

TRANSACTIONS
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The President, DR. WILLIAM J. TAYLOR, in the Chair.

COMBINED CYSTOSCOPIC AND RONTGENO-
GRAPHIC EXAMINATION OF THE
KIDNEYS AND URETER.

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THERE is no group of organs in which methods of precision in diagnosis are more successfully employed than in surgical conditions of the urinary organs. It is indeed surprising what progress has been made in the diagnosis of surgical affections of the kidney, ureter and bladder. The physician who avails himself of the knowledge obtained from a systematic employment of these methods approaches his work with a more accurate knowledge of the pathological conditions and surgical indications than is obtainable in any other field of abdominal surgery.

The chief methods of precision used in the diagnosis of the surgical affections of these organs are the X-ray, the cystoscope and ureteral catheterization.

The X-ray has its greatest field of usefulness in the diagnosis of calculus of the kidney and ureter. Here there is more than one source of error. In a very small proportion of cases a calculus may exist, and a shadow cannot be discerned; again shadows occurring in the region of the kidney or ureter may be caused by other conditions and consequently be misinterpreted. The shadows which must be differentiated from that of stone are those produced by (1) phleboliths; (2) fecal concretions; (3) enteroliths in the vermiform appendix; (4) calcified costal cartilage; (5) osteoplaques; (6) folds of the intestines; (7) foreign bodies in the intestine (pills, tablets, Murphy button, etc.); (8) calcified arteries; (9) calcified lymphatic glands; (10) bullets or shot in the muscles of the back; (11) prostatic calculi; (12) fingermarks on the plates; (13) developing errors, from an uneven flow of the developer; (14) flaws in the plate; (15) tubercular kidney; (16) calcified myomata; (17) extra-uterine pregnancy; (18) dermoid cyst; (19) calcified ovary; (20) moles on the skin. Shadows are also obtained in hydronephrosis, pyonephrosis, and tumor of the kidney, but a correct interpretation is usually impossible.

Cystoscopic examination frequently reveals pathological changes which are characteristic of ureteral or kidney disease. The character of the bladder mucosa, the presence of ulceration particularly around the orifices of the ureters, the condition of the ureteral openings themselves, whether elevated, depressed, inflamed, oedematous, etc., together with their functioning characteristics, and, finally, the character of the fluid ejected (clear urine, blood or pus) are valuable data which aid in establishing a diagnosis.

Ureteral catheterization will determine an obstruction in the course of the ureter, the urine collected will give information as regards the presence of abnormal elements such as blood or pus. The manner of the flow will determine to some extent the functional activity of the kidney or the presence of residual urine in the pelvis of the kidney, such as occurs in hydronephrosis or pyonephrosis.

While ureteral catheters will determine the presence of an obstruction, it is frequently impossible to establish the nature of the obstruction. The passage of a catheter may be obstructed by a calculus, a fold of mucous membrane or diverticulum within the ureter, a stricture or twist of the ureter or pressure upon the ureter from without. Attempts have been made to determine the presence of stone by the use of wax-tip catheters or catheters fitted with a stylet and stethoscope attachment. These methods are often successfully employed in the female by using the cystoscopic tube, but in the male where more complex instruments are necessary their use is difficult and uncertain. The X-ray furnishes the most reliable information regarding the presence or absence of stone, but occasionally a mistake in interpretation is possible, because of the confusing shadows mentioned above.

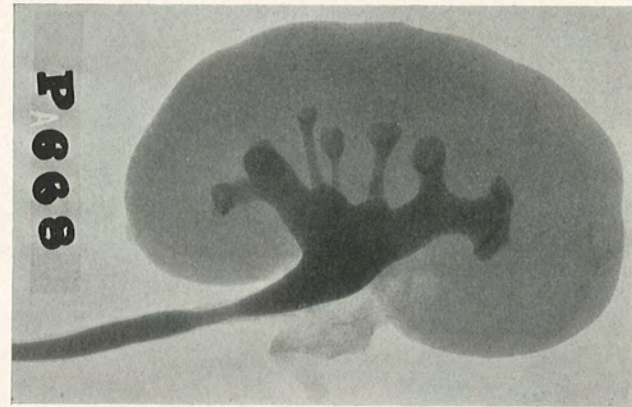
It is impossible that any one person can become thoroughly skilled in all methods of examination, and the usual practice of having separate examinations made by the cystoscopist and the Röntgenologist in the diagnosis of surgical conditions of the urinary tract is to be commended, especially as the examination made by one will aid the findings of the other. In many obscure or doubtful cases better results will be obtained by combining the Röntgen examination with ureteral catheterization or exploration, using for this purpose a catheter filled with a substance capable of casting a shadow. To facilitate the examination it is best conducted upon the table of the X-ray laboratory, the picture being taken immediately after the catheters have been introduced.

Catheters suitable for this purpose may be obtained by filling the lumen with bismuth paste, metal stylets or fluids of sufficient density to cast a shadow. Our first examinations were made with catheters filled with 30 per cent. bismuth paste. The ends of the catheters were plugged and the paste allowed to dry in the catheter. Flexible lead wire introduced into a catheter gives a more distinct shadow. Both of these catheters are flexible and can be employed without fear of injuring the walls of the ureter, when gently passed. We later found

that fluid injected into the pelvis of the kidney for renal diagnosis was of sufficient density to cast a shadow not only of the kidney pelvis, but also the ureter. Where a stone is suspected a more distinct picture is obtained with the lead catheter introduced to the point of obstruction. It is not advisable to withdraw the cystoscope during the X-ray examination, especially if the obstruction exists within three or four inches of the ureteral opening, as manipulation of the instrument may displace the catheter. The site of obstruction can be estimated by graduated catheters or by measuring the distance which the catheter must be withdrawn before it emerges at the ureteral orifice.

