

operating cystoscope of Nitze I have never employed, nor has it gained any wide popularity.

Cystoscopic batteries are obtainable of every important electrical company. To use the street current a rheostat must be interposed.

**Preparation for Cystoscopy.**—The instrument is prepared by soaking several hours in a 5% carbolic-acid solution, after which it is carefully washed with sterilized water before using. The newer instruments may be boiled.

The patient requires no great preparation unless his prostate is sensitive or his bladder inflamed. In the former case the gentle passage of sounds at intervals of three or four days for several weeks before the operation may materially blunt the prostatic sensibility. In the latter case it is proper to attack the inflammation in the hope of clarifying the contents of the bladder before employing the cystoscope. It is also prudent to administer urotropin for three or four days before operating to diminish the danger of infection and of urethral chill (p. 373).

Cystoscopy may almost always be performed under local anesthesia, and accordingly some local anesthetic is injected into the posterior urethra and bladder a few minutes before operating. The bladder is first washed out until the fluid returns clear of pus or blood, then 150 c. c. of 1% cocain solution is injected into the bladder and a few minutes later 10 drops of a 5% solution are instilled into the posterior urethra.<sup>1</sup> The patient is then made to remove his trousers and drawers and placed upon an ordinary gynecological office table with his buttocks on a low cushion and his feet spread apart and in the foot-rests. All is then ready for the operation. (The remote possibility of cocain-poisoning must be borne in mind. It happened once in my experience.)

**The Operation.**—The cystoscope is attached to the battery and the electricity slowly turned on until the lamp is at a white heat. Noting the amount of current necessary, the electricity is turned off, and the cystoscope, greased with a soluble lubricant, such as glycerin or lubrichondrin, is slowly introduced into the bladder. The instrument enters like a steel sound, but as it has a short beak it is often

<sup>1</sup> Eucain B. has not proved as satisfactory in my hands for bladder use as cocain. Nirvanin has a disagreeable property of irritating for a few moments before it anesthetizes. Guyon employs as an anesthetic injection into the rectum, forty-five minutes before operating—

℞ Antipyrin .....	gm. 150
Laudanum .....	gtt. x
Water.....	gm. 100

PLATE IV.

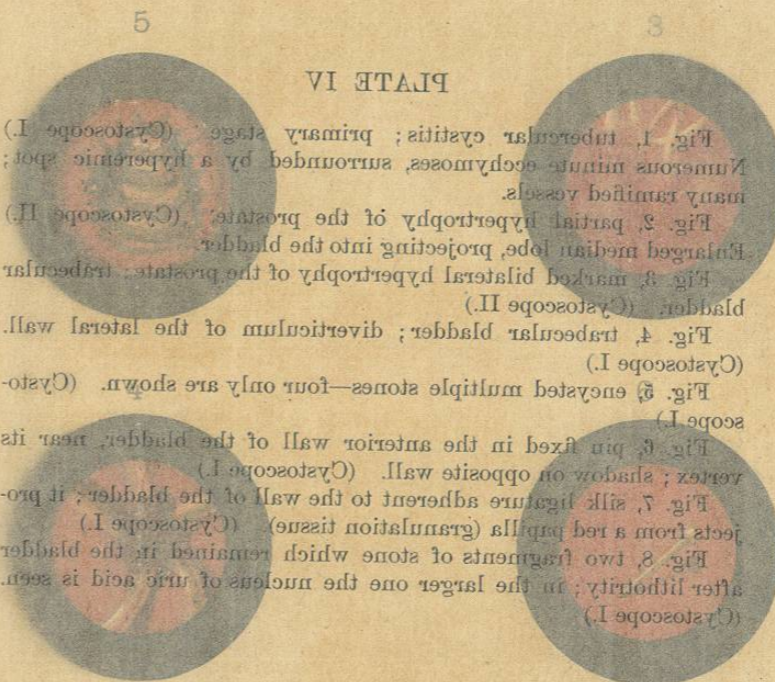


PLATE IV

Fig. 1. tubercular cystitis; primary stage. (Cystoscope I.) Numerous minute echymoses, surrounded by a hyperemic spot; many ramified vessels.  
 Fig. 2. partial hypertrophy of the prostate. (Cystoscope II.) Enlarged median lobe, projecting into the bladder.  
 Fig. 3. marked bilateral hypertrophy of the prostate, tabercular bladder. (Cystoscope II.)  
 Fig. 4. tabercular bladder; diverticulum of the lateral wall. (Cystoscope I.)  
 Fig. 5. encysted multiple stones—four only are shown. (Cystoscope I.)  
 Fig. 6. pin fixed in the anterior wall of the bladder, near its vertex; shadow on opposite wall. (Cystoscope I.)  
 Fig. 7. silk suture adherent to the wall of the bladder; it projects from a red papilla (granulation tissue). (Cystoscope I.)  
 Fig. 8. two fragments of stone which remained in the bladder after lithotomy; in the larger one the nucleus of uric acid is seen. (Cystoscope I.)

