should be done with the assistance of the Radiologist. The first radiogram would show the relationship of the ureter to the other shadows. The second one may show a dilated condition of the ureter and the pelvis. Uric acid stones appear as negative shadows in the ureterograms and as ringed shadows in the last one taken. Estimation of functional value of each kidney may be carried out before doing the pyelograms. Both indigo-carmin test

and urea excretion test can be done. About 5 c. c. of urine should be collected from each ureter by catheters. For this the patient should be given 15 grammes of urea in 100 c. c. of water, an hour and a half before cystoscopy.

By these means a definite diagnosis as regards the site of impaction and the number of stones can be made, and the condition of the ureter and the kidney proximal to it, and the condition of the opposite kidney can be definitely ascertained. This helps in giving an opinion on the prognosis and treatment.

With this technique failure to show ureteral stones is about 4 per cent. Stones over 2 mm. in diameter give shadows unless made of pure uric acid. Such stones may appear as ringed shadows in the last radiogram mentioned above.

DIFFERENTIAL DIAGNOSIS

This is necessary in an acute emergency where intense pain, vomiting, abdominal distension, and absolute constipation and some shock are present. Radiograms are not of much help owing to the small size of the stones and the gaseous distension of the intestines. Presence of blood in the urine, tenderness in the renal angle, and partial or one-sided muscle rigidity favour a diagnosis of ureteral stone. The pulse rate should be noted every half-hour. A rising pulse of over 100 per minute would suggest an intra-peritoneal trouble. In renal colic an initial high pulse rate begins to come down later. When in doubt it is advisable to do an exploratory laparotomy to deal with intra-peritoneal conditions.

In cases of recurrent attacks of pain in the right iliac fossa, chronic appendicitis should be excluded. It is here that a detailed examination of the urinary and intestinal tracts is helpful in the differential diagnosis.

PROGNOSIS

Every stone impacted in the ureter is a danger to the kidney above, which gets gradually destroyed in course of time. If infection supervenes, this destruction is more rapid, with the added danger of infection of the opposite kidney through the blood stream. In bilateral cases there is always the danger of anuria. Smaller stones are more liable to cause this during their movement downwards by the added spasm and the inflammatory oedema.

CALCULOUS ANURIA

This is the most important emergency in ureteral lithiasis.

Anuria may be *pre-renal*, due to a fall in blood pressure to below 70 mm. Hg. as occurs in shock, spinal anaesthesia, etc. But this is temporary.

Renal Anuria is due to damage of renal epithelium as in poisoning by corrosive sublimate and in the terminal stages of chronic renal diseases. In chronic cases, signs of oliguria and uraemia appear before complete anuria.

Post-renal Anuria is due to obstruction in the ureters by stones, accidental ligature, inflammatory oedema of ureteral mucosa, etc. The condition may be bilateral or involve an only functioning kidney. In some cases the fellow kidney may be put out of action by reflex inhibition or a fall in blood pressure in the kidney vessels reflexly. If it be healthy it is likely to recover and secrete after 24 to 48 hours.

Calculous Anuria is not common. It sets in suddenly. There may or may not be any history of previous renal colic. The usual age period is the fourth to the sixth decades. It is more common in the male. It is more common in those who have had renal lithiasis for a long time and where bilateral infection is present.

The types of obstruction causing anuria may be classified into:—

(1) Obstruction of both ureters simultaneously, or consecutively with a few days interval.

(2) Obstruction of the only functioning kidney, its fellow being congenitally absent, removed for disease, or destroyed by disease or by previous obstruction.

(3) Obstruction of one kidney, its fellow being healthy but put out of action by nerve reflexes.

Oliguria may occur in those cases where the fellow kidney is damaged by disease as stone in the renal pelvis.

Complete obstruction of the ureter lasting over a fortnight is usually fatal to the kidney above. In the majority of cases the obstruction lies in

the upper portion of the ureter. The calculus is usually small, not larger than a pea.

In fatal cases of anuria, either both ureters are blocked or the ureter of the only functioning kidney is blocked. When one ureter is blocked and the opposite kidney is healthy, there is a temporary anuria for 24 to 48 hours, after which the healthy one usually begins to secrete. But one cannot be certain of this in such emergency.

SIGNS AND SYMPTOMS.—Often a previous history of renal colic, passage of stones, etc., may be elicited. A few may complain of back-ache or slight polyuria preceding the onset of anuria. In the majority of cases no prodromal symptoms may be evident. The painless type is very serious, as it indicates degeneration of both kidneys. In the painful type, if anuria persists after pain ceases, it indicates that the opposite kidney is functionless.

CLINICAL COURSE.—**Painless type:** During the first few days (5 to 6), *the period of tolerance*, the patient feels well enough to carry on his work but passes little or no urine. His blood urea steadily rises to about 100 mgm. on the third day, 150 mgm. on the fourth, and is usually 200 mgm. per cent before toxic symptoms appear. Anuria is rarely absolute, a few cubic centimeters of blood-stained urine being passed daily. The period of tolerance is usually 5 to 6 days but may be more or less.

The period of intoxication next sets in gradually, but sometimes suddenly. The tongue becomes coated and dry, and the patient complains of thirst. Next dryness of mouth and throat causes some dysphagia. The patient craves for water and has an aversion for solid food. The bowels are constipated; the abdomen becomes distended and tympanitic; hiccough sets in and is distressing by disturbing rest and sleep. Nausea and vomiting are present. If the kidneys are diseased, hiccough sets in earlier. Persistent headache is present.

Stage of coma.—Gradually drowsiness sets in and deepens into semi-coma or mental confusion. The patient does not recognise any one, lies listless and in an apathetic state. Picking at bed clothes and carphology occur, coma deepens, and death ensues.

The pulse is at first slow and hard, with raised arterial tension, but soon becomes soft, rapid and uncountable. Respiration is deep, slow and

noisy. Temperature is about normal at first and subnormal later. Blood urea rises to 200 to 400 mgm. per cent or even more.

If possible an immediate radiogram is taken and examined. It may or may not show stones, as most are too small.

TREATMENT OF ANURIA.—The first consideration is to restore the urinary secretion by catheterising the ureters or by open pyelotomy or nephrostomy.

Catheterisation.—Under aseptic precautions and local anaesthesia a cystoscope is passed in and the ureteral openings viewed. Then a No. 5 ureteral catheter is passed up the ureter of the affected side. If successful, a gush of cloudy and blood-stained urine flows down. Several attempts may be required with smaller sizes of catheter. Then a catheter is passed into the other ureter. The catheters are left in and the cystoscope is removed. Copious flow of urine takes place if the procedure is successful. The penis and catheters are wrapped with sterile gauze and the catheter ends left in a bottle containing some antiseptic. The patient is placed in Fowler's position and plenty of fluids such as weak tea, barley water, Vittel water, etc., is given. Five per cent glucose intravenously encourages the secretion of urine. Avoid normal saline as it puts more work on the kidneys to excrete sodium chloride. Caffeine citrate or theocin-sodium-acetate also stimulates secretion. Polyuria generally occurs and the blood urea comes down quickly. The catheters can be left in for about 10 days, but because of the danger of ascending infection it is best to remove them after 48 hours. The renal pelvis should be lavaged twice daily with weak silver nitrate solution (1 in 5,000).