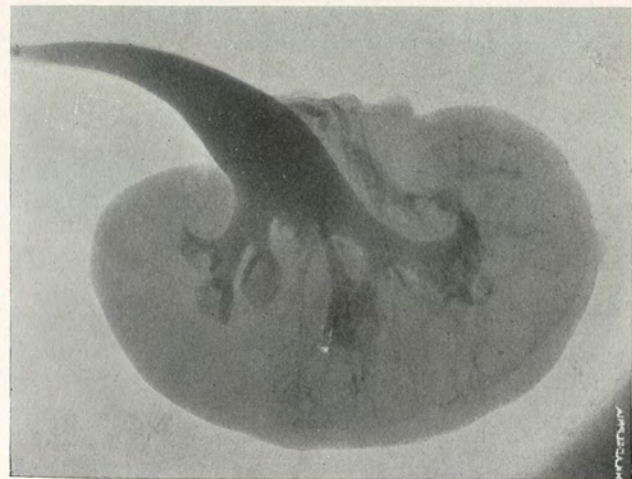
RADIOGRAPHIC EXAMINATION OF THE INJECTED KIDNEY PELVIS.

Before resorting to this means of examination in the diagnosis of surgical affections of the kidney numerous fluids of different strengths were X-rayed to determine the density of their shadows. The percentages of the fluids were selected in accordance with their physical properties and the strength with which they could be used with safety. Among the solutions employed were emulsion silver iodide 5 per cent., novargan 10 per cent., silver nitrate 1 per cent., collargarum 2 per cent. and 10 per cent., and colloidal silver oxide 5 to 50 per cent. Colloidal silver oxide is a silver salt said to contain 50 per cent. of silver, sold under the name cargentos. This salt in 50 per cent. solution gave the most dense shadow. A further test of this solution was made by injecting it into the ureter and pelvis of the kidney removed at postmortem. Before injecting this salt into the pelvis of the kidney of any patient it was used extensively in urethral and bladder affections and was found nonirritating in 50 per cent. strength. The first two patients examined by this means received an injection of warm 20 per cent. solution of colloidal silver, but the X-ray plates were unsatisfactory as the shadows were too indefinite. All the other patients have received an injection of 50 per cent. strength.



Shows normal pelvis of kidney, injected by colloidal silver. (Post mortem.)

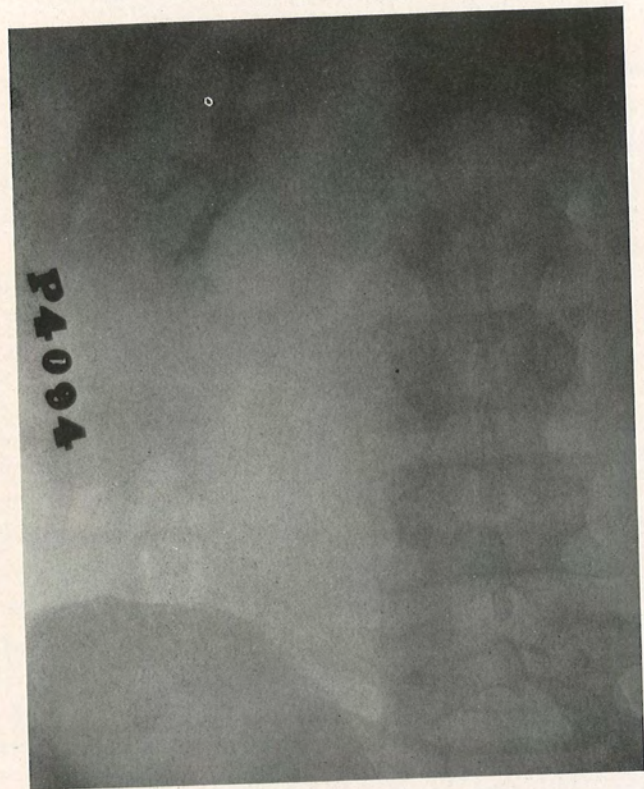
FIG. 1.



Shows some dilatation of the pelvis of the kidney, with infiltration of the tubules from a case of chronic interstitial nephritis.—Colloidal silver. (Post mortem.)

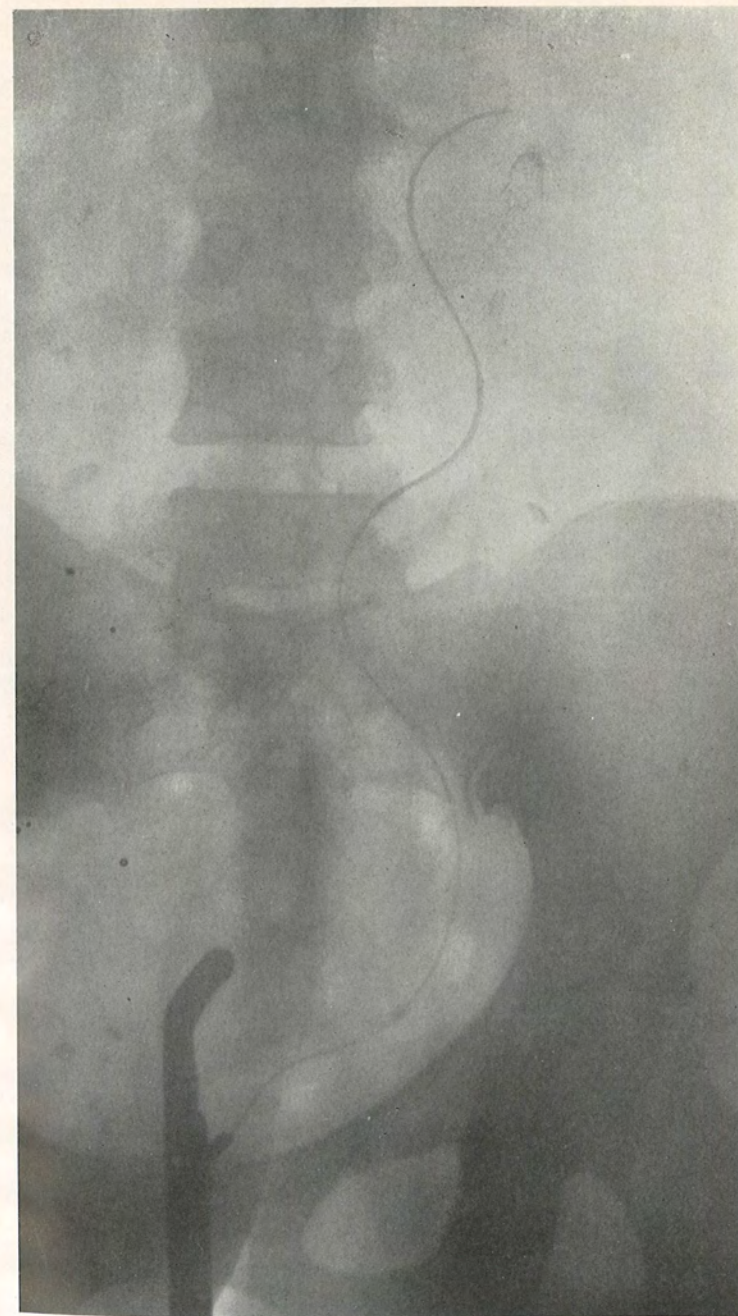
FIG. 2.