CYSTOSCOPIC PICTURES.

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In the latter case it is proper to attack the inflammation in the hope of clearing the field of the bladder before operating. The use of the cystoscope is also advised to administer urotropin for three or four days before the operation to diminish the danger of infection at the urethra.

**Fig. 1, tubercular cystitis; primary stage. (Cystoscope I.)** Numerous minute ecchymoses, surrounded by a hyperemic spot; many ramified vessels.

**Fig. 2, partial hypertrophy of the prostate. (Cystoscope II.)** Enlarged median lobe, projecting into the bladder.

**Fig. 3, marked bilateral hypertrophy of the prostate; trabecular-thesia, bladder. (Cystoscope II.)** local anesthetic is injected into the posterior urethra before operating. The bladder is washed out until the fluid returns clear of pus or blood, then 50 c. c. of 1% cocain solution is injected into the bladder and a few minutes later 10 drops of a 5% solution are instilled into the bladder through the urethra. The patient is made to remove his trousers.

**Fig. 4, trabecular bladder; diverticulum of the lateral wall. (Cystoscope I.)**

**Fig. 5, encysted multiple stones—four only are shown. (Cystoscope I.)**

**Fig. 6, pin fixed in the anterior wall of the bladder, near its vertex; shadow on opposite wall. (Cystoscope I.)**

**Fig. 7, silk ligature adherent to the wall of the bladder; it projects from a red papilla (granulation tissue). (Cystoscope I.)**

**Fig. 8, two fragments of stone, which remained in the bladder after lithotripsy; in the larger one the nucleus of uric acid is seen. (Cystoscope I.)** (The use of cocain or cocain poisoning must be borne in mind. It happened once in my experience.)

**The Operation.**—The cystoscope is attached to the battery and the electricity slowly turned on until the lamp is at a white heat. Noting the amount of current necessary, the electricity is turned off, and the cystoscope, greased with a soluble lubricant, such as glycerin or lubrichondrin, is slowly introduced into the bladder. The instrument enters like a steel sound, but as it has a short beak it is often

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PLATE IV.



CYSTOSCOPIC PICTURES.

necessary to lift it into the membranous urethra by pressure on the perineum. Once in the bladder it may be freely moved forward and backward and rotated on its long axis, but this long axis should always be kept in the sagittal plane of the patient, except for the slight inclination allowable and necessary to catheterize the ureters. With the instrument well in the bladder the electric current is again turned on to the necessary strength and the beak of the instrument rotated so as to face the floor of the bladder. The surgeon then looks into the instrument and deliberately withdraws it until a dark-red crescent appears upon the scene. This is the neck of the bladder. Withdraw the instrument a trifle further and everything disappears from view; further withdrawal is impeded, and the patient complains of pain. If the neck of the bladder is normal it appears as a clear-cut crescent. If inflamed it appears nodular and velvety. If there is contraction or hypertrophy of the prostate, the neck of the bladder is deformed (Plate IV, Figs. 2, 3). Having carefully observed the lower part of the neck of the bladder, the cystoscope is pushed slowly backward in the median line. The salmon tint of the bladder wall passes through the field, here and there crossed by a vessel or interrupted by a fold of mucous membrane.

When the fundus is reached the instrument is turned 45 degrees to one side and the return trip is made. On this trip the ureteral opening should be seen. It may be recognised as an oblique slit or a slight prominence of the bladder wall, and if watched for a moment it will be seen to gather itself up and emit a spurt of urine. This may be visibly purulent or bloody. Thus the examination is continued all the way around until the beak of the instrument is turned downward again. It is best to begin and end the examination upon the floor of the bladder, since it is there that the diseases for which the surgeon seeks—tubercle, neoplasm, and stone—are almost always found. I shall not delay to describe the appearance of the normal and the abnormal bladder. The figures in Plate IV show the common abnormal pictures, but a few minutes of practical cystoscopy will teach more about these things than can be learned from hours of study. I need only remark that in order to see an object to the best advantage it must be brought as near as possible to the window of the cystoscope.

At the end of the examination the light is turned out and the instrument extracted. The patient is then instructed to empty his bladder. The organ is once again washed with boric-acid solution in order to empty it of all the cocain, and an instillation of 1:1,500 nitrate-of-silver solution given to forestall infection and to minimize congestion.