Open operation is indicated where one has failed with ureteral catheters, where anuria recurs after their removal, and where uraemia is present. It should be done under local anaesthesia, with gas and oxygen, if necessary. Spinal anaesthesia is not advised, owing to the fall in blood-pressure which adversely affects the excretion of urine. The kidney is brought out by a lumbar incision; an incision is put on the posterior surface of the renal pelvis, and a drainage tube with its end cut obliquely is introduced and tied in by two fine catgut sutures picking up the edge of the incision and the tube. Next, another drainage tube is placed so that its end lies near the opening in the pelvis. Some prefer to do a nephrostomy through the cortex and the lowest calyx for draining. If the exposed kidney is found

disorganised, or contains a giant stone, etc., the opposite kidney and pelvis are exposed and drained. No time should be wasted in performing this operation as patients are on the verge of uraemia, or already uraemic. The tube becomes loose on the eighth or tenth day. The adjuvant treatments as described above. The bowels should be emptied by enemata when the patient shows improvement. The kidney in these cases is found swollen, congested and plum-coloured, the pelvis distended with cloudy and blood-stained fluid. Oliguria is a sign of failing kidneys and polyuria is a good sign. Blood urea should be estimated daily. A falling blood urea is the best sign of recovery. Mortality varies according to the number of days after the onset of anuria. Operations within 48 hours have practically no mortality; after that it rises: third day, 25 per cent; fourth day, 30 per cent; fifth day, 42 per cent; and so on.

TREATMENT OF STONES IN THE URETER

This consists in enabling the patient to pass down the stone, or in removing it with the minimum damage to his urinary organs, and then in putting him on a prophylactic treatment to prevent recurrence.

Medical Treatment is indicated in cases of gravel or passage of calculi not more than 1 cm. in diameter. Contra-indications are: (1) signs of renal back pressure; (2) chronic parenchymatous nephritis; (3) signs of obstruction in the lower urinary passages as enlarged prostate and urethral stricture; (4) chronic hyperpiesis, as giving diuretics and forcing of fluids is contra-indicated in these. Medical treatment may be tried where the urine is sterile or only mildly infected. An increase in renal pain with or without a rise in temperature, is an indication for surgical treatment. Medical treatment is not suitable when severe infection is present.

For acute renal colic of a rapidly descending stone, an injection of atropine with papaverine, and Tinct. Ammi Visnaga, 5 to 10 c. c., well diluted per os, is to be recommended. In slowly moving stones ingestion of large amounts of fluid such as barley water, weak tea, Contrexville or Vittel water (a bottle a day), would encourage polyuria. Potassium citrate, diuretin, etc., are given to increase urinary secretion. Tinct. Ammi Visnaga is an antispasmodic. If the stone shows no sign of moving, as seen by X-rays, in 4 to 6 weeks, treatment by cystoscopic methods should be done.

CYSTOSCOPIC METHODS.—Ureteric catheter, size 5 Charrier, is passed up and attempts made to slip it by the side of the stone. If this succeeds a free flow of urine begins. It should be sent up to the pelvis which is washed with silver nitrate solution 1 in 10,000. It may be left in for twenty-four hours and then withdrawn after injecting papaverine solution 2 per cent (0.3 gm.) If the catheter is stopped 1 c. c. of liquid paraffin or olive oil is injected and further attempts made to push it up. To reduce local congestion and spasm injection of 1 c. c. of 0.2 per cent pantocaine with a couple of drops of adrenaline is helpful; the amount injected should not exceed 5 c. c. The other step is to dilate the ureter below the stone by bougies and then to pass a small sized catheter beyond the stone. Next try to insinuate a second catheter by the side of the first. Continental urologists leave the catheters for 24 to 48 hours. These should be removed after lavage of the renal pelvis with dilute silver nitrate solution. After this the patient is given antispasmodics and large amounts of fluids. But, for stones impacted in the abdominal ureter, with a transverse diameter of 1 cm. or more and a vertical one of more than 2 cm., an open operation is the best. Stones giving dense shadow are either of calcium oxalate or of calcium phosphate. The former are very rough and can be passed down only after much suffering and damage to the ureteral mucosa; and a subsequent stricture of the ureter and damage of kidney by back pressure may develop. Phosphatic calculi occur in the presence of infection and it is inadvisable to try cystoscopic methods in these cases for fear of setting up pyelonephritis. A long cylindrical stone should be removed by operation as it usually has been impacted for some time. Cystoscopic methods are useful in recently impacted stones or those with a diameter of 5 to 10 mm.

Stones in the pelvic portion of ureter.—Stones in the intramural part of the ureter are very amenable to cystoscopic methods. The ureteral opening is slit up by diathermy, or scissors, or by both, for a distance of 1 cm. The stone may drop into the bladder after some time. If it is not passed in 5 days, another cystoscopic examination is made and further slitting of ureteral opening done when the stone usually slips out.

Stones above the intramural part of ureter.—After slitting the ureteral opening, the ureter is gradually dilated to size 10 Charrier and injection of liquid paraffine, etc. done. Recently diathermy has been used by BUEGER and others for dilatation and to overcome the ureteral spasm. A special electrode with a small olive end is introduced to reach the stone and a weak

current (200 to 400 milliamperes) is turned on for a few seconds. The electrode is removed and replaced by one with a larger tip and diathermy repeated. The process is repeated till enough dilatation is obtained. This requires experience as inexperienced handling may cause dessication of the ureter without any pain. The former method is much safer.

Contra-indications for cystoscopic methods.— 1. Stones exceeding 1.5 cm. in diameter. 2. Where there is much peri-ureteritis (in long standing cases). 3. Where kidney shows pyonephrosis or hydronephrosis. 4. If stone has been impacted for a long time. 5. Where cystoscopic methods have been once done unsuccessfully. 6. Where cystoscopy is badly tolerated. 7. Where ureteral manipulations produce severe reactions, especially in stones in the abdominal ureter.

OPERATIVE TREATMENT.—The functional capacity of the kidney should be estimated before operation is undertaken. If the kidney is disorganised by a giant stone, hydronephrosis or pyonephrosis, nephrectomy is the operation of choice, if the opposite kidney is adequate. The removal of the stone in the ureter is done at once if it is easily accessible, or deferred till later, depending on the condition of the patient. A stone left behind rarely gives trouble (in about 2 to 5 per cent it does from persistent pain or empyema of ureter or a sinus).

If the kidney contains stones but has fairly good function, the ureteral stone is removed first and then the stones in the pelvis, at the same sitting or subsequently depending on the state of the patient. If the ureteral stone can be pushed back into the pelvis it should be done before pyelotomy. Complicated procedures at one sitting tax the patient's strength and recuperative powers and are best avoided.

Simple *nephrectomy* is performed by the usual lumbar incision. If pyonephrosis be present it is advisable to aspirate the pus by a syringe and needle as by this means the subsequent steps are rendered easier. The ureter is exposed at the lower pole of the kidney and traced down as far as possible and ligatured distally, the proximal part being excised with the kidney.