FIG. 3.



Shows the normal ureter and pelvis of the kidney injected, in a healthy adult, with colloidal silver (50 per cent. solution).

FIG. 4.



Shows a very tortuous ureter, with a bismuth catheter in position. Shows phleboliths in the pelvis, one lying directly beneath the ureter. (The upper part of the shadow of the catheter has been made more distinct by pencil.)

The solution was injected through an ureteral catheter by means of a syringe of 10 c.c. capacity. Two patients received 10 c.c. each, and the solution flowed back into the bladder alongside the catheter. In these patients probably too much solution was used. The quantity of solution employed was subsequently reduced to 5 c.c., which was found satisfactory from a radiographic point of view. The injections were given slowly so as not to cause sudden distention of the kidney pelvis, a condition which will provoke renal colic. Injections immediately preceded the taking of the X-ray picture. The fluid was allowed to drain from the kidney pelvis before withdrawing the catheter, although subsequent experience has shown that this is not necessary.

Two of the patients who received an injection, suffered immediately from renal colic lasting for several hours after the fluid was injected. Both of those patients were highly neurotic and complained of vague urinary symptoms with pain referred to the kidney region, but in whom no evidence of disease could be found. One of these patients received an injection of 10 c.c. of 20 per cent. colloidal silver, the other 8 c.c. of a 50 per cent. solution into the right kidney pelvis with no discomfort; but a few days later, when the left kidney was injected with 4 c.c. of a 50 per cent. solution colic followed immediately. Later experience has convinced us that the colic is not due to any irritating properties of the solution, but to an overdistention of the kidney pelvis.

It is difficult to estimate the capacity of the kidney pelvis and to know how much of the solution should be injected without causing overdistention. The normal average capacity from our investigations is 4 to 6 c.c., but in pathological conditions it may be less than this or considerably more than even 200 c.c.

To prevent overdistention or the too rapid distention which cannot be controlled with the hand syringe, a difficulty encountered in the first five examinations, we have devised the following technic:

INJECTION OF THE URETERS BY GRAVITY.

The buttocks of the patient are elevated and the ureteral catheter is introduced for a distance of about three inches. The warmed solution is allowed to flow by gravity from a graduated burette, which is connected with the ureteral catheter by means of a rubber tubing to which is attached a small cannula. Then with a force of gravity of about two feet the fluid is allowed to flow. The solution flows at times evenly and at other times intermittently, but finally it comes to a standstill, which is taken as an indication of complete filling of the ureter and pelvis of the kidney.

This technic offers an advantage of a natural filling of the kidney pelvis and obviates the danger of overdistention or too sudden distention. It also gives a possibility of filling a ureter which offers obstruction to the passage of a catheter but in which the obstruction is only partial as is seen by the flow of urine, pus or blood from the ureter before the introduction of the catheter.

By this means we may be able to determine the condition of the ureter, such as dilatation or diverticulation above a partial obstruction, together with the size of the kidney pelvis.

The fluid can then be easily drained from the ureter by the catheter, or it may be allowed to flow into the bladder. An additional quantity of the fluid can then be injected into the bladder and this organ outlined. This is useful in a suspected diverticulation or partial displacement from pressure.

Conclusions that can be made from the examinations thus far conducted are:

1. Combined X-ray examination and ureteral catheterization with catheters filled with substances capable of casting a shadow give more definite information as to the existence of ureteral obstructions than either method alone.

2. Doubtful shadows in the region of the ureters caused by conditions other than calculus can be excluded by this means of examination.

3. By the use of a warm solution of colloidal silver oxide (50 per cent.) a definite shadow of both ureter and kidney pelvis can be obtained.

4. This salt is non-irritating.

5. Renal colic does not occur if the solution is allowed to flow into the renal pelvis under low pressure.

6. Colic is probably due to too rapid injection of fluid or overdistention of the kidney pelvis.

7. This method of examination determines the size of the kidney pelvis, the amount of destruction of the kidney substance and the position of the kidney in its relation to other structures.

8. It also determines the position and alterations in the size and shape of the ureter and the bladder.

DR. PFAHLER remarked that although it is generally supposed that the diagnosis of ureteral or urinary calculi is comparatively simple; this is not the case. There are a great many confusing shadows. In at least half the cases the plates must be repeated to be sure of what has been found. Ordinarily, when they are repeated, one can be sure; occasionally, however, shadows still occur that are almost impossible to diagnose positively, although here, as in every line of work, experience comes into play.

DR. FRANCIS T. STEWART said that he had recently been pursuing a similar line of inquiry, using leaded catheters and collargol 2 per cent. In his series of cases the capacity of the pelvis of the kidney ranged from 3 to 18 c.c. It seems that if one gets an adventitious X-ray shadow, one can be almost sure with these methods of examination whether it is or is not a urinary calculus, but frequently the shadows of calculi do not show on plates. In four instances at least he had been able to recover a stone from the ureter, usually by oil injections, in cases in which the stone did not show on the plates. Phleboliths may often be felt through the vagina or rectum. A few years ago he showed before the Academy some X-ray plates of phantom ureteral calculi. As to the dangers of ureteral catheterization he feels that he should not keep silent, in view particularly of a case which he recently examined for Dr. Mitchell. After catheterization this patient had absolute anuria for a day and a half; at the

end of that time urine was again secreted and the patient recovered, but for a time it looked as if the result might be fatal.