The three essentials commonly insisted upon for the proper performance of a cystoscopy are:

1. A urethra large enough to admit the cystoscope.
2. A bladder not too contracted to contain the necessary 150 c. c. of fluid.

3. A clear medium. This is the condition most difficult to fulfil. Unless there is profuse intravesical bleeding the contents of the organ can readily enough be made clear, but they will not remain so. Whether the case is one of tubercle, tumour, or stone, bleeding is a prominent feature, and the cystoscopic manipulations promptly evoke the bleeding. There are two ways of avoiding this difficulty. The first is to know in a general way what you expect to see, and to go straight for it and get a good view of it before it is obscured by the hemorrhage. The other way is to use an irrigating cystoscope, to wash the prism clean, and dilute the muddied contents of the bladder. This latter expedient is deemed the more scientific. I must confess to having found the former more practical.<sup>1</sup>

**Indications.**—Many surgeons constantly employ the cystoscope for the diagnosis of hypertrophy of the prostate, stone in the bladder, and cystitis. I do not consider it a proper routine method of diagnosis for any of these conditions. They may be better determined by other means. In tuberculosis the cystoscope should never be introduced except to decide a question of operation. The only indications for cystoscopy that I recognise beyond this are ureteral catheterization (p. 472), tumour (p. 419), and, in obscure cases, for a diagnosis.

**Contra-indications.**—In the presence of any acute inflammation cystoscopy is certainly contra-indicated. Chronic cystitis and inflammation, hypertrophy and tumour of the prostate, while they do not absolutely contra-indicate cystoscopy, make it a difficult and rather harmful operation. Cystoscopy irritates tubercular cases even more than do other local measures.

#### CONGENITAL ANOMALIES OF THE BLADDER

*Double bladder*, a condition in which the bladder is either divided into lateral halves by a central partition, or gives off one or two large lateral cavities, or is divided by a transverse partition, is very rare. The anomaly is a curious one and has a certain clinical significance in that it may give rise to troubles similar to those

<sup>1</sup> The injection of a solution of adrenalin (1:2,000) serves to prevent hemorrhage in urine segregation (p. 476), and the same solution may be employed in simple cystoscopy.

caused by acquired diverticula (p. 342), with which, indeed, it is often confused. *Absence of the bladder* is also very rare.

#### EXSTROPHY OF THE BLADDER

Exstrophy or extroversion of the bladder (*ectopia vesicæ*) is far more common in the male than in the female. Thus of the 49 cases collected by Pousson,<sup>1</sup> 37 were men and 12 women. In the female it is of less importance, as it may be more easily concealed, and does not prevent performance of the sexual act. Cases of pregnancy and successful delivery at term are recorded. The subject will be considered here, however, only in relation to the male.

The deformity is an arrest of development in the median line analogous to hare-lip, and is found in different degrees. In a type case the lower part of the front wall of the abdomen and the front wall of the bladder are absent. The pubic bones are more or less widely separated from one another, their ends being united by a strong band of fibrous tissue. The posterior wall of the bladder, pressed out by the intestines, forms a mottled, red, tomato-like tumour, occupying the position of the symphysis pubis. Inguinal hernia of one or both sides is not uncommonly present, either partial or extending down into the scrotum, which is usually normal, containing the testicles. The penis is rudimentary, and affected by complete epispadias. The ureters are sometimes greatly dilated, forming, as it were, rudimentary bladders. The pathology and etiology are given in detail by Connell.<sup>2</sup>

The above description applies to a type case. There may be variations in the absence of herniæ, in a normal union of the pubic bones, in the amount of the protrusion, etc. Ordinarily in the adult the mass reaches the size of the palm of the hand. With complete exstrophy there is also always complete epispadias. A condition analogous to exstrophy may exist where the bony union of the pelvis is lacking, but the anterior walls of the abdomen and bladder are perfect. Here there is a sort of hernia of the bladder forward. In such cases there is always some analogous condition of the external organs of generation.

In exstrophy of the bladder the patient's condition is miserable indeed. The mucous membrane covering the protruded posterior wall of the everted bladder is inflamed, thickened, ulcerated, and covered by decomposing stringy mucus of alkaline reaction, similar to that found in vesical catarrh. From the orifices of the ureters,

<sup>1</sup> Guyon's Annales, 1888, vi, 94, 155, 244, 337, 409, 471, 536, 615.

<sup>2</sup> J. Am. Med. Ass'n, 1901, xxxvi, 637.