Nephro-ureterectomy.—The pelvic ureter may be first exposed and cut between two ligatures and the proximal part isolated as far up as possible, through a sub-umbilical incision. Then the kidney and the upper

part of the ureter are exposed by the usual lumbar incision, and the vascular pedicle of the kidney is first dealt with; then the ureter separated by pulling from above and dissecting it free. Care should be taken not to open the peritoneal cavity as the ureter is often bound to it by periureteritis. Some prefer to expose the kidney first and examine it before proceeding further.

Uretero-lithotomy.—The ureter up to the level of the lower border of the fourth lumbar vertebra is exposed by a lumbar incision. The lower pole of the kidney is identified, and by pulling it up the ureter is made taut, identified and traced down. Palpation along it brings one against the preminence made by the stone. The ureter is carefully separated from the peritoneum for about an inch above and below the stone, and a tape looped round it and held by an assistant. The surgeon steadies the stone with the fingers of one hand and cuts directly on to the stone and upwards for a centimeter. The stone is delivered and a large sized bougie is passed down the distal part of the ureter. The incision is closed with fine catgut sutures, and the wound closed with a drainage tube. If the ureter is found dilated, the stone would be below and is to be milked into the upper part and removed.

THE ILIAC PART OF URETER.—Impaction in this part is rare. It can be exposed by a muscle-split incision as for the appendix, but placed a little more lateral. As soon as the transversalis fascia is exposed, it should be carefully incised and the peritoneum pushed medially. The peritoneal cavity can be opened and the stone palpated, but it should be adequately closed before exposing the ureter. The guide for the ureter is the external iliac artery which should be traced up to its origin where the ureter crosses it, but the ureter remains attached to the peritoneum. The stone is removed after separating the ureter for an inch as described before. The wound in the ureter is closed by catgut and the abdominal wound is closed in layers round a small tube.

PELVIC PART OF URETER.—The bladder is emptied by catheter. The patient is placed in the Trendelenburg position, the surgeon stands on the left of the patient to expose the right ureter and on his right to expose the left one. A mid-line incision from the symphysis pubis to the umbilicus is made and the recti separated. The apex of the bladder is identified, and retracted by a stay suture towards the operator. The peritoneum is now separated from the pelvis and the lateral wall of the bladder and pushed upwards

FIG. 1.



MULTIPLE URETERAL CALCULI
 Radiogram of Case 3 showing chain of stones ending in hooded mass
 By kind courtesy of The Antiseptic, Madras.

FIG. 2.



MULTIPLE URETERAL CALCULI
 Case 3. Photograph of mounted specimens. Fifty out of a total of
 sixty stones are seen. Total weight of stones 19.96 grammes

Composition—Calcium oxalate	74.2
Calcium phosphate	1.066
Calcium carbonate	10.013
Free acid	1.277
Insoluble residue to 10% HCl	3.47%

FIG. 3.



Radiogram of Case 3 showing four stones still left opposite
 the right ureteral opening. Taken on 24th Feb. 1934

FIG. 3



CASE 4. Radiogram of stone in relation to an opaque catheter passed up the left ureter.

FIG. 4



CASE 4. Radiogram of stone in left ureter after in ravenous pyelogram.

Note: No back pressure is caused. Ureter proximal to it is not visualized.

and inwards by fingers. Next palpation is done for the stone and the ureter, and the ureter is pushed up with the peritoneum. If the ureter cannot be felt, palpate the internal iliac artery and trace it to its origin. Here the ureter lies anterior to it, i.e., the palpating finger also. The lower end of the ureter can be identified by tracing the ductus deferens to the neck of the bladder. Further steps are the same as described before. The incision in the ureter is sutured and the ureter is dropped back. The abdominal wound is closed in layers round a drainage tube. The only trouble is when there is a dilated ureter as here the stone is liable to slip upwards in the Trendelenburg position. If the stone cannot be felt, the peritoneal cavity can be opened and the ureter palpated for stone. The stone should be milked down and held there by a tape above it and the peritoneum closed before incising on the stone. The ureteral incision is closed by catgut suture. The abdominal wound is closed in layers round a drainage tube passed down to the ureteral incision.

REPORT OF CASES

1. R., Hindu, male, 40 years, admitted on 1-11-'32, with history of several attacks of mild renal colic. Radiogram showed a shadow of a stone, the size of a rice-grain, in the right ureter just above the intra-mural part. Cystoscopy showed right ureteral opening slightly swollen, and the catheter was arrested at 3 cm. distance. Injection of glycerine was done. On 25-11-'32 cystoscopy was again done, catheter was manipulated and passed into ureter above the stones. It was left in for 24 hours, renal lavage followed by injection of glycerine was done before removal. Stone was passed on 1st December.

2. A. H., Mohammadan, male, 26 years, admitted on 25-9-'33 for renal colic. Radiogram showed a small opacity in the right ureter and confirmed by passing catheter. Cystoscopy showed a small bulge in the line of ureter. Two catheters passed in and left for 24 hours and removed after lavage and injection of olive oil. There was some reaction. Radiogram on 25th October showed no shadow and cystoscopy showed clear and free efflux.

3. A., Hindu, male, 35 years, was admitted on 10-2-'34 with history of colic and passing about nineteen stones during the previous eighteen years. A radiogram after admission showed a chain of stones in the right ureter ending in a hood-like mass. Urine was cloudy and contained pus cells in plenty. Cystoscopy on 13-2-'34. A swelling, apparently a ureterocele

packed with stones, was seen in the middle, and a swollen ureter extending upwards on the right. The left ureteral opening was normal. The ureterocele was cut into by diathermy electrode and the opening enlarged. He passed thirty-five stones during the next four days. Cystoscopy was done again on 17-2-'34 and diathermy was used for enlarging the opening further. A finger was introduced into the rectum and stones were massaged into the bladder. He passed twenty-five more stones. In this case the ureter was dilated and there was apparently a congenital narrowing of the right ureteral opening. In all sixty stones were passed while in the hospital. These were mostly cuboidal in shape and about 0.5 cm. in each direction. Cystoscopy on 5th March showed a fairly large right ureteral opening, efflux cloudy, and indigo-carmin excretion took ten minutes and was poor in depth of colour; the left took only 5 minutes and was normal in colour. (This case has been reported in detail in *The Indian Medical Gazette*.)

4. N., Hindu, male, 40 years, admitted on 3-3-'34 with history of cloudy urine and renal colic on the left side, of four years. Radiogram showed a shadow 1 cm. long and 0.5 cm. wide in the pelvic part of left ureter. Urine cloudy with pus cells. Cystoscopy on March 6th: Right ureteral opening normal. Left was swollen and efflux cloudy, catheter was arrested and an injection of liquid paraffin done. On the 10th a catheter was manipulated upwards by the side of the stone and was left in for 24 hours. Renal lavage and injection of glycerine done. On the 24th again two catheters were passed up and left in for twenty four hours and renal lavage and injection of glycerine were done. The stone was apparently 'nested' and showed no sign of moving. He was advised open operation but refused.

5. K., Hindu, male, 35 years, was admitted for left lumbar pain of a year's duration. Urine contained erythrocytes and pus cells *B. coli* infection was present and blood urea was 58 mgm. per cent. Cystoscopy on May 25th: Cloudy efflux from left ureter. Two catheters were passed up but were arrested by the stone. Renal lavage was done. Uretero-lithotomy was done on 8th June and stone removed. Kidney function was tested by intravenous pyelogram and was good on both sides. Blood urea was 35 mgm. per cent on 31st May and urine had become sterile by 26th June.