DR. JOHN B. DEEVER said that there was no doubt that in a certain class of cases calculi cannot be diagnosed by the X-ray alone, and all must see the importance of the introduction of the catheter and the X-ray taken under these circumstances. The question of the risk attached to distending the pelvis of the kidney will become less as one becomes more expert in manipulation of the catheter. He called attention to one case which Dr. Pfahler had shown in which a stone was removed from the ureter extraperitoneally at a time when a hysterectomy was done for fibroid uterus; the patient made a good recovery. That case would probably not have come to operation for ureteral calculus had not the diagnosis been made by the X-ray and verified by catheterization.

DR. ORVILLE HORWITZ said that he had had one experience in which the injection of silver solution employed by Dr. Uhle caused anuria, which persisted for about twenty-four hours, causing great anxiety. He had never seen suppression of urine following a simple catheterization, although he was aware that this complication had been encountered by other observers. All had had the experience of passing a catheter past a partial obstruction caused by impacted stone. When this condition persists a diagnosis of stricture is usually made until Röntgenographic examination reveals the presence of calculus. It may not be uninteresting to call attention to the fact that ureteral catheterization or Röntgenographic examination may give wrong information, thus leading to a mistake in diagnosis. In a certain proportion of cases, no matter how skilfully or gently the catheter may be manipulated, the examination causes a hemorrhage which makes it very difficult to determine whether the blood in the urine is due to traumatism or to a pathological cause.

Dr. Uhle has pointed out that when an X-ray picture reveals a shadow alongside, or in the course, of the ureter it is frequently difficult to decide whether it is a phlebolith or calculus. He had an experience of this kind once with a patient who had a calculus causing an obstruction of the ureter located at the brim of the pelvis. It was with difficulty that the catheter could be made to pass the co-arction; the Röntgenographic examination was negative. Believing that the obstruction was caused by stricture, an

exploratory examination was performed which resulted in quite a large urate stone being removed from the ureter. It is now well known that this rare form of calculus does not throw a shadow and consequently an X-ray picture in such cases is negative.

DR. ALEXANDER UHLE (in closing) said that, in regard to the dangers in the passage of the catheter, he had seen anuria on numerous occasions follow the passage of the catheter alone. In none of the cases he had observed was there any vomiting or any apprehension about the patient's condition. After allowing catheters to lie *in situ*, the kidneys, at times, fail to act for two or three hours, and the passage of a catheter through the ureter will occasionally cause hemorrhage even under normal conditions. A catheter left for any length of time in the ureter will cause some bleeding, not observable in the urine, but cystoscopic examination made two or three days later will show a small blood clot coming from the ureteral opening. This is ordinarily mistaken for tumor, and on two or three occasions the patients have been catheterized later and tumor suspected. Even normal patients used for experimental purposes will show slight hemorrhage.

In regard to diseased kidneys with symptoms all referred to the bladder, he had observed such cases. In tuberculosis the patient may complain of only frequent urination, all symptoms pointing to the bladder, but cystoscopic examination will show the bladder apparently normal.

DR. PFAHLER added, in answer to the question of traumatism, that by the gravity method of injection one can fill the ureter and pelvis of the kidney by passing the catheter only a few inches into the ureter, which is a distinct advantage. He thought this method to be limited in its field of usefulness. The great majority of calculi can be diagnosed without this, and if so there is no necessity for taking any additional risk; it is only occasionally that one wishes to be more certain regarding calculi at the lower end of the ureter. One which came nearest to misleading him was a mole on the patient's back. This patient had persistent hæmaturia; he could find no stone in the kidney, but after repeated X-ray examinations he found a beautiful shadow of what seemed to be a stone about half an inch above the upper pole and lying to the outer side. When the patient was on the operating table, however, he saw there was a mole on the back in just this location, and so told the operator, who however decided to go on with the operation, but no stone was found, and no cause for the hæmaturia yet the patient recovered.

PLASTIC OPERATION FOR THE RELIEF OF AN
INCURVATION OF THE PENIS.

BY ORVILLE HORWITZ, M.D.,
OF PHILADELPHIA.

Professor of Genito-Urinary Surgery in the Jefferson Medical College; Surgeon to the
Jefferson Hospital, and to the Pennsylvania State Hospital for the Insane.

THE case here cited is unique; hence it is believed that a
brief description will not prove uninteresting.

The patient, a man thirty-six years of age, consulted me in
March of the past year for a physical defect of ten years' stand-
ing that followed an operation performed for stricture of the
urethra. His recovery from the operation had been uneventful,
but it was soon after observed that when the organ became erect,
it was bent at almost a right angle in the median line, and was
deflected toward the right side. The deformity made coition im-
possible. Previous to consulting me he had undergone various
treatments at the hands of numerous physicians, but had obtained
no relief.

On inspection, the flaccid penis presented a normal appearance.
Palpation revealed the presence of a fibrous mass, one and one-
half inches long, situated on the under surface of the penis, at
the right side of the urethra. The mass appeared to lie between
the sheaths of the corpus cavernosum and corpus spongiosum,
and to be attached to the lateral wall of the canal. On introducing
a bougie the tube was found to be free from obstruction. The
position and attachment of the cicatricial tissue made it evident
that it could be resected with little or no damage to the body
of the organ; hence a plastic operation, which would, in all proba-
bility, result in benefit, if not in cure, was deemed justifiable.
My colleague, Dr. Loux, who saw the case in consultation, agreed
with my conclusions.