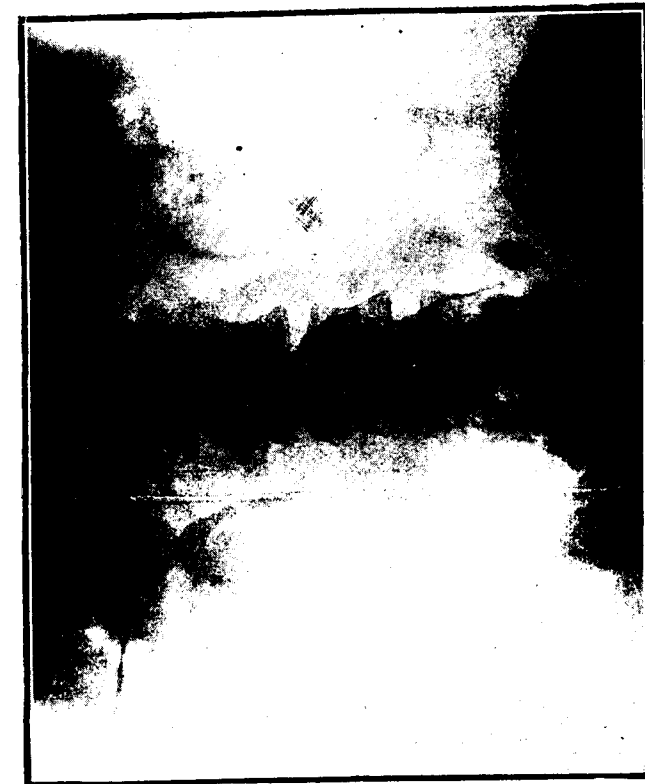
6. R., Christian, male, 30 years, admitted on 26-4-'35. History of pyuria, attacks of fever and pain in the left lumbar region. Duration 8 years. Radiogram had shown a shadow to the left of the fourth lumbar vertebra

FIG. 7.



Case 5. Radiogram with two opaque catheters in the left ureter held up by the stone. The stone has been pushed up half an inch by the catheters

FIG. 6.



Case 5. Radiogram of stone after intravenous pyelogram. Ureter proximal to stone is slightly dilated.

and was diagnosed as a calcified gland. Cystoscopy was done and a catheter was passed up the left ureter but was arrested, a retrograde ureterogram was done. This showed the stone to be in the left ureter and dilatation of the renal pelvis. Patient refused operation.

I am obliged to the Staff of the Barnard Institute of Radiology for the roentgenograms.

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FIG. 8.



Radiogram of two stones in the right ureter. The patient had a giant stone in the right kidney with pyonephrosis. Nephrectomy was done. Ureteral stones still there but have given the patient no trouble. The lowest part of the renal stone can just be seen. (See Case 2. "Renal Lithiasis", Part II. *Journ. S. I. Med.*, 11, Sept., 35, p. 96.)

THE MADRAS MEDICAL COLLEGE

1835—1935

CENTENARY CELEBRATIONS

4th—9th November, 1935

INAUGURAL CEREMONY

By H. E. THE GOVERNOR OF MADRAS

Monday, 4th November, 1935.

WELCOME ADDRESS

SIR MAHOMED USMAN, B. A., K. C. I. E.

President, General Committee, Centenary Celebrations

As President of the General Committee for the Centenary Celebrations of the Madras Medical College it is my privilege to offer Your Excellencies a most cordial welcome on this historic occasion. Your Excellencies' presence in our midst to-day has greatly enhanced its value. On behalf of the Committee I beg to convey to Your Excellencies our most grateful thanks.

The Madras Medical College, which was originally established as a school and later developed into a college, has earned a high reputation as one of the most efficient institutions imparting medical instruction in the Empire. It has supplied the country during these hundred years with thousands of trained and qualified medical practitioners who have been imbued with a high sense of professional honour and prestige.

The relief these successive generations of the alumni of the College have brought to the people of this Presidency and its adjoining Indian States, cannot be measured by mere figures, but is reflected in the general well-being of the population and in scores of ways.

The College has always set a high standard of accuracy and thoroughness in the instruction imparted; in fact, the Madras Medical College course and the Madras University examinations in medicine have not been regarded as suitable for easy-going students. The products of the college have held their own in coping with the obligations of any situation to which they were accredited.

The college has a great future before it with the rapidly advancing march of Science in many directions and the rapid extension of these buildings is an evidence of the expansion in the curriculum of studies and the larger influx of students seeking admission. We cannot forget on this occasion the illustrious men of Science who held professorial chairs in this College

College cannot, I fear, take credit to itself for those discoveries, but it was not slow to take advantage of them, and much valuable research work has been done here in addition to the practical instruction which has been imparted.

We may point with pride to the discovery in 1903 by Donovan, a Professor of this College, of the parasite of one of the then most deadly diseases prevalent in South India—kala-azar—paving the way for the subsequent introduction of a treatment which has reduced the death-rate of that disease from 100 per cent to almost nil.

The progress of medical science in the second half of the last century was indeed rapid, and no less rapid since 1900. With every step forward its complexity has increased, and parallel to it has been the growth of this College.

The history of the College is in fact the history of medicine in South India, until to-day it stands a noble monument to one hundred years of steady and devoted service in the interests of humanity. Attached to it are a wide range of clinical institutions as up-to-date and efficient as any in India, and amongst those in charge of them are men whose reputations are world-wide.

At the recent F. R. C. S. examination, held for the first time in India at this College, Madras candidates secured better results than their fellows from all parts of India, and I may fairly claim that the reputation of our medical profession is second to none.

A word, too, of congratulation to our lady students. For, is it not the fact, and justly so, that they who first stormed the citadel of male prejudice here in Madras are still able to hold their own in competition with the so-called sterner sex?

Ladies and gentlemen, we are met to-day in an institution of which any city in the world might well be proud. It is an ever-growing institution and this fine building in which we now find ourselves is the latest addition to its requirements.

But its needs are many yet. I think I am entitled to say that my Government have in the past dealt generously by the College, and I would now urge that the College deserves generously at the hands of the public. That the Madras public can be generous is shown by the example of a lady who has within the last few days offered an endowment of fifty thousand rupees for the institution of scholarships tenable in this College.

I refer to Mrs. Kamala Rangachary, and it gives me great pleasure to take this opportunity of expressing to her the gratitude of my Government for her munificent gift.

The President of the Centenary Celebrations Committee has informed you that a Centenary Fund has been opened and will be kept open for a year from this day. I understand that subscriptions to it already total Rs. 14,000 apart from Mrs. Rangachary's gift. I warmly sympathise with this undertaking and I confidently appeal to you and to the public at large to give it your generous support, for no worthier object for your charity could be found.

In conclusion, ladies and gentlemen, I would like to assure you that the interest taken by Lady Marjorie Erskine and myself in this College is deep and abiding. This afternoon will long remain amongst our happiest memories of Madras. We wish the College and its Centenary Celebrations all possible success.

CENTENARY DINNER*Wednesday, 6th November, 1935.***THE MADRAS MEDICAL COLLEGE OLD BOYS' ASSOCIATION**

In connection with the Centenary Celebrations, the Old Boys' Association gave a dinner which was largely attended.

The guests on arrival were received by Rao Bahadur Dr. A. Lakshmanaswami Mudaliyar and Dr. N. Venkataswami Chettiar and conducted to the second floor of the new Pathology block.

The dinner was held in the library hall; Dewan Bahadur Dr. C. Natesa Mudaliyar, an old boy of the College, presided.

Dr. Natesa Mudaliyar proposed the **Toast of H. M. the King-Emperor**, which was enthusiastically drunk.

Rao Saheb N. Ramaswami Nayudu, the oldest student of the College, proposed the **Toast of the Alma Mater**. His family has been connected with the institution for nearly a century. His father entered the College in 1836, a year after it had been formally opened. In the course of his speech, which was read out on his behalf, he said:

"The central life-size picture adorning the main hall (which is now, I understand, used as a students' common room) among the many Surgeons-General, Principals and Professors, is that of my Principal, Surgeon-General George Smith. There were also James, Shaw, William Mackenzie, Balfour, Robert Cole, George Biddie and Fernel. I had the honour to attend their lectures in the College and later to serve under some of them.

"The anniversaries in those days were quasi-military functions and generally were presided over by the Governors. The Commander-in-Chief, the Generals of the Divisions, the Judges of the High Court, the Secretaries and Members of the Legislative Council, the Sheriff of Madras, and the elite in Madras, attended these in large numbers.

"The first two that graduated through the Madras University were Doctors Rockwood and Dhanakoti Raju. On both of them subsequently were conferred the degree of M.D. The first alumnus of this College who went to England and competed successfully for the Indian Medical Service was Dr. Shortt, an Anglo-Indian. He was followed by Dr. Kees who was my Professor of Anatomy. Among the Dressers, Dr. Palaniandi (failed to secure a pass in England, returned and) served in the Travancore Durbar as Superintendent-General of Vaccinations.

"These were all incidents that took place before many of you were born. I served H.M. Queen Victoria, her son King Edward VII and our beloved Emperor, King George V, for forty years, both in India and abroad; both during peace and war; and retired thirty years ago as Assistant Professor of the College.

"It is a great privilege to me to participate in this Centenary—a reunion of the old students and the present students and staff of the College; and may I conclude with a prayer for the prosperity and progress of my *alma mater* and for the success, happiness, contentment, peace and honour of its alumni and of the staff of this wonderful institution."

Replying to the toast Lieut.-Col. Clive Newcomb, Principal of the College, said: "Mr. Chairman and Gentlemen: I am deeply grateful to you for having asked me to reply to this toast. I feel perhaps it would have been more fitting that one of the real sons of this College should have responded to this toast rather than an adopted son, as I hope I may consider myself. Whatever other defects I may have in one respect I can yield to on one, I yield to no one, in my pride in the College.

"To many people the College means the buildings and, indeed, I often feel that it means more buildings than anything else to the inspectors who come from time to time to have a look at us. My pride in the buildings is mixed. We are all proud of this handsome new block. We regard with complacency the anatomy and physiology block and with affection, on account of its antiquity, the old centre block of the buildings. There are, however, other parts of the buildings discreetly hidden from casual visitors which are the objects of anything but pride.

"The buildings are merely the outer husk. The College, properly understood, is the company of men and women who work here. In them we can all take a legitimate pride. We have now a very highly qualified staff and what are commonly called the 'bad old days' are gone, when men were put in to teach largely on account of suitable seniority and other considerations and with little thought to their knowledge of the subject they had to teach. It is remarkable how successful the teachers were in those 'bad old days' and this serves to confirm my idea that the personality and general culture of a teacher is of as much or more importance than his specialist knowledge."

The **Toast of the Medical Profession** was proposed by Dr. U. Rama Rao.

He paid a handsome tribute to the services rendered to the progress of medical science in this country by members of the Indian Medical Service, who were, he said, the makers of Modern Medicine in India. They had done much for medical education, researches into various diseases and other fields of the science.

The demand for the reversion of the members of the Indian Medical Service to the military, leaving the civil posts to the sons of the soil, he observed, should not be misconstrued as an act of ingratitude, but was to be taken merely as a part of the programme of autonomy, which Indians claimed for themselves.

Continuing, Dr. Rama Rao said that forty years ago the period of training in the Medical College was not fixed. It used to be two, four, or five years. Now things had changed, the period was fixed at five and in certain cases at five and a half years. In those days the Professors of the College were members of the Indian Medical Service. He compared that state of affairs to the conditions prevailing to-day, when the professors were mostly Indians, holding high medical degrees. Thanks to the efforts of the late Dr. T. M. Nair the appointment of honorary medical men has come into existence.

He observed that medical men becoming ministers to Government would be a great blessing to the country, and he advised medical men to take up politics. Concluding, he said, "At any rate one thing is certain, that we are proud we belong to this noble profession and have the opportunity to serve and relieve human suffering. Let us pray God that this institution may gain strength and become more and more useful in the days to come."

Replying to the toast Lieut.-Col. R. E. Wright said: "When I was asked to speak in support of the toast of the Profession it seemed to me that there surely must be a lot to say about the great calling which unites doctors the world over under the three words, *The Medical Profession*. On thinking it over I realised that to me the profession was most naturally subdivisible into two groups the profession as exists for me in the world at large, and the profession as it exists for me in the country, or more particularly, in the presidency and city of my adoption.

"With regard to the latter it is an impressive mental process to review in my mind's eye the position as I saw it over twenty years ago and to-day. At that time with a very few notable exceptions the Madras members of the profession constituted a great group which struggled hard in the routine of dependent positions in trying to meet the more urgent medical needs, both curative, preventive and educational. I am not drawing a distinction between the official and the non-official members of the profession at all. Gradually the picture changed, and although to me the intervening years have seemed to fly, I can look back on the springing up of individuals of various talents, some in the political sphere, others in purely professional or academic spheres, until one realised that a veritable forest of independent growths was steadily taking shape. I can remember the progress of many of these individuals growing older contemporaneously with me in the service of Medicine and assuming larger responsibility with the years. I am glad to say that in the case of many I have been enabled not only to watch their progress with interest but also to maintain a valuable intimacy. Some slightly junior to me have gone—like my old friend the late Dr. Krishna Menon, others of a later period have with astonishing rapidity grown to win not only my respect but that of us all. To-day one realises that the profession here has a core of dignified and progressive scientists. For me then the profession as it exists in Madras, has attained an independence, an individuality, a style of its own, moulded of Western Medicine through Indian influences. But it has been very largely preoccupied with local affairs and has a distinctly local atmosphere.

"What of the profession in the world at large my other sub-division?"