The patient was told that his only hope of obtaining relief
lay in an operation that would be experimental in character. He
was further assured that if it was found that the fibrous mass

could not be removed, nothing would be done, but that if we found
the conditions favorable, we would proceed with the resection.
We impressed upon him the fact that we could promise nothing;
that the operation might fail, or might even result in accentuating
the deformity. On the other hand, it was explained to him that
if the operation proved successful, the result would be most grati-
fying, and the several functions of the organ would be com-
pletely restored.

The patient, an unusually intelligent man, agreed to have an
operation performed.

At operation our previous views were confirmed, namely, that
the fibrous tissue was interposed between the corpus cavernosum
and corpus spongiosum. It was easily resected until the middle
of the penile urethra was reached, this being the site at which
the stricture had been incised. At this point the scar-tissue
formed a part of the urethral canal. Its dissection necessarily
resulted in a hole, about the size of the finger-nail, being left
in the lateral wall of the urethra. In excising the fibrous tissue
in the cavernous structure an incision was made through the
sheath; an upper and a lower flap were then formed, thus giving
access to the scar-tissue, which, fortunately, involved the body of
the organ to only a slight degree, and was easily removed. The
lower flap of the sheath of the corpus cavernosum was utilized
to close the opening made in the wall of the urethra. The wound
was then closed in the usual manner, and perineal drainage estab-
lished by means of a perineal cystotomy.

Following the operation there was cedema of the penis, which
persisted for about four days. The sutures and perineal drain
were removed on the eighth day, when the patient left the hos-
pital. When I saw him, about a week later, he stated that when
the organ became turgid, the former curve in the median line had
almost entirely disappeared, and that there was some slight deflec-
tion of the glans penis toward the right side. A month later
coition was successfully effected.

In 1898 Otis, of New York, published a valuable contri-
bution to the literature on the subject of stricture of the male
urethra. In this work ("Stricture of the Male Urethra and
its Radical Cure") he practically assumes that the urethra
should be of "uniform calibre," at least as far down as the

triangular ligament. He states (*loc. cit.*, p. 22), moreover, that: "We may hence affirm, as a most important axiom, that the slightest encroachment upon the calibre of the urethral canal is sufficient to perpetuate a urethral discharge, or even, under favoring conditions, to establish it *de novo*, without venereal contact."

These views were received with favor by most surgeons, and thus dilating internal urethrotomy became the accepted method of treating cases of chronic anterior urethritis in whom the slightest suspicion of a coarctation of the urethra existed.

Otis also devised an ingenious instrument, known as a "urethrometer," which serves to determine the dilatability, location, and calibre of any constriction that may be present in the anterior urethra. This instrument is at present used only in the examination of certain obscure cases. In the hands of a surgeon of wide experience in urethral cases, and of one skilled in the manipulation of urethral instruments, the urethrometer is capable of disclosing valuable information. In the hands of those of limited experience in urethral work, however, it is unreliable, and may impart information which erroneous conclusions regarding the existing local condition of the urethra may be drawn, and a mistaken diagnosis made; thus the patient may be subjected to a urethrotomy that was not only unnecessary, but probably injurious as well.

Many years ago Gross, in his "System of Surgery," emphasized the fact that but few physicians can manipulate urethral instruments skilfully. This writer goes on to say: "To be successful, it requires skill of the highest order and an intimate knowledge of the anatomy of the urethra. My conviction is, but few men can do it well."

It is now well understood that the calibre of the urethra is not uniform, but that the tube is made up of a series of physiologic dilatations and contractions. Its walls are in contact, except during the passage of urine or the emission of semen, or when the canal is distended by the introduction of instruments or other foreign bodies.

In reality, the urethra is a narrow slit, about eight and one-half inches long, the calibre of which is not fixed, but which, when normal, is capable of great distention, without consequent injury. The extent to which the canal can be dilated with safety varies in different individuals. Many years ago Otis demonstrated that the normal dilatability of the urethra bears practically a constant relation to the circumference of the flaccid penis at the penoscrotal junction.

When operating for the relief of a stricture, the surgeon is not concerned about the calibre of the canal, but aims to restore the normal function of dilatation and contraction to the tube, which function is always interfered with when a stricture exists. This result can be attained only by exercising care when dividing the constricting fibrous tissue that makes up the stricture, and by avoiding, so far as possible, inflicting injury to the healthy tissue in front of, behind, and surrounding the coarctation. If the healthy tissue surrounding the constriction is extensively incised, it will be found, on convalescence, that the normal power of contractibility and dilatability of this portion of the tube is permanently lost, and that a plastic exudate forms in the wounded healthy tissue and may become organized into fibrous tissue, which, in turn, contracts, causing an incurvation of the penis.

In the case previously cited, the instrument that caused the incurvation of the penis was one devised by Otis, and known as the "dilating internal urethrotome." The technic of the method of using this instrument is thus described by the inventor: "The normal dilatability of the urethra is first determined by means of the urethrometer. The urethrotome is then introduced beyond the stricture, and the blade separated up to one or two millimetres beyond the normal calibre of the urethra, in order to make the stricture completely salient; the blade of the instrument is then drawn through the entire mass of cicatricial tissue, severing the stricture completely" (Morrow, "Genito-Urinary Diseases," vol. i, p. 308).

The wide employment of this method of performing urethrotomy resulted in quite a large number of incurvations being

reported as a late sequel to this operation. My own unfortunate experience with two patients, coupled with the fact that incurvation of the penis was not an unusual complication of a dilating internal urethrotomy, led me to investigate, and finally to discover, the cause of this untoward result. This I found to be due to overdilatation of the urethra when the stricture was incised. On performing the operation with the canal overdilated it was impossible, in some cases, to avoid wounding the surrounding healthy tissue, which, as has previously been pointed out, will cause the formation of cicatricial tissue and result in incurvation of the organ.

Since discovering the cause of this condition I have modified the method of using the Otis dilating urethrotome. The method as now employed by me is as follows: After the instrument has passed slightly beyond the stricture, the blades of the instrument are separated just widely enough to fill the calibre of the stricture comfortably, and not to overdilate the canal, so causing the stricture to become fixed and present an unyielding surface to the passage of the knife. Since adopting this technic I have used this instrument in a large number of cases without subsequent development of untoward results, and I have come to regard this form of urethrotome as one of the most satisfactory and reliable instruments that can be employed for performing internal urethrotomy.