"This is an entirely different picture. One sees the various groups of the profession in different parts of the world as one might see one's relations when on a visit, rather on their best behaviour, as their domestic troubles are kept in the background. Some of them are rich, some poor, some young, some old. Whether we like it or not we belong to that family and the dignity of any particular group and the esteem in which it is held by its neighbours is determined by the progressive scientific achievement of its individuals. It is the magnitude of the purely scientific attainments of any particular school which attracts the attention of the profession in the world at large. The profession as a whole is not really concerned with the parochial struggles of its various schools, but it is vastly concerned with the advancement of medical knowledge. Let us hope that the profession in Madras will not be content until early in the second century of its career it attains further dignity of attracting the universal attention of the world to its capacity for scientific progress, and produces Madras-qualified scientists, the mention of whose names will be a password into any other school in the civilized world.

I have just had an opportunity of looking from the outside, as it were, at the profession in Australia. Although nearly all the visitors from overseas were struck with the excellence of medicine in that country and the flourishing condition of its schools, it was the fact that

Australia had produced some master minds whose names are household words and whose work is of unsurpassed excellence in the realm of medical science that made the greatest impression.

At the great Annual British Medical Association dinner to which over a thousand sat down, there were of course numerous speeches. Like the school in Madras, the Australian schools are relatively young—just over a hundred years old—and apparently young schools are rather apt to let politics vie with science. We had therefore several doctor-politicians before the microphone. One such started hopefully by telling of a certain important speech which he had made. He asked his wife how he had got on. She said; "Well, you missed several good opportunities." He said, "What of?" She replied, "Of sitting down." We trusted this had made a lasting impression on him, but alas! he treated us to Australian politics till the more noisy elements ended the matter by shouting him down at the end of 35 minutes.

"Gentlemen, I have very nearly made a similar mistake, but will now take my opportunity and in doing so thank you, Mr. President, for giving me the privilege of attending one of the first big dinner parties of the Madras Old Students."

The toast of the guests was proposed by Rao Bahadur Dr. Lakshmanaswami Mudaliar, who said this day was a red letter day in the annals of the Medical Profession in South India, since this was the first occasion when an old students' rally, as it were, had taken place. The rejoicing was all the greater because there were present some distinguished guests representing different walks of life. The Old Boys of the College were pleased to find that the Hon. Minister for Education was present at the dinner. It was in 1918 that for the first time a member of the Government attended a medical dinner in Madras. He was Sir Alexander Cardew who took a deep interest in the progress of the medical profession and it was largely due to his efforts that the professorial chairs of the Medical College were thrown open to students of the College. The name of the late Raja of Panagal would ever be remembered with feelings of gratitude by people of this presidency for his remodelling the medical administration in this province and improving the health department.

Dr. Mudaliyar paid a handsome tribute to the services rendered to the cause of medical education in this presidency by such eminent professors of the College as Lieut-Col. Charles Donovan. Nothing pleased him more than to see representatives of the present students of the Medical College. They were the real representatives of students elected on a system of adult franchise.

The scheme for the construction of a hostel for the men students of the College was discussed and rediscussed, but nothing came out of it. With the aid of his fellow students Mr. Alagar, a student of the College, had opened a hostel at Periamet, which was the envy of students of many other colleges. He said that the Old Boys were proud of the fact that there were present women representatives of students, one of whom was a Muslim, which gave sufficient indication of the great changes in the country during the past few years.

Replying to the toast, the Hon. Dewan Bahadur S. Kumaraswami Reddiar, Minister in charge of the Medical Portfolio, endorsed the tributes paid to the services of the late Raja of

Panagal, and other distinguished men. No member of the Government, he said, had done more for the medical profession in this country than Sir Alexander Cardew and the Raja of Panagal. Perhaps if example was required of the deep interest taken by the Government in the medical profession it could be found in the fact that in spite of the financial depression the Government had assisted considerably in the progress of the medical department. In fact, it was during the last decade that the department had made the greatest progress. Concluding, he wished the institution and the Old Boys' Association all success.

The toasts and replies were enthusiastically drunk.

JOURNAL OF SOUTH INDIAN MEDICINE

NOVEMBER, 1935

THE CENTENARY OF THE MADRAS MEDICAL COLLEGE

The Centenary of the Madras Medical College was celebrated with great enthusiasm during the first week of this month. The opening ceremony was performed by HIS EXCELLENCY THE GOVERNOR OF MADRAS, and the function was attended by a large gathering which included not only the alumni and staff of the College, but also many of the prominent citizens of Madras. The celebrations were continued through several days on each of which some function or other, such as the opening of the Centenary Exhibition, the Centenary Dinner arranged by the Old Boys' Association, the College Sports, and the Prize distribution, took place. The College grounds and buildings, which were the scene of these events, were gaily decorated, and looked festive as became the occasion. There was good cheer all round; the students of the College, no less enthusiastic or hilarious than medical students elsewhere on similar occasions, lending to the entire show a wholesome carnival atmosphere. The celebrations were a great success, and on this much desired result the Committee in charge of the arrangements amply deserves congratulation.

The College which has furnished the occasion for these celebrations fully merits our consideration. To its history we need not devote much space. It has been fully traced by Col. NEWCOMB in his centenary address which we have reproduced elsewhere. Founded as a medical school in 1835 with a meagre staff and an equally meagre accommodation and equipment, it attained to the status and dignity of a College in 1850; but with insufficient staff, accommodation and equipment. And in spite of the lack of adequate facilities it established for itself both in India and abroad a great reputation as an efficient training ground for medical students. As time went on conditions improved, and at present it is one of the best housed, fully equipped and well staffed teaching institutions for under-graduate students the world over. During the one hundred years of its existence, as

SIR MOHAMED USMAN pointed out in his *Welcome Address*, "It has supplied the country with thousands of trained and qualified medical practitioners who have been imbued with a high sense of professional honour and prestige." And, as HIS EXCELLENCY THE GOVERNOR remarked in his *Inaugural Address*, the Madras Medical College "stands a noble monument to one hundred years of steady and devoted service in the interests of humanity." HIS EXCELLENCY said also that this College "is an institution of which any city in the world might well be proud." We know fully well, and this can bear reiteration, the institution has contributed largely to the public weal of this Presidency by training up and sending out medical men and woman in great numbers to look after the health of the people.

And what of the *products* of the College? The Madras-trained Medical Practitioners have at all times proved to be no less efficient, if not more efficient, than the medical practitioners trained anywhere else in the world. Time and again they have been commended in glowing terms for their skill and professional knowledge by persons well qualified to do so. In the academic field they have garnered many a rich harvest to the glory of their *Alma Mater* not only in this land but also in foreign countries. Many of the young men and women trained at this institution have achieved signal successes at examinations in London and Edinburgh, and proved themselves the equals of the young men and women trained in the institutions of these cities. The medical men and women who have gone out into the wide world from the Madras Medical College have by their devotion to duty and their professional skill and integrity established for themselves a reputation of which any member of the medical profession might well be proud. With changing times changing ideals have crept in; a spirit of research and thirst for knowledge have come to leaven the outlook of our medical men; clinical science has come to be cultivated; and, as Col. WRIGHT has pointed out, "To-day one realizes that the profession here has a core of dignified and progressive scientists."

In this connection we would pay a tribute to the long line of British medical men who have been on the teaching staff of the College. To them the College owes a great deal. The reputation it enjoys came to it largely through their efforts. They were mostly members of the Indian Medical Service, from which Service till a few years ago the professional staff of the College was almost entirely recruited. It is not contended that these officers were without fault, but it cannot be denied that they

devoted a good deal of time and care to the training of the young men and women who passed through the College. They brought with them the spirit of British Medicine which they infused into their pupils. The names of many of them will be remembered in Madras as long as Modern Medicine endures here. In one particular they were probably remiss. In the instruction they gave and in the example they set, research played little part. There were a few exceptions, one of whom especially, namely Col. DONOVAN, has earned world-wide renown. The College has now a large staff of Professors many of whom are old students of the College. Let us hope that they will continue the tradition of good teaching for which Madras was noted in the past.

The Medical College can well lay claim to being the main instrument that brought into existence a Medical Profession in this Presidency. But it must be confessed that the College has not fulfilled its obligations towards the Profession which it has brought into being. Medical education is the function of the College, but the College has failed to realize that no scheme of medical education is complete which has not made adequate provision for the continued education of the Medical Practitioner. The absence of facilities for post-graduate medical instruction in the College is keenly felt, and it is hoped that very soon this defect in its structure will be remedied, and the Madras medical graduates will be able to turn to their *Alma Mater* for further enhancement of their Professional knowledge. We are aware that funds are necessary to provide for instituting post-graduate facilities. But we feel that the public of Madras will help towards this cause and subscribe largely to the Centenary Fund which remains even now open. The example of Mrs. Rangachary bears emulation, and we are sure will find other willing patrons of Medical Education in Madras.

We wish the College every prosperity and success, and look forward to the time envisaged by Col. WRIGHT when he said, "Let us hope that the profession in Madras will not be content until early in the second century of its career it attains further dignity of attracting the universal attention of the world to its capacity for scientific progress, and produces Madras qualified scientists, the mention of whose names will be a password into any other school in the civilized world."

MEDICAL ETHICS

♦ ♦ ♦ ♦ ♦

"From time to time some one speaks loosely, accusing a fellow member of this or that violation of the code of ethics. Occasionally the charge is justified. More often, the act seems serious because of prejudiced judgment. We fail to consider the fact that some of our own acts, if seen through jaundiced eyes, might seem just as guilty to others.

♦ ♦ ♦ ♦ ♦

"What is the basis of our ethics? Can we not define it as the recognition by one in the profession of medicine of the obligation upon himself to give each patient the best possible treatment, curing where possible, alleviating the pain and supporting the strength of the incurable; accepting pay from those who can pay, but serving just as freely those who cannot pay; to treat each colleague in the manner in which he himself would like to be treated; to keep the profession clean and honorable?

"Our medical forefathers found that those doctors who boasted to the public of their skill in curing the sick, and invited patients to come under their care, were almost invariably more interested in their pay than in the cure of the patient and were usually poorly equipped to do a reputable practice. Those more skilled and conscientious thought of curing the patient first, and of their pay afterwards. They were not willing to promise that which they might not be able to deliver.

"In this way there gradually evolved what is known as the ethics of the medical profession, which lays upon the doctor the obligation to attract and hold his patients by the results which he secures for them and by the impression which his personality makes upon them. In other words, by the confidence which he inspires in them. This same general principle applies also to referred practice.

"In accordance with this principle, a doctor's success in building up a practice will depend first of all on the results of his work, and, almost equally, on the number of people he can successfully impress with his personality.

"There are many ways of securing these contacts. The method used depends on the taste and preference of the individual doctor. Some rely

entirely on their "professional manner" in daily practice, and have few outside contacts. Others prefer bridge, dances, and social activities. Still others turn to fraternal organizations, political life, educational or possibly religious associations to bring them into contact with prospective patients who may be impressed by their methods.

"In each of these fields of effort the doctor's efficiency is increased if news items carrying his name appear in the newspapers. If there is sufficient news interest, the article may be accompanied by a picture of the doctor—the winner of the golf tournament—or the one who has taken to the air in his own plane.

"A doctor exhibits his wares in everything he does—and he cannot help it. In every contact with others he either impresses people favourably or he convinces them that they want some other doctor to treat them when they are sick. Whether we like Dr. Pill or not, we cannot pass a rule that he must stay away from the dances because most of the ladies he meets become his patients. We cannot keep Dr. Driver away from the golf club because he is such a good golfer that all the athletes come to him when they are sick. When their names and faces adorn the newspapers in such a connection we have no right to object. If we envy them—let's bestir ourselves and follow their lead. There is no just tax on energy and industry. On the contrary—they pay a premium.

♦ ♦ ♦ ♦ ♦

"There is a distinct difference, however, between publicity of this type and that which furnishes news regarding the individual doctor's skill or equipment in the practice of medicine. If the latter has the effect of directly increasing his professional reputation it is unethical. Such publicity may be boot-legged under the guise of news but it violates the rules of fair play and is gross disloyalty to one's colleagues.

"It seems to me that we can briefly state the whole idea by saying that it is unethical to do anything which gives one man an unfair advantage over his colleagues who may be as able doctors as he; or to do anything which would confuse or mislead a patient who is seeking competent medical advice. In short, to apply the working of the Golden Rule to colleague and patient alike is the basis of Medical Ethics."

GLENN H. REAMS

—*The Bulletin.—The Toledo Academy of Medicine, Sept. 1935.*

GOVERNMENT OF MADRAS
LOCAL SELF-GOVERNMENT DEPARTMENT
(Public Health)

Order No 2793, P. H. (M.S.), dated 28th, October 1935.

The Government approve the proposal of the Surgeon-General to create a separate cadre of honorary officers under the designation "Honorary Licentiate Medical Officers." The cadre will consist of the three grades—1st, 2nd, and 3rd, and will be open to candidates possessing licentiate qualification L.M.P. The minimum period of service required for promotion from the 3rd to the 2nd grade and from the 2nd to the 1st grade will be five years and ten years respectively.

(By order of the Government, Ministry of Education and Excise.)

R. SUBBAYYA,
Joint Secretary to Government.



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2. Surgery: traumatic and postoperative wound pains, fractures, abscesses and prophylactically prior to operations.
3. Gynecology: dysmenorrhoea, inflammatory diseases of the adnexas or parametrium, pseudo-neuralgia due to pressure upon the pelvic nerves, obstetrics and climacteric disturbances, etc.
4. Internal Medicine: muscular and articular rheumatism, lumbago, gout, colics due to gall and kidney stones, pneumonia, pleuritis and angina pectoris, etc.
5. Oto-Rhino-Laryngology: otitis media, pain in swallowing especially in angina, etc.
6. Dentistry: toothaches prior and after extractions of teeth.

Administration: DORALGIN tablets should preferably be taken in some warm liquid. Injections may be administered subcutaneously, intramuscularly, and in special cases also intravenously.

Dosage: 1 to 3 times daily 0.3 grams. Children should receive correspondingly less.

Pharmacology: According to Bürgi's principle, the analgesic effect of pyrazolon derivatives may be increased considerably by combining same with products of the malonylurea group. This has very successfully been done in DORALGIN. The average dose of the harmless dimethylamido-phenyldimethylpyrazolon could be reduced and the desired increase in the analgesic action be attained by the addition of one of the most effective, but at the same time most harmless, compounds of the malonylurea group. A series of experiments made with the specific purpose to determine the decomposition in, and the elimination from the organism, of the sec. butyl- β -bromallyl-malonylurea, proved that it is almost completely broken down and therefore considerably less "foreign to the body" than if, for instance, the widely used diethyl barbituric acid (barbiton). This explains fully the fact why neither accumulation nor untoward after-effects such as benumbed head, aversion to mental work, have ever occurred after the administration of DORALGIN.