The surgeon engaged in genito-urinary work has long since learned that a chronic anterior urethritis, associated with a stricture of large calibre, in the so-called recent or "succulent stage," is frequently associated with peri-urethral thickening, due to cell proliferation, that interferes materially with the dilatability of the urethra. In such cases he has discovered that better results are obtained by gradual dilatation, employing the conical steel bougie for this purpose, than by attempting urethrotomy.

The once highly lauded and popular method of treating such cases by internal urethrotomy has long since been abandoned, and, in consequence, incurvation of the penis resulting from this method of treatment is now but seldom encountered.

In concluding, let me warn the surgeon not to be carried away by the gratifying result that I was fortunate enough to obtain in the case cited, that he be not led to operate indiscriminately upon cases of this kind that may come under his care. In the past fifteen years I have seen several similar cases, but only in the one just recounted have I deemed operation justifiable. In the others the scar tissue was so extensively connected with the penile urethra and the corpus cavernosum that an extensive resection of the fibrous mass would have resulted in a hopeless mutilation of the body of the organ.

DR. JOHN B. DEEVER agreed with Dr. Horwitz that the Otis dilating urethrotome is a dangerous instrument if not used judiciously. He recalled one case of a doctor with a slight incurvation following an internal urethrotomy which he performed, and after this he was very cautious in the use of this instrument. He had seen slight incurvation a number of times occurring in the practice of others, but never any reaching the degree of Dr. Horwitz's case. The incurvation, though very slight, in a nervous man is enough to make him very uncomfortable.

The modification which Dr. Horwitz suggests is most important—that is, not to overdilate when the blade is drawn through the stricture. This is particularly important advice for young surgeons who are about to take up the Otis instrument.

THE TREATMENT OF SYPHILIS BY HYPODERMIC
INJECTIONS OF SALICYLATE OF MERCURY.

BY MACY BROOKS, M.D.,
OF PHILADELPHIA.

IN treating syphilis we are confronted with two great difficulties: First, to keep the patient from blowing his brains out when informed of the nature of his malady; and, second, a much more difficult task, to keep him on regular treatment after all the subjective symptoms have disappeared and he is apparently perfectly well.

Is there any wonder that the dispensary and hospital cases proclaim themselves cured and throw away their medicine, when the refined and educated gentleman grows lax, indifferent and intermittent in his treatment and often goes so far as to marry contrary to advice, after a year or a year and a half of spasmodic medication.

Any method which by its prompt and rapid relief of all acute secondary symptoms, and by the fact that it makes it necessary for the patient to see the physician every five or ten days, is bound to impress the syphilitic with the importance of the disease and the necessity of regular treatment.

Few patients will make visits daily or every second day, as is necessary with the soluble salts, unless there is some subjective symptom which is worrying them, but the majority prefer to receive a hypodermic every five to ten days, as is required in this treatment, to taking medicine three or four times daily for several years, in constant dread of detection, or to rubbing in inunctions for twenty minutes once or twice daily and having their clothing and bed linen stained continuously.

The injection of the insoluble salicylate of mercury, if performed, as will be explained, is practically a painless pro-

cedure. There is established a medical depot which is continuously dispensing mercury day and night as the tissues gradually change the insoluble salt into a soluble mercury.

The physician cannot be misled as to the amount of mercury the patient is getting and the patient cannot become lax in his treatment without the physician knowing it.

I was surprised when I first started this method of treatment to find how pleased were all my private patients, who had previously been on pills, to take it up and continue it.

The injections are continued all through the treatment even after the iodide has been started.

I believe from what I have seen of this treatment in my own practice and in the wards of the Philadelphia Hospital, that it is far superior to any, except inunctions in the hands of an experienced masseur, which is not practical in the vast majority of cases.

The rash, the headache, the angina, the osteocopic pains, the mucous patch, the alopecia and the condylomata rapidly disappear, and are seldom seen again if this treatment is continued. There have been no relapses in any of my private cases.

The solution which is used is composed of mercury salicylate, Mercks, 1 part, liquid albolene, 5 parts. One minim of this solution will equal one-fifth of a grain of mercury. This solution may be placed in one ounce bottles which are corked with sterile cotton, and placed in a water bath, the temperature gradually being raised to the boiling point and kept there for an hour. These bottles may then be corked with sterile corks, the necks dipped in paraffine, ready to open when needed. After once being sterilized the solution appears to remain so.

Dr. Gottheil told me he had left a bottle of this solution uncorked in his office for several months and after repeated attempts the bacteriologists had been unable to grow a culture from the exposed top of the media.

Liquid albolene will not become rancid, as will the vegetable oils and it is in no way irritating. It passes readily through

the needle, yet is heavy enough to hold the mercury in suspension for several minutes. It is unaltered by the regular means of sterilization.

It is advisable to have a special syringe having a long narrow barrel, so that the markings indicating minims are not too close together. With an oily menstruum it is difficult to measure a minim accurately in an ordinary closely marked hypodermic. All parts of the syringe, other than the barrel, should be of metal, so that it shall be as heavy as possible, to facilitate a quick deep puncture with the long needle. The needles vary in length from an inch and a half to an inch and three-quarters, depending upon the thickness of the patient's buttocks. The needles should be made to slip on to the syringe, instead of screwing on, so that the barrel of the syringe may be readily disconnected from the needle without disturbing the point, as is apt to occur when the barrel has to be unscrewed. The needle must have a larger lumen than the ordinary hypodermic needle to permit the passage of an oily fluid; a separate needle is kept for each patient.

The salicylate of mercury has no action on metal except to preserve its lustre and prevent oxydizing.

The best syringe is one designed by Dr. Gottheil; it has a plain metal piston which completely fills the barrel of the syringe, leaving no dead space when at the end of its stroke. The thumb end of the piston terminates in a flattened disk large enough to support the syringe with needle attached in a perpendicular position, so that no contamination may take place after sterilization.

The technic of the injections is very simple. After the syringe has once been sterilized the film of mercury which remains in the barrel keeps it sterile. The needle end of the syringe is wiped off with ether on cotton; it is then passed back and forth through the flame of a spirit lamp, five or six times, so that the solution may not be contaminated. It is now filled with the salicylate of mercury solution, which has previously been well shaken, and the needle being fitted in place is drawn through the flame several times. Care must

be taken not to heat the needle hot enough to take the temper out of it.

The syringe now being filled and all air expelled, is ready for use. The patient stands in front of the operator in the position of "attention," feet together, body erect and with buttocks relaxed. The skin is sterilized with a pledget of cotton wet with ether. This also chills the skin and renders it anæsthetic. This anæsthesia may be increased by blowing upon the ether-moistened skin. When the skin is quite cold the needle is driven home with a rapid stroke into the fullest part of the buttock on a line perpendicular to the intergluteal fold and one inch to one and one-half inch external to it.

The syringe is disconnected and the end of the needle watched for twenty seconds. Should the injection fluid start to well out, the needle is in a small vein; where the vein is large the fluid is followed by drops of blood. In either event the needle must be withdrawn and re-inserted. This may be done immediately, or, should the patient be nervous, it may be postponed. When the needle is found to be properly inserted, the barrel is again attached and the injection fluid slowly introduced. The needle is then rapidly withdrawn, its track closed by rotating the tissues with a pledget of cotton. A square of sterile zinc oxide adhesive plaster is placed over the point of puncture. This may be removed in a few hours. Blood from the seat of puncture after withdrawal of the needle is of no consequence, simply indicating that a vein has been injured as the needle passed it; pressure for a moment will stop this. With this form of treatment, there is less tendency to salivation and gastro-intestinal disturbances, and the results are very rapid.

In ordinary cases, the headache, rash, and sore throat disappear after the first or second injection, and persistent cases are frequently relieved after three or four hypodermics.

It is well to start with a small dose at first, especially in women, except when there is a severe lesion requiring drastic measures.

In starting the treatment at the Philadelphia Hospital,

there were a number of cases which had been under other treatment for various periods, ranging from a month to eight months, some of which had been very refractory, having stubborn mucous patches and condylomata; most of these cleared up after two or three injections.

I have collected data on sixty cases, which I will not report here, except to state that they indicate a decided improvement over the methods previously used at the hospital.

Dr. Christian and I started this treatment last winter at the Philadelphia Hospital and the other chiefs upon the genito-urinary service have continued it as the routine treatment ever since, which would indicate that they were pleased with their results.

The advantages of this form of treatment are as follows:

All treatment is administered by the physician, therefore he can readily determine when a patient is neglecting treatment.

The history shows the exact amount of mercury the patient is getting, which is very important in determining results, as few patients are regular with treatment by mouth or inunctions.

A visit every five to ten days to a doctor's office does not arouse suspicion, and it relieves the man of affairs from the fear of detection in constantly taking medicine and the danger of forgetting it.

Simplicity of technic—flaming, instead of boiling, being all that is required.

The injection, if properly given, is practically painless, causing a slight bruised sensation which usually disappears in twenty-four hours.

These points of advantage, coupled with the fact that this method seems to give the most rapid results, even in very stubborn cases, should recommend it to those who have not yet used it.

DR. HILARY CHRISTIAN said that he had been all his life a most uncompromising opponent to the hypodermic treatment of syphilis, for the reason that he had always felt that the introduc-

tion of the drug in this manner rose to the dignity of an operation, involving the risk of abscess, considerable pain, and the danger of acute salivation, but he had had lately an open mind on the subject owing to the experience he had had in his service at the Philadelphia Hospital, and he had come to believe almost that the hypodermic treatment of an insoluble salt of mercury is superior to any form of internal treatment, although he had never had any fault to find with internal treatment except when the patient got beyond control and run away. He had seen in the wards of the Philadelphia Hospital such great results that he was compelled to come to the conclusion that there is probably a great future for the treatment of syphilis by the hypodermic introduction of an insoluble salt. This salicylate of mercury used by Dr. Gottheil for ten years persistently with few if any abscesses and with absolute disappearance of all lesions, is entitled to some belief and respect.

DR. JOHN B. ROBERTS said that he had had a little experience recently with the hypodermic use of mercury in a case of tertiary syphilis. The patient has specific osteoperiostitis of the tibia, and was treated by him with inunctions of mercury, and mercuric chloride with potassium iodide internally in enormous doses by the mouth for seven years. Several operations for splitting the periosteum and boring into the bone were done. The pain was alleviated but not entirely relieved. Recently he had been giving her succinimid of mercury, one-fifth grain, hypodermatically once a week, and it is astonishing how quickly she had been relieved of her pain, and how little discomfort she has as compared with that resulting from the other treatments given by mouth.

DR. THOMAS R. NEILSON said that he had been very much impressed by the results in one or two precocious cases of syphilis in which mercury given by the mouth was not efficacious, but he would not like to subscribe to the routine treatment of syphilis by the hypodermic injection of mercury, the risk hardly seeming worth while. However, it is valuable to have such treatment when the introduction of the drug by way of the stomach does not prove of value.

DR. ORVILLE HORWITZ said that at the present time most of the syphilographers are in accord in teaching that syphilis is best treated by administering a course of mercury for at least two and one-half years. Mercury should be given for a short period

by mouth. This method should be interrupted every four to six weeks and either hypodermatic medication or inunctions substituted for about two weeks; which course is to be pursued during the entire time that the patient is under observation.

On return from a visit from the various venereal clinics in Europe in 1883 he found that hypodermatic medication and inunctions of mercury were relied upon as the standard method of treating the disease in determining the secondary or tertiary stage. He decided to investigate the hypodermatic method and after the study of one hundred and thirty (130) cases he read a paper giving the results of his observations before The County Medical Society which was afterwards published in the *Therapeutic Gazette* of May 19, 1894. The discussion of the paper gave rise to a most acrimonious discussion, and when the Society adjourned the majority dispersed believing that this method of treatment was dangerous, unsatisfactory, and one to be employed only in specially selected emergency cases. Not discouraged by this adverse view of his confrères he had continued to employ the hypodermatic method as a means of treating syphilis for the past twenty-six years and was fully convinced that when properly employed it is one of the strongest and most reliable weapons possessed by the physician wherewith to fight this disease.

It is gratifying to find that the hypodermatic treatment of syphilis is rapidly becoming the standard method employed as a routine treatment by all progressive physicians.

DR. BROOKS, in closing the discussion, said that the dangers of this method are very slight. Embolism cannot occur if the operator takes sufficient time to be sure that the needle is not in a vein.

The danger of abscess is very slight, if the technic is carefully carried out and the injections given deeply. Dr. Gottheil claims to have only had one abscess in ten years and that happened in the case of a patient treated in a dirty tenement without aseptic precautions.

A few deaths have occurred after the hypodermic injection of mercurial salts, but these are extremely rare, and it has not been proven that death was due to the fact that the drug was administered by hypodermic,—some patients have a rare idiosyncrasy for mercury and cases are reported where death has followed its administration by mouth.

Administration by mouth is very uncertain, even when the patient takes his medicine regularly, for the pills are often so old and hard that they pass through the alimentary canal undissolved.

DILATATION OF THE PROSTATIC URETHRA FOR THE RELIEF OF THE SYMPTOMS OF PROSTATIC ENLARGEMENT.

DR. E. HOLLINGSWORTH SITER said that the Bottini operation having been practically discarded, the only procedure left for the relief of the prostatic symptoms is prostatectomy. But there are so many cases that are not fit for the prolonged anæsthesia and shock of prostatectomy, that it seems some method should be devised for this class of patients.

Three and a half years ago, a patient upon whom he proposed to do a suprapubic prostatectomy did not do well with his ether after he had opened his bladder, and he was led to try dilatation of his prostatic urethra with his finger. The results were so gratifying that he had since employed it frequently. This patient's urinary difficulties disappeared, and he heard from him recently that he had had no return of frequency and was not rising at night. His age was 65 years and owing to the fact that there had been no disturbance or injury of his ejaculatory ducts and vesicles, he had had no interruption to his sexual life.

He had since employed this procedure on some twenty cases and his results had so far been satisfactory in every way, not only as to relief of symptoms, but as to uninterrupted sexual life and no return of urinary disturbances.

The cases he had selected have been the "spread out" prostates, usually with cystitis and always somewhat run down from the effects of catheter life. He had tried it on two hard prostates but too recently (within eighteen months) to say how long the relief will last.

He had also tried combined removal of the "middle" lobe and dilatation, but these have also been too recent to estimate the permanency. He felt that this method was worth a long and continued trial. It can be employed under local anæsthesia as it is no more than a suprapubic cystotomy. There is no loss of blood, practically no shock, and the patient can be up and about in a few days. Where there is cystitis, he drains the bladder for two or three days suprapubically. Where there is no cystitis, he

closes the suprapubic wound and drains through a catheter left in the urethra. The after treatment has consisted of a daily irrigation for ten days or two weeks, with urinary antiseptics by the mouth.

He thought dilatation had the following points to recommend it,—absence of shock, absence of interruption to sexual life, brevity of the operation, absence of secondary hemorrhage, quickness of recovery and absence of post-operative incontinence; and the fact that the operation can be done without waiting for the disappearance of a long continued and troublesome cystitis due to the catheter life so many prostatitis lead before they come to operation.

Then again, the operation is so simple and safe that he would not hesitate to repeat in a few years or every few years, if there is no permanency to the relief, and there is a return of symptoms.

DR. JOHN B. ROBERTS said, before prostatectomy was known to be so successful and satisfactory much relief was given in some cases of moderate prostatic enlargement by the use of large bougies introduced through the urethra into the bladder. Retrograde dilatation through a suprapubic incision ought to be even more valuable and Dr. Siter's remarks indicate its beneficial effect.

HYDATID CYST OF THE LIVER.

DR. FRANCIS T. STEWART related the history of a man, aged 19 years, who was admitted to the Pennsylvania Hospital August 25, 1909. For one year he had been suffering with epigastric pain, indigestion, and occasional attacks of vomiting; he had lost much weight. On admission he was extremely ill. The temperature was 105° F., the pulse rapid, the skin moderately jaundiced, and the mind clouded. A large mass could be felt and seen in the right hypochondrium, and above this a secondary nodule close beneath the ribs. The mass was dull on percussion, extremely hard, and moved with respiration; neither fluctuation nor fremitus could be demonstrated. The leucocytes were 15,000; the urine bile stained, turbid, acid, with a S.G. of 1011, a cloud of albumin, and a few granular casts. As he had seen two somewhat similar cases, which, on exploration, proved to be sarcoma of the liver, he made this diagnosis, and suggested exploration with the hope that he was wrong and that some condition amenable to surgical treatment would be found. In two days the temperature fell to

normal and the patient was much improved. The abdomen was then opened and a hard, whitish mass protruding from the convex surface of the liver disclosed. The secondary nodule previously mentioned was about one inch in diameter and not connected with the larger mass; it was excised to corroborate the diagnosis, but on incision was found to be a cyst with a white lining and clear contents. The larger growth was then punctured; and finally incised; it had an extremely hard and thick wall lined with a softer layer, and contained about two quarts of fluid and white, spherical, daughter cysts, ranging in size from a pea to a hen's egg. Scolices, hooklets, and cholesterin crystals were found in the fluid. The mother cyst occupied the right lobe of the liver and was about 10 inches longitudinally and 8 inches transversely; it was enucleated and the cavity painted with iodine, sutured to the abdominal wall, and packed with gauze. A large quantity of bile subsequently flowed from the wound, but the cavity rapidly contracted and healing was complete in nine weeks.