Clinical reports: Clinical tests have entirely confirmed the correctness of the theoretical reflections which lead to the synthesis of DORALGIN. Pains due to a great many causes were promptly relieved. Comparative experiments on humans regarding the action of DORALGIN and morphine, demonstrat-

ed that they both relieved acute and chronic pains in practically the same manner. The use of DORALGIN therefore, renders possible a considerable saving of morphine. DORALGIN can be given more advantageously because its administration does not result in a habit which is always a danger in the use of any of the alkaloids containing analgesics.

DORALGIN is well taken whether given orally or parenterally. Secondary or harmful effects have never been observed even if it was given for a prolonged period of time or if the individual dose was increased. In cases of insomnia due to pain, the analgesic action of DORALGIN suffices in most cases to produce a restful sleep. In special instances one to two tablets of DORALGIN may be combined with one to two tablets of the hypnotic and sedative Noctal.



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JOURNAL OF SOUTH INDIAN MEDICINE

among the various grades of medical men, in promoting their knowledge and in organising Health Exhibitions. He congratulated the President and members of the Tinnevely Dt. Medical Association on the happy idea of celebrating at Palamcottah the Centenary of the Madras Medical College and wished the College every success.

THE TINNEVELLY DISTRICT MEDICAL ASSOCIATION, MONTHLY MEETING.

At the beginning of the meeting resolution of condolence and sympathy was moved from the chair and passed *nem con* all the members standing in connection with the sudden demise of Dr. G. S. Krishna Ayyar of Pettaikulam.

The ordinary monthly meeting of the Association was held under the Presidentship of Lieut.-Col. T. S. Shastry, I.M.S. Dr. N. Isaac, L.M.P., the Secretary, read the minutes of the last meeting held at Tuticorin in September last which were passed. Dr. Ian M. Orr, M.D., CH. B. (Glas.), F.R.C.S. (Edin.), delivered a most interesting lecture on "Orthopaedic and Plastic Surgery" wherein he explained most lucidly by means of X-ray pictures and illustrations the main advances in Bone and Joint and Plastic Surgery outlining Winnett Orr's and Bohler's and Gillies's epoch making methods. Dr. Miss Lazarus, L.M.P., gave an interesting and exhaustive lecture on "Uterine Fibroids." The meeting proper was very instructive and informing.

Colonel Shastry, I.M.S., offered thanks to the lecturers, to the non-member visitors, and to the organisers and brought the meeting to a close after a common dinner.

CENTRAL MEDICAL ASSOCIATION OF SOUTH INDIA, TRICHINOPOLY

A meeting of representatives of District Medical Associations of Tinnevely, Chettinad, Madura, Trichinopoly, S. Arcot, and Salem was held at 4 P.M. on Saturday the 19th October 1935 in the Pehchi-Hall, National College, Trichinopoly.

It was unanimously resolved, that the above Association be formed representing as many District Medical Associations of South India as possible. The Coimbatore District Medical Association had written approving of the formation of the Central Medical Association and agreeing to be a member thereof.

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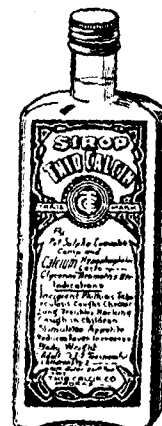
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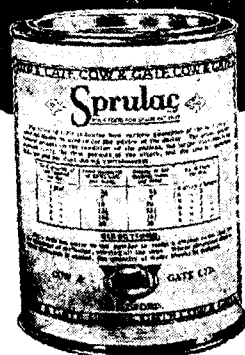
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ASSOCIATION NOTES

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It was unanimously resolved that all those present then with power to co-operate do form the Executive committee.

Dr. C. E. R. Norman was unanimously elected as the President and Dr. P. A. S. Raghavan as the Secretary of the Central Medical Association. A Sub-committee consisting of the President, the Secretary and Capt. Sangham Lal, Dr. R. Kalamegham, and Dr. R. Sambasivan, with power to co-operate was formed to draft the rules and bye-laws for circulation to the various District Medical Associations for approval.

THE TRICHINOPOLY DISTRICT MEDICAL ASSOCIATION (REGISTERED.)

A monthly meeting of the above Association was held at 5 P.M., on Saturday the 19th October 1935 at the Pethachi Hall, National College, Trichinopoly when about 60 members were present. Medical officers of the Srirangam Government Hospital, were 'At Home' and Dr. C. E. R. Norman presided.

Dr. Y. G. Henry of the Fort Railway Dispensary demonstrated an interesting case of Chenopodium poisoning in a child aged two years. Dr. Raghavan read extracts from Sajous on the toxicology of chenopodium. Dr. Narasimhalu Naidu of Siruganoor gave his experiences of a similar case of chenopodium poisoning. Capt. Sangham Lal, demonstrated two cases:—one of Pancreatic cyst operated upon by him some time back and another of a tumour of the jaw which is awaiting operation.

Dr. Raghavan delivered a lecture on 'Electro-Therapy' explaining the various diseases in which electro-therapy was useful or acted as a specific. The lecture was accompanied by the demonstration of the working of various machines and was much appreciated.

Dr. T. N. Subramanyan and Dr. R. Sambasivam gave their experiences of the specific action of Diathermy and ultra-violet-ray in cases of Pneumonia and Erisipalis respectively.

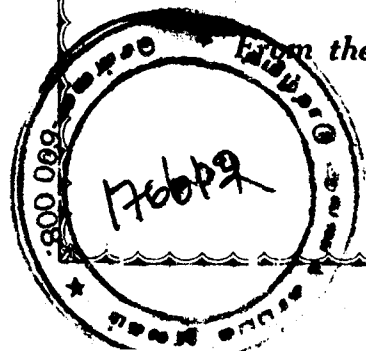
In his concluding remarks Dr. Norman made a few remarks about the various cases demonstrated and with a vote of thanks to the Lecturer, the Hosts, and the Authorities of the National College, for lending the Hall, the meeting terminated at a late hour.



SOME INTERESTING CLINICAL REPORTS.

1. This was a case of a man of 30 who complained of intense itching of the lower extremities upon undressing at night. There were no objective symptoms. The skin was extremely harsh and dry with a tendency to scaliness. This itching was so severe that it kept him awake for a very long time at night. Beyond rather a harsh dry skin no other dermatological characteristics could be detected. Except Oxaluria there was no other pathological condition that the patient was suffering from. I advised Sarcoptol lotion the strength recommended being one part of the solution to two of water. This lotion was rubbed into the affected parts after they were washed with warm water and soap. One week of this treatment showed appreciable signs of improvement. He was now free from itching to a great extent, was much more comfortable and could sleep without much disturbance. The same treatment was continued for four weeks at the end of which the itching had practically disappeared. There was no recurrence now for a long time. The analgesic action of Sarcoptol coupled with its parasiticial effects brought about great amelioration in this refractory case of pruritus.

From the Diary of a Medical Practitioner.